

1804

1: William Dunbar Journal

William Dunbar

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Wm Dunbar, usually styled
Sir Wm. Dunbar, a Scotsman
of ancient family, who settled
12 miles from Natchez, on
an estate called the Forest,
and founded a large & influential
family.

Sketch of Life ^{and} Character
and one letter, addressed to
A. Wetchins, enclosed.

THOMAS DOBSON,

N^o 41, South Second Street, Philadelphia;

*Has constantly on Sale a Very General Assortment of
Stationary, of the best Kinds; viz.*

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Invoice, Account Current, Sales, Letter and Re-
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and Pounce Boxes, Tape, Blank Checks, Bills of
Exchange, Bills of Lading, &c. &c. &c. &c.

Latitude of principal places

Mouth of Red river 31° 1'
D. of black river 31-15-48
D. of Washita river 31-37-57
Port of washita 32-29-57

Journal of a voyage commencing at S^t. Catherine's
Landing, on the East bank of the Mississippi,
proceeding downwards to the ~~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 Wm Dunbar

Adams Co,

Mississippi

il

Under taken at the request of Thos. Jefferson

1804

Journal of a Voyage

October
16th

Tuesday

Set out from St. Catherine's landing in the afternoon. The Latitude of this place is
and Longitude 6^h West of Greenwich.

1804 Journal of a Voyage up the Washita river

October 16th Set out from S^t. Catharines Landing in the afternoon;
Tuesday A hill below are the white cliffs 5 leagues ^{below the} from Natchez

The face of the cliffs ^{is} chiefly white sand ^{sworn out} by pine; the cliffs are ^{from} about 100 to 200 feet high; when the waters are low the bases of the cliffs are uncovered consisting of clay of different colours & some beds of ochre, covered here & there by a thin lamina of iron ore - small ^{possessing a peculiar} springs ^{and partly of pure} ~~over~~ the clay & ochre, ~~which possess a petrifying quality,~~ numberless logs & pieces of timber converted ^{into} stone are strowed about the beach.

Wednesday Fine pure argil of various colours chiefly white and red is found here
17th Encamped at night upon an island ^{6 miles farther} of miles below.

Set off passed Fort Adams & the line of demarcation & arrived at the mouth of red river ~~15 miles below~~ ^{about} 9 miles below the line of demarcation; encamped just within ^{its mouth} the red river; the waters of this river have a red appearance from a red fat earth or marl of that colour worn down by the floods, ^{from which it derives its name;} the mouth of the river is about 500 yards wide; here we commenced taking the meanders of the river by courses time depending upon the lag to inform us of our rate of going as well as the velocity of the Current; there is however no ^{visible} Cux^t. at the mouth that is sensible - the banks on both sides are here clothed with willows, ^{the} land, low

Subject to inundation 2
and ~~is supposed~~ from appearance to the ^{height} ~~depth~~
of 30 or more feet above the present level of the
waters, the mouth of the red river is accounted to
be 76 leagues from New Orleans & 3 miles above
the exit of the Chafalaya or Opelousa river
which is ^{was probably} ~~supposed not improbable 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. & long. of this place the first at $31^{\circ} 1' 45''$ N. & the last at $6^{\circ} 7' 11''$ west
Thursday 18. ^{of Greenwich} Set off up the river -

Remarked vegetation
to be surprisingly luxuriant along the banks
owing no doubt to the rich red muck yearly
deposited by the floods of the river - willows
grow to a good size, but other forest trees are
much smaller than those seen upon the banks
of the Mississippi, which may be owing to the
newly formed soil or its excessive richness. The river

narrower gradually as we advance: at ^{noon} ~~midday~~ it
was about 200 ^{wide} yds. Got out the instruments, which re-
quiring a good deal of adjustment we were unable
to make perfect observations. the banks of the river
are luxuriantly clothed with pea vine & several kinds

of grasses yielding seed, of which Geese and ducks are very greedy - got our log line prepared and divided into perches - how the log & found we went at the rate of 4 perches in half a minute, i.e. 1 1/2 mile p^r hour - very slow - Soldiers do not exert themselves as the oar, came to for the night having made nearly 13 miles - how 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 growths of forest trees continued, consisting chiefly of black oak, packawm, 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 Fahrenheit's thermometer. made this day 12 ⁵⁵/₆₀ miles.

Friday 19th. Continued our rout up the river, having given the Soldiers this morning a few words of advice & encouragement, they improved considerably in activity & cheerfulness, how the log & found we went 7 perches p^r half minute, ~~the~~ Current yet continues so moderate as to offer no impediment to our rowing along shore

4
4
Octob. therefore not worth estimating: landed before
19th 12 to observe & for dinner. Lat: $31^{\circ} 14' 50''$ after

~~Lat:~~
31-15-48⁰ the Confluence of red & black river, ^{in Latitude $31^{\circ} 15' 48''$} which by our
reckoning appears to be $26\frac{1}{3}$ miles from the Miss-
sissippi, the Contrast of the two rivers is great,
the red river being charged with red marly earth
& the other a clear river gives it by comparison
a dark appearance, hence the name of black
river - Each river is about 150 yds & when
united about 200 yds ^{wide} & found in the
black river & found 20 feet black sand, little
or no Current. Took specimens of the red marl of
+ particularly red river bank. The water of the black river is
rather clear 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.
made 15 miles 102 perches.

+ particularly
in Cata-
hoola.

20th Saturday. Continue ascending the river & Thermometer
47°. Temperature of the water 73° - a spring issuing from
the river bank 66°. Forest trees on the banks, chiefly
red & black oak, interspersed with ash, paccaw, hickory
Some elm, persimmon &c. - several kinds of grape & 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 marl 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 forgot to mention in its proper place, that the last inundation of the red river appears to have deposited on the high bank a stratum of red marl about half an inch thick now dry, of which a specimen was taken. Took a meridian altitude of the Sun & found the latitude to be $31^{\circ}22'46''.6$. observed Canes growing on several parts of the right banks, which is a proof that the land is not deeply overflowed ^{perhaps} from 1 to 3 feet; the banks appear to have stability; very little willow on either side but a solid bank covered by vegetation. nothing worthy of notice - encamped at Simet's sounded 5 fathoms black sand. Extremes of the Thermometer 47° to 80° .

Made this day 13 miles 40 perches.

6th October 1804

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Sunday 25th Thermometer before Sun rise 60°. Continued ascending, no current to impede us ~~with our progress~~ for altho' there be a feeble Cur^t. yet as this is deflected from bend to bend, by crossing under the points it is not felt; the river about 80yds 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 even in the throat 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 commenced on the left bank by a man & his wife; a covered frame of rough poles without walls served for a house & a couple of acres of ^{Indian} 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 skins of the wild animals & an abundance of honey being carried to market enriches 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 Settlers in the U. S. with the starving peasant of Europe.

October 1804

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The bank here is about 40 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 renders the road very circuitous; considerable bodies of Cane on both banks interrupted by many ^{creek} bays; - Saw many Cormorants & the Stately Hooping Crane - geese & ducks not yet abundant they arrive in multitudes 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, & 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 concluded that the Sun had not reached his meridian Alt: when he disappeared behind the cloud: Lat: found $31^{\circ} 37' 52''$, which is certainly too much. This afternoon found the shore favorable for tracking (i.e.) running along shore & towing the boat; rate of going 5 per. $\frac{1}{2}$ min: at 3 o'clock thermom^r, 83° - the banks shelving 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; shot some water fowl with the web foot divided with bluish plumage extremely fat & very delicious, resembling in taste the Canvas-back - the Teal also fat and very fine. Wind S.S.E and cloudy. Encamped. Extremes of the Thermometer 60° to 83° - made 14 miles 59 per.

October 22^d Monday Thermometer before Sun-rise 65° - Wind S.S.E. cloudy - a few drops of rain before day; set off as soon as we could the men ready & on board - Soldiers slow to move - continues cloudy & threatens rain. green matter floating on the river supposed to come from the Catahoula & other lakes & leagu of stagnant water, which when raised a little by rain flow into the black river.

Saw also many patches of an aquatic plant resembling little Islands, 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 willow 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 is terminated by a spike of very slender & narrow seminal leaves from one to two inches in length & $\frac{10}{16}$ or less in breadth, producing its seeds on the under side of the leaf in a double row, ~~alternately placed in contact~~ the grains 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 denominates

The day continued cloudy, it rained at noon, no observation for the Lat. 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 3 1/2 fathom, the river being now considered very low. Extremes of the thermometer 65° - 79°. Wind S.S.E. Cloudy, made 13 miles 76 perches.

Tuesday 23^d Thermometer 68° - The River for several nights past has fallen about 3 inches perpendicular each night. observed

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October
23

a great number of muscels and periwinkles along shore; the wind in the morning altho' 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. $31^{\circ}36'29''$, about 3 miles higher than the town of Natchez: after dinner proceeded on to the mouth of Catahoola on the left & landed to get information from a french man named ^{Hebrard} Caddé who has made a small settlement there & keeps a ferry for the crossing of men & horses traveling to & from Red River and Natchez, and occupies the only lands not liable to inundation between those two places; his house is placed on an indian mount 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 neighbourhood 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 Catahoola & Washita	22
To the Bayou or River Ka-ha on the right	1
To the Prairie Villemont opposite pine point	5
	38

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10

Brought over	38 leagues
To Bayu Louis on the right & rapids	1
To Bayu Bouf on do	4
To the drowned prairie	3
To pine point on the left	4½
To Bayu Calumet	3½
To the Coal mine on the right and Gypsum on the left	3
To m. shot of first settlement	12
To Fort Miro	22
	<hr/>
	Leagues 91

The accounts of the low state of the river we received here are rather discouraging, as it appears that on the first rapids 7 leagues distant, 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 Catahoola, the Washita & the Xensa are united nearly together, the Catahoola 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, & receives a

1804
October
23

11

Small river called little river which preserves a channel with running water at all seasons making its way thro' the bed of the lake, but all other parts of the lake during the dry season from July to November, ^{are} deprived of its water, and becomes clothed ^{with} the most luxuriant herbage & ^{the bed of the lake is inhabited by} ~~it has become 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 bayou Tensa serves only to drain a part of the Mississippi lowlands — Extremes of the thermometer $68^{\circ} - 73^{\circ}$ Sounded found 6 fathoms, muddy bottom. By reference to our Lat: at noon we found the mouth of Washita to be in Lat: $31^{\circ} - 37' - 57''$. made 9 miles $77\frac{1}{2}$ percheas.

Wednesday
24th

^{in air} Thermometer before sun rise 54° - Wind North - Cloudy
Temperature of the river water 71° - no Current worth estimating along the shores to impede our progress. Made slow advancement as usual with our oars - found the shore favorable for tracking or towing, which we continued nearly all day making at the rate of 5 per h^m $\frac{1}{2}$ min: i.e. a gain of half a perch ^{or} more than by rowing; the wind was contrary all day, otherwise we might have gone to 6 per: which is equal to $2\frac{1}{4}$

1804 }
October }

12

miles per hour: that is all that / it seems / we are to ex-
pect from Soldiers - they are without vigour or
ambition, & wish only to pass over the time with
the least trouble to themselves; they possess a dis-
position to be insolent, & pretend to hint, that they
can work only in proportion as they are paid, yet
these men ^{were} all ^{very} ^{solicitous} & prayed at New Orleans to
be admitted upon the voyage. The high lands
on both sides have now the appearance of being
above the inundation; the timber is such as is gene-
rally produced on high lands, chiefly Oak, red,
white and black, interspersed with a variety
of others; the Magnolia grandiflora is absent
^{its presence} which is an infallible sign of lands not sub-
ject to inundation. We observed to day along the
banks, the strata of solid Clay or marl, (not recent
but ancient) to lie in very oblique positions, some
making an angle of nearly 30° with the horizon
& 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 ^{fact} has an appearance of
great permanency & certainly is of very ancient
formation, being much more solid than the

1804

13

October } recently formed soil; the river is now about
 80 yards wide. The bayu *Ha-ha* comes in unexpectedly
 from the right about a league above
 the mouth of Washita, and is one of the many
 passages thro' which the waters of the great in-
 undation pass & serve to dam up & an-
 nihilate for a season the Currents 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 festoons, & often
 present for a great extent an impenetrable
 curtain, variegated with all the shades of color
 from yellow to green bordering on blue, spangled
 with lively red and russet brown. The richest
 Strawberry also adorns the fertile margin, composed
 of plants to which no name has yet been given;
 & here & there where the shade is not too deep the
 ground is enameled with thousands of humbler plants
 in full blossom at this late season. The day has contin-
 ued cloudy but begins to clear away about 11 a.m.
 we therefore land before noon to observe and
 find our latitude to be $31^{\circ} 42' 30''$ deduced from a

1804 }
October }
24

Double Alt. of the Sun $92^{\circ} 4' 50''$ In: ex: $+13' 45''$ - The Long: 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 Mississippi; 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.N.W. but the Clouds are cleared away & we expect tomorrow favorable weather for making Observations.

Extremes of the thermomⁿ. 54° - 68° - Encamped after completing a poor days voyage of 14 miles 48 perches without any Current to oppose us.

Wind northerly, thermomⁿ. 54° . - Made 14 miles 48 perches.

October }
25

Thermⁿ ^{in air} 49° - temperature of River 68° - Wind north - cloudy Continued our Voyage - passed passed Villemont's prairie on the Right & pine point on the left about 500 yards from the encampment; these 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 ⁱⁿ an Indian Country is got into this State, it has no opportunity of producing timber, as the Savages & even White persons 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: These prairies

1804

October }
25

on the Washita are chiefly on the East side, and are liable more or less to be inundated by the annual floods of the Mississippi, which often escape over the banks into the Washita, & by many Creeks, called bayus or rather Baijoo [according to the English pronunciation] — We saw 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 Bayou 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 a ground & 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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October
25

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. Extremes of the thermometer 49° - 60° - Wind at North, clearing up many Stars to be seen. made 3 miles 120 perches

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 Cannal 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 [as I expected] she stuck fast. Cables, ropes & pulleys were got across & fixed to trees & handspokes 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. Extremes of the Thermom. 40° — 70° —wind N.W. clear star light. Discovered a Barge coming up behind us; she also grounded & sent her people out to search for the channel.

1804

18

October
27
Saturday

Thermometer 32° - Wind N. Temperature of the 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 easing & propelling the boat with handspokes.

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 grounding & rubbing two or three times we finally got into deep water, where

the river became again like a mill-pond, ap-
 parently without current, excepting a small mo-
 tion along the heads or concave banks, ~~but~~
~~on the opposite shores~~ altho' over the rapids in
 certain positions the velocity was very consi-
 derable. The whole extent of the Shoals or rapids
 embraced an extent of $1\frac{1}{2}$ miles, that is, the obstruc-
 tion was felt at small intervals along this space
 rowed about $1\frac{1}{2}$ miles & encamped. Extremes of
 the thermometer 32° - 73 . The Evening is fine
 & mild therm: 62 . Wind North. high pine land
 on the right, breadth of the river 100 yards.
 made 2 miles 77 perches.

Sunday
28

Thermometer 40 - 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 dis-
 tance from the Sun. High lands & a large Savannah seen on
 the right in the morning, passed a rocky hill soon after &
 Bayou Boeuf about 4 leagues from the rapids. At Noon
 observed the Sun meridian altitude & found the latitude to be
 31° - $53'$ - $35''$. at $3\frac{1}{2}$ the thermom^r was 78° shaded: the day was
 warm & the Sun powerful - saw some more Savannahs
 to the left: the river made several courses today to the West
 & to the southward of West. Therm^r in the evening 56° . the
 Extremes, 40° - 70° . Sounded - 3 fathoms mud & Sand.
 made 12 miles 116 perches

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October } Thermometer 41° - Temper^{re} of the river water 62° - Wind N.W.
Monday } fog on the river.
29th }

20

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 greyish light color with streaks of red sand & clay; it is esteemed in this Country thin & poor land, bearing great numbers of pines, interspersed 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 convenience as we advance. At noon we found our Latitude to be $31^{\circ}58'2''$. 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. pt. half minute, which however does not exceed $2\frac{1}{4}$ ^{miles} per hour in water without any sensible opposition from the Current. The wind came about to S.W. in the Evening: the temperature ^{at 8 o'clock} 62° & the extremes of the thermom^{er}: 41° - 85° - soundings at night 3 fathoms mud &

Monday
 sand. Encamped on the right bank. made this day 14 miles
 65 perches.

30th Thermometer 47° - Temperⁿ. of the river water 60° - Wind ~~W.N.W.~~
 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 in quality -
 fumes 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 a bout 30 yards, altho' the whole extent from the high
 banks was more than a hundred. At noon, found the
 Latitude to be $32^{\circ} 5' 24''$. It would appear from the
 distances run by our Log 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 ~~the~~ favorable for
 hauling the sene & caught a sufficiency of fish to serve
 all the people for Supper and breakfast. Thermom-
 eter in the evening 60° - Extremes 47° - 83° . made this day
 15 miles & 150 perches.

1804

22

October
Wednesday
31st

Thermometer 44° - River water 62° - Wind N.N.W. clear fog on the River - Continued our voyage. This morning met with shallow water and strong Current, our rate of going / promoting 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, & impeded ^{us} more or less untill the afternoon: at Noon took the Sun's mer: alt: & found our Latitude to be 32° 10' 13": at 2^h got over the last shoal for this day & 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 & oars sufficiently deep, altho' the water on the shoal might be 70 or 80 yards wide; in the afternoon passed a little plantation 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~~ ^{is} even 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 approaches within a small distance of the

bank of this river, at a medium perhaps a quarter of a mile, sometimes more & often much less, the Cypress 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 $\frac{1}{4}$ 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 advantageous, 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 time. Boats well manned at such times make 12 leagues or more

1804

24

October
31

p^r 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 larger 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 trees may be expected to resist better than barges built of plank & much less liable to leak after being hauled over shoals &c. These Canoes are sometimes made of two or of three pieces, and 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 & ferry; this road extends from Natchez by the Calahoola & crossing here goes up to the post or Fort of the Washita called Fort Miro; the distance by the river to the Fort is 20 leagues, but by land thro' the swampy low grounds on the East side not above miles. Along this river is a very considerable grant of land said to have been conceded by the Spanish Gov^t. to the late Marquis de Maison Rouge, a french emigrant, who bequeathed it with

all his other property to M. Bouliigny Son of the late Colonel of the Regiment of Louisiana, & by him sold to Daniel Clark; it is said to extend from Fort Miro down to the Bayou Calumet, 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 perches.

November
 Thursday
 1st

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 Shoal about noon: finding one of the Canoes so useful & being informed of other rapids before us, 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 & 115 perches.

Extremes of the thermom. 48° - 85° & at 8^h p.m. 64° .
 Weather extremely fine & agreeable, the slow progress of the boat being the sole circumstance of regret, as tending to disappoint our prospects.

1804

November } Thermometer 48° - River water 62° - light clouds
2° } 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 bends, 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 bends were generally so choked up with logs fast in the ground, some showing themselves above water and others concealed below, so that our choice ~~was~~ frequently reminded us of the situation of the Mariners between Scilla and Charibdis; 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 those 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 & hove her backwards off the log, by which we lost each time 1½ 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 shores thro' 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 over setting 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 104 perches. Thermometer in the Evening 8 hours, 78° . the Extremes $48^{\circ} - 84^{\circ}$.

No astronomical observation made this day, which was prevented by our embarrassments.

Saturday

3^d } 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, altho' we got several times aground we were not so unfortunate as yesterday; immense sand bars & steep banks with little or no alluvial lands, except

Nov 3 } ~~It~~ At a few hours exposure to cliffs which had been undermined & broken down by the torrents; along

the margin of the river many humble plants are in

flower at this late season, altho' the leaf begins to fall

from the larger trees of the forest; the great variety

of trees which the foliage assumes before it separates for

ally from the parent stock presents to the eye, an in-

finity of beautiful landscapes; and if critically ex-

amined, is perhaps not without its use, for it will be

found that the leaves of the same tree are all changed

to the same colour, which is probably occasioned by

the origin of the atmosphere acting upon vegetable

matter deprived of its vital principle, & thereby calls

forth its latent colorific properties; I have always re-

marked, that the leaves of such trees whose bark is

known to produce a dye, are changed

in autumn, to the same colour which is extracted in

the dye; but from the woods, more especially by the

use of Alumina or other mordant whose predominant

principle yields orange: thus the foliage of the Kirk-

ory & the oak yielding the Quercitron bark are changed

before it fall to a beautiful yellow; other Oaks assume

a fawn colour, a liver or blood colour; and I am per-

suaded from the few observations I have made that

No. 7 } 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
Drugs for the use of the Dyer.

Made a good observation at Noon, from which
we found our Latitude to be $32^{\circ} 17' 17''$ -

Nothing remarkable occurred in the afternoon,
except a discovery made by Doctor Hunter 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^h p. m. 72° - Extremes 52° - 86°
made this day 11 miles & 140 perches.

Sunday

4th Thermometer 54° - river water 64° - Clear.

This has been an unfortunate day; the morning and afternoon
were spent upon shoals and rapids with stony & 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 $32^{\circ} 21' 10''$. made only 4 miles 233
perches. Therm. at 8^h in the Evening 63° - Extremes 54° - 83° .

1804

30

Nov.
Monday
5th

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^h a.m. - In the course of the day got upon several shoals of inferior magnitude but upon the whole we were more fortunate than usual, the water being generally deeper & with little current. 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~~ the vegetable world, no longer receiving nourishment ^{from} the Parent stocks: 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 retained 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, thro' the admired lemon colour
 to the Summer-green, which last in the shade retains
 its full verdure: on 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 ~~it~~ the same
 breadth from bank to bank, i.e. from 80 to 100 yards,
 altho' the water course is some times confined to 30 yards.
 The atmosphere had this day a smokey or misty ap-
 pearance, the sun ~~of~~ broke forth a little after noon
 but shone with diminished lusture. This smokey 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 & Savannas
 which frequently consumes the herbage & brush
 upon some hundreds of miles of extent at once.
 During this state of the atmosphere, the condensation

1804
Nov.
5

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, any thing which might be called a shower of rain, & the weather immediately becomes fine again), preserving however some thing of its misty appearance, until an entire revolution 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, altho' it is reported that in its neighbourhood are some salt springs & salt licks - there is reason to believe that the saline impregnation of those licks depends rather upon Nitre than Marine Salt. Made this day 11 miles 276 perches. Therm. at 8^{1/2} p.m. 78°. Extremes 52° - 68°. Wind at N. W.

1804
Nov.

33

6 Tuesday - Therm: 45° - river water 64° - heavy fog - wind W.
Continued our voyage with better fortune; that is, we
escaped any considerable obstructions from rapids
& sand 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 $32^{\circ}28'58''$, by the sinuosity of
the river it appears we were not much more
than a mile to the South of the Post: arrived
there about half an hour past 3 in the
afternoon, & were very politely received by
Lieutenant Baumaure, who immediately of-
fered us all the services in his power with the
hospitality of his dwelling. The Position
called Fort Miro, being the property of a
private person who was formerly Civil Comman-
dant under the Spanish Gov^t, & who as he says built
the Stockade at his own expence, 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

1809 }
Nov }

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, ~~from~~ this 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, of all which we have made notes & formed a sketch which may be useful to us, made 9 miles 257 perches.

Thermometer at 8^h in the evening 68°. Extremes 45° - 79°. The distance from the mouth of red river being 196 miles and 256 perches.

Wednesday }
7th }

Therm. 52° - River water 64° - Clear.

Finding from past experience that the Boat in which we have come up would be improper for the con=

tinuation 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 inter-
 rupted in the morning by Visitants, who came
 to offer services &c, we were prevented from
 making any useful observation untill noon
 when the Sun's meridian altitude gave
 the Latitude $32^{\circ} 29' 52".5$. our position being
 about 450 feet to the South of the Garrison,
 the Post of Washita will therefore be in
 Latitude $32^{\circ} 29' 57"$

Thermom^r. at 8^h p.m. 67° - Extremes $52^{\circ} - 80^{\circ}$

Thursday
 8th } Therm^r. 53° river water 58° - Cloudy -

This was a disagreeable, cold & damp day, made
 enquiry for smaller boats, with little success -
 found only one which may be supposed to answer
 our purpose, with a nother of the same burthen.
 no observations made this day. therm^r. at 8^h p.m.

1804 }
Nov. }

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 barge - upon examination, found it very proper for our purpose, it being supposed, that with the reduced loading we proposed to carry with us, the boat would draw only 12 inches water: no observation this day - Extremes of the thermometer 42° - 72°.

Saturday
10th

Thermometer 40°. river water 58° - Clear - Calm - This day having the appearance of being fine & serene, 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 observation to be 32°-29'-35"; this differs from that of the 7th by 17" but I give the preference to the result of this day, because on the 7th owing to interruption, I was in some doubt whether the Sun had

not dipped a small matter before I had ascertained the Altitude.

Got the Barge brought along side, destined for the continuation of our voyage; She is upwards of 50 feet in length & $8\frac{1}{2}$ 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 build in the form of Canoes. We are to give $1\frac{1}{4}$ dol: p^{er} 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^o in the evening 34° . Extremes 40° - 72° .

Sunday Therm^o 24° - Clear - Calm - river 53°

11th } Got the Barge hauled ashore & caulked, which detained us untill afternoon; got another fine

1804 }
Nov 7 } observation at noon, by which the Latitude ap-
pears to be $32^{\circ}-29'-30''.5$, that is $4\frac{1}{2}''$ less than yes-
terday, and as those two observations were both
very good, the mean of the two results may be
taken for the truth, to which adding $4\frac{1}{2}''$ for
the distance of the place of observation below
or to the south of the Garrison, we may there-
fore consider the true Latitude of the Post of
Washita as fixed at $32^{\circ}-29'-37\frac{1}{4}''$ - made this
afternoon 3 miles.

Monday }
12th } Thermⁿ. 36° - river water 54° . Clear - Calm -
Got some fresh beef & other provisions which
retained us a little this morning, Continued our
voyage, having a pilot on board hired at 30
dollars p^r. 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 Settlements on
the Bayus Bartheleme & Siard are said to
be rich lands. at noon got an observation

and made the Latitude to be $32^{\circ}-34'-47''$.

Made this day 16 miles & 32 perches - ther-
mornⁿ at 8^h p. m. 54° - Encamped on the right
a little Cloudy this evening. —

Tuesday
18

Thermometer 33° . River water 55° . fog - calm -

Continued our voyage with no change in the appearance of
the Country - passed an Island & strong rapid at 8^h a.m. &
arrived at a little settlement at 8^h where we halted to break-
fast, said to be 12 leagues from the post, there is an Island to the
right with rocks across the inner passage, the place is called
Roque raw, the wind at South indicates rain with a dark
cloudy sky; we find our situation greatly improved in our
new barge, being able to go about 3 miles per hour, when
the men row with some vigour; we pass without much difficul-
ty over shoals of 11 or 12 inches water. The river acquires
a more spacious appearance being in most places about
150 yards wide and under - Lost some time on the shoals
at half an hour past noon arrived at the last settlement - Began
to rain, put ashore to dine - cleared up - set out and
passed the Baya Bartholomeu on the right at 4 o'clock, computed
12 leagues from the post. At 11^h 10' passed Otter Baya on the left.
In this Neighbourhood is a large grant of land in fav^r of the
Baron Bastrop, which was at first conditional six

1804 }
Nov

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 pale ash colour, upon which the river has deposited a stratum of 12 feet of light sandy soil, which in some places appears to be 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 Washita, beyond which there is very high land, chiefly Pines are found thereon.

The evening is cloudy & dark Encamped on the right hand. made this day 16 miles 312 perches.

Thermom^r. at 8 p.m. 62° Extremes 33° - 66°
in air

Wednesday }
14th

Thermometer 44° in river 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. Dressed the Bayonet & bottles

in the forenoon, this Creek derived its name from a vast number of Indian mounds, ^{discovered by the Hunters} found ~~up above~~ ^{along ^{its} Course}; of ~~this~~ which have been ~~found~~ ^{discovered} by the Hunters. we were detained an hour extraordinary at breakfast, from the necessity of repairing our rudder irons 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 $32^{\circ}-50'-8.5''$ - 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, this low country is 2 or 3 leagues wide on each side of the river, liable to overflow 12 or 15 feet above the level of the land, the Soil is a mixture 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

1804 }
Nov. }

within the space now occupied by this alluvial tract, which
 may have been ~~drained off by a Canal worn by the abrasion~~
~~of the waters~~ ^{drained off by a Canal worn by the abrasion}
 now the bed of the river, & that since that period
 the annual inundations have been replenishing this
 space with the alluvion of its waters; 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 peopled by the Beasts of the forest,
 some of which we saw, the Hunter also and 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 ^{generally} not ~~very~~ numerous until the frost & cold rains drive
 them to us from the Northward. Fish is not so abundant
 in this river as might be expected; at the post we were inform-
 ed that the river had been extremely full of fish, until the year
 1799 when the ^{waters of the} inundation of the Mississippi back dammed
 up the Washita river some distance above the post, & pro-
 duced a stagnation & corruption of the waters, which des-
 troyed the whole of the fish within the influence of this cause.
 Nothing remarkable was seen in this alluvial Country, the river
 continues contracted seldom exceeding 60 yards & generally deep, no
 current is felt excepting here & there when it becomes more
 shallow. Encamped on the right shore - Thermometer at 8^h. p. m.
 44°. Extremes 44° - 58°. clear

Friday 16th Thermomⁿ ^{in air,} 38° - ⁱⁿ river water 54° - Cloudy - Calm.

Set out at 6^h.58' and continued our voyage, the wind rises a little northerly against us, nevertheless we make $7\frac{1}{2}$ per: p: $\frac{1}{2}$ 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 Saline / Salt Spring Creek /~~ the 'marais de 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 pt. of high land which approaches ^{within} $\frac{1}{2}$ a mile, of the river, and to which Boats resort 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 the Creek are Salt, so that it must have obtained its name, from some Cattle / Buffalo / licks 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 those earth or clays which are scooped out into hollows by the licking of the Beasts of the forest, are ^{sometimes} more frequently impregnated by nitre than ^{as well as} common salt. We now begin 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 perches.
~~where in place of alluvial banks of 10 or 15 feet perpendicular~~
~~we shall probably find ourselves in the present low state of~~
~~the river / raised in between banks of 30 feet or more.~~

In the evening it began to rain. Encamped at 4 hours 54 minutes.

Thermometer at 8^h. p. m. 42° - Extremes 38° - 51°.

Saturday } Thermometer ^{in air} 40° - ⁱⁿ river water 54° - fog on the river - calm -
 17th } river rose 2½ inches in the night.

Continued our voyage, the low lands ^{are} still continuing alluvial at
 least to a certain depth, ~~and~~ an understatum of Clay appears in
 many places where the banks are broken down: we remarked
 that since we entered the alluvial country about 32° 52' Lat: we
 have seen no long moss / Tillandsia, altho this low damp country
 seems to be otherwise favorable for the production of this Curious ^{vegetable} ~~leaf~~.
 upon enquiry 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 arid lands and generally in lofty situations where the soil is sandy
~~in dry and lofty situations, general in a sandy soil~~
 but our Country furnishes it in a hard poor Clay:

1804
Nov 2

In the forenoon we saw the first swan which was shot
by one of our hunters; it was a solitary one, whose mate
had been killed by some of the hunters of the Country: this
is the season when the poor inhabitants of the Settlement
of the Uradula turn out to make their annual hunt
the Bear is now fat & their skins in perfection; the Bear
also is now fatter than at any other season, having
fed for some time on the abundant fruits of the forest
by our forests in the autumn
~~and on the berries of the~~ consisting of berries,
grapes, Raspberries, Walnut, Hickory nuts, Champignons, a
great variety of the acorn, Bush-nuts &c. & the skin of
the Bear is now in good order, being clothed by nature in
his thick winter fur-coat: the hunters count much of their
profit from the Oil drawn from bears fat, which is now
steams in abundance of ready sale, & is much esteemed for its
wholesomeness in cooking, being generally preferred to
Stags lard; it is found to keep longer ^{than any other} without turning
rancid: ~~the same~~ they have a method of boiling it
from time to time with sweet-bay leaves which facilitates
its ~~conservation~~. Aff men found our latitude to be
93° 13' 16.5. In the forenoon saw a small Oblong which

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 Cane of a small Sire; the river begins to widen & a number of sand beaches are seen.

Thermometer at 8^h p.m. 44° - Extremes 40°-41°.

Made this day 15 miles 308 perches

Sunday
18th

Thermometer 32° - river water 52° - Serene - Calm. - river seems rather on the rise. - Set out at 7^h 20' and continued our voyage, passed thro' in the morning, a narrow passage of about 70 feet wide; the whole of the water of the river runs thro' 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 pass along the old Channel: Came up to a place at the hour of breakfast when there is an appearance of some clearing called 'Cache la Tulipe' [Tulipe'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 earth deposited thereon by the river, this superstratum is whitish & very sandy with a small admixture of loam, which seem an indication of the poverty of the mountains & up lands where the sources of the river takes their rise.
At noon we found our Latitude to be 33°-17'-13". In the after

1804 }
Nov }

noon passed on the right the entrance of a Bay which within
 has the 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 ~~in size~~, indicated
 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^h p.m 57°. Cloudy, weather
 threatens rain. I 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.

Monday
 19th } Therm: 54° - river water 54° - Cloudy - Calm - river at
 } strand. Set out at 6^h 56' and continued our voyage;
 the banks present still more the appearance of high
 land; the understratum being a pale yellowish Clay & the
 alluvial soil of a dirty whitish Colour, with a very thin

Stratum on the surface of brownish vegetable earth. The trees begin to be more stately growing to a considerable size & height, tho' much inferior to those of the alluvial banks of the Mississippi: passed on the left in the morning the 'Bayou de Cachis': points of higher land not subject to be overflowed frequently touch the river, altho' 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 Champignolle'; the river has been narrow during the course of this day's voyage, not exceeding on the average from 50 to 60 yards. Encamped on the left. Made this day 18 miles 120 perches.

Thermometer at 8 p. m. 62° - Extremes 54° - 67°.

Tuesday

20th Therm. 59° - river water 54° Cloudy - calm. no change in the river Set off at 6^h 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 runs forms a deep ravine in the high land and has been called 'Chemin Couvert' (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 farther we had to quit

Nov^r

the main channel on account of its shallowness and rapidity, & passed along a narrow channel 60 feet wide; without 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 underbrush, 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' / water side wood - Pistimmons & small black grapes are plenty in some situations, which is the only eatable 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 ferruginous earth on the right. The margin is frequently bordered

with a variety of plants & vines, of the latter several species of the *Convolvulus*, which no doubt in their season ornament this river with their elegant flowers.

Thermom^r. at 8^h. p.m. 54° - Extremes 59° - 62° . Made this day 18 miles 308 perches.

Wednesday } Thermom^r. 43° - river water 54° - a little fog - Calm -
21^h }

Set off at 7^h. 3' and continued our voyage, passed a hill & cliff 100 feet perpendicular high crowned with lofty pines called 'Cote de Fin' / Fin's 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 'Bayu Accapia' / Locust 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 / & had just time to make a good observation & found our Latitude to be 33° - $29'$ - $29''$. The day proves mild warm & agreeable, which acted as a restorative to myself & others who had been indisposed for some days past; at 3^h. p.m. the Thermom^r. was at 72° . Altho' Ducks, Geese and Turkeys are often seen, yet we cannot

1804 }
 Nov^r } 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.

Thermomⁿ. at 8 p. m. 58° - Extremes 43° - 72° -

Thursday 22^d

Thermⁿ: 40° - river water 53° - light clouds - Calm.

Set out at 7^h. 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 in-
 creasing proportion of Holly, birch, maple & handsome
 pines; at about 10^h. 1/2 a. m. came to the road of the Cadama
 Indians crossing the river & leading to the Arcansa nation;
 a little beyond is the 'Escor'a Fabri' / Fabri's cliffs / 80 to 100
 feet high; it is reported that Fabri, who was a french man,
 buried lead upon the top of the hill, as a permanent mark
 of the passage of the french and Spanish lines, but no
 authenticated account of such a circumstance can be ob-
 tained, and is therefore not generally believed: a little

farther is a smaller cliff called 'le petit eor à Fabri',
 [the little cliff of Fabri] these cliffs appear to be composed
 chiefly of ash coloured 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 observati-
 on for the Latitude at Nooa. In the afternoon we encoun-
 tered 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 Cur-
 rent 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 this day 80 yards, altho'
 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 prodigious masses, lying 20 feet above the pre-
 sent level of the water, & 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

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22

descent. accidents are not / new at the top / frequent with the pit-
agues or canoes of the Country, but ours is the first barge of so
large a size that ever went up this river. passed a very intri-
cate rapid in the evening, which obliged us to get out a rope
to drag a head & encamped upon an elevated gravel beach.
Therm. at 8 p. m. 54° Extremes 40° - 68°.

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

This day an unlucky accident happened which was very
nigh being a very lamentable one. Dr. Hunter was busied
in the Cabin of the boat loading one of his pistols, it went
off upon half cock while he was in the act of pushing down
the ball with the rammer in his right hand, while the pistol
stood upright between his feet with his head almost over the
muzzle; 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 fore-
head & eye brows scorched, with a great concussion of the head.

The bottom of a new powder horn, ^{which} ~~the ball~~ was not well fixed, was
by the shock forced out & the powder spilt in part on the table,
the burning wadding of the ~~gun~~ pistol fell upon the
same table, but providentially the powder did not catch.
The Doctor's wounds were dressed, he suffered great pain
& debility, but after some repose felt better in the even-
ing.

Friday Therm. 48° - river water 54° - light clouds - calm, river
 23 } seems rather falling. Set off at $7^{\text{h}} 4'$ & continued our
 voyage, thro' a difficult navigation, the river broken into a
 number of small streams by Islands, short turning rapids,
 sunken logs, shoals, bars and every impediment to be ex-
 pected in our situation, & this continued at short intervals dur-
 ing the whole of the day, so that our courses and 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: I fortunately obtained a good
 observation of the Sun's mer. altitude in the interval of some
 shifting clouds; Latitude found $33^{\circ} 41' 35''$. The banks of
 the river, as we ascend, are less elevated being only from
 9 to 12 feet, & probably the freshes 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 mountain rivers and oceans
 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

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Nov. } mentioned, no change being observable in the appearance
of the lands 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
bituminous matter, unless we suppose that a very
slight odour of sealing-wax may be an evidence of
its presence. Thermometer at 8^h p.m. 54° - Extremes
48° - 72°. Made this day 13 miles 28 perches.

Saturday

24th

Thermometer 48° - river water 54° - light clouds - Calm -
river at a stand. Set off at 6^h 54' and continued our
voyage thro' a country in all respects similar to that
of the preceding day, excepting that our obstacles
from strong rapids &c were considerably augmented;
at the place called 'auges d'Arclon' (Arclon's troughs)
we observed some laminated iron ore, & a stratum of tenacious
black sand shining with minute crystals - The river is
now generally 80 yards wide, tho' in many places greatly

enlarged by Islands and bars and at other places contracted 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 Cask-hoops; this on the contrary resembles the Ox-eye & seems sufficiently supple and elastic, its leaves are now yellow and falling: we also found some of the greater Huckle-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 lesser; 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 Caddox & upon all Nations whatever,

1804 }
 Nov^r - } 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 Cadanz may be considered as Span-
 ish 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 Nacockdoch
 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 whitish & yellowish colour; it
 may probably be Iron mineralised by sulphur.

Made this day by a very uncertain reckoning
 11 miles 152 perches - Therm^o. at 8^h p. m. 59° Ex =
 tremes 48° - 72°.

Sunday }
 25th } This morning proved very rainy, having commenced be-
 fore day, we were therefore constrained to continue encamp-

ed; a cessation 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.ⁿ at 8^h p.m. 62°. — Extremes 54° — 70°.

Monday

26th } Therm.ⁿ 50°. — river water 57°. Clear above — calm — river risen 3 $\frac{1}{2}$ inches in the night. Contrary to expectation the morning proved not only fine & serene, but of a mild agreeable temperature. In general after the winter season sets in, the changes in the weather are made 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 3°. 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 great sameness in the appearance of the river banks, the Islands are skirted with Osier

Nov^r } and immediately within on the bank grows a range of
26 } 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 continue to encounter the same
obstacles from the Shoals and rapids; 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 ^{reaches} ~~extends~~ within a few
miles of the Washita; & is said to extend to the Red river
being connected with the great prairies above the Cadeaux na:

tion & in the proximity of the red river: this rich tract of
 Country is said to be of very considerable extent, ^{perhaps a square} and capable of
 of 30 miles & is contiguous with the great prairies which ^{are}
~~possessing a population of several thousand families: the~~
~~prairies~~ are the hunting grounds of the Caddox nation, con-
 sisting of about 200 warriors, they are warlike, but frequently
 unable to defend themselves against the tribe of Orages,
 who are settled upon the arcausa river, who passing round
 the mountains which give birth to the Washita, along the
 prairies which enclose those mountains on the west
 & separate them from the main Chain of Mountains
 which furnish the waters of the red & arcausa river,
~~fall down~~ the pass down into the Caddox Country &
 rob & plunder them of their horses & other effects & not
 infrequently take a few scalps, for it seems that
 this detached tribe of the Orages ~~is~~ is a lawless gang
 of robbers making war with the whole world.

Therm. at 8 p.m. 62° - Extremes 50° - 68°.

Made 12 miles 21 perches. —

Nov. } Tuesday 27th Therm. 54° - river water 58° - Cloudy - river
 risen above the mark which was 12 inches out of water.
 Set off at 7^h 1' and continued our voyage with the
 same obstacles from rapids, 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 passes. During the hour of breakfast the
 river rose $\frac{1}{2}$ inch perp^o: the general height of the
 main banks is now from 6 to 12 feet above the level
 of the water, & the land is rather of a better quality,
 the Canes &c. shewing a more luxuriant vegetation;
 the superficial soil subject to inundation is of brownish
 appearance, greatly mixed with sand: at Noon ar-
 rived at 'Cache à Magon' / Magon's hiding place / on
 the right, stopped here for dinner. Having been
 informed of some pit coal reported to be in the neigh-
 bourhood, we determined to explore its position. Doctor
 Hunter with the Pilot set out for this purpose, and at about
 $\frac{1}{2}$ 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 & of a homogeneous appearance greatly resembling pit coal, but it was deficient in 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 evidently the fibrous texture of wood; one piece in particular seemed to have been a large chip taken out by the felling 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 & no clue could be found to lead to a discovery of the process by which Nature effects so extraordinary a change, an ingenious en-

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quirer placed in favorable circumstances, will probably have the good fortune to make this discovery. The time may arrive when the Planter who shall be clearing his plantation or farm of useless timber, will be enabled from the instructions of the Chemist to place the whole in a situation to be transmuted into an useful article capable of long preservation. This is no doubt the Carbonated wood described by Kirwan & other Chemists.

We found along the banks a species of the white thorn loaded with abundance of ripe fruit, being a small oval berry of a cornelian colour, and agreeable sweetish taste the whorle 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 inches and it now flows with great rapidity, which obliges

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 to us plants some of them very handsome, but our very limited knowledge in ~~botany~~ practical botany, did not enable us to discover what they were, particularly as they were not in flower. Made this day 13 miles 39 perches. Thermom.ⁿ at 8^h p. m. 66° Extremes 54° - 71°

Wednesday

28th

Therm.ⁿ 68° - river water 60°. fallen 4 inches in the night - Cloudy - calm. Set off at 7^h 5' 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 &c & hauling up along shore, oars & poles being insufficient to stem the violence of the torrent; in other situations for miles together

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the current is inconsiderable, in fact it is nothing under the ~~lee of the~~ shelter of the points, this advantage is the result of the enlargement & increased depth of the ~~water~~ 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 tracks, we are therefore in hopes soon 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 Washita & before that period has been up the Arcansa river, the White river & the river S^t. Francis; the two last he informed 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 has been up, the navigation is safe & commodious, without any impediment from rapids or shoals, upon all those rivers, the Soil is of the first rate quality, the Countries are of easy access, being lofty open Forests, unembarrassed by Canes & other under growth.

the Lands on the arcanza 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 on board to supply
 his immediate wants, hence this inconvenience is not
 of much moment. This man confirms the frequent re-
 ports 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 pin & pringlets by beating
 it & hammering it out. The tribe of Ozages 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 Arcanzen Nation with a part
 of the Chactaws, Chicasaaws, Shawnee &c &c have formed
 a league and are actually gone 800 strong against

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these depredators, with a view to destroy or drive them entirely off & possess themselves of their fine prairies which are the most abundant hunting grounds, being plentifully stocked with Buffalo, Elk, Deer, 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. 72°. river water 62° - Cloudy - wind South, ^{blew} ~~blow~~ strong all night - This morning Doctor Hunter went with a party & 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 & is called Bayou 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 1.0219 to 1. Evaporated 10 quarts of the water which produced a Saline mass weighing when dry 8 ounces.

It began to rain about 9^h. a.m. which obliged ^{us} to remain in camp until after dinner, when it cleared up, and we set out at 1^h. 27^h p.m., the water of the river has now become whitish & less transparent in consequence of the rain & appears to be rising again altho' 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 Soldiers 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 perches. Therm^y at 8^h p.m. 52°. Extremes 52° - 76°. - The weather clears up & begins to grow cold, we expect a north wester in the morning.

Friday
30th } Therm^y. 38° - river water 60° - river risen 19 inches since last evening - clear calm. Set off at 7^h. 7^h and continued our voyage against a strong Current with some favourable during the greater part of the day, altho' frequently we found favourable eddies or water without Current where the bed of the river became enlarged, which sometimes extended to 150 to 170 yards in breadth. Saw a great many turkeys to day, two of which were killed.

04
ov.

At 10¹/₂ p.m. arrived at the large branch, called 'Fourche des Caddaux' 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 mer. altitude, in some measure thro' 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, altho' ~~entirely~~ changed in colour: Being informed of a 'Saline' or salt lick, we landed before 3 o'clock p.m. and Doctor Hunter with a party went to view it. Therm^o at 3¹/₂: 57°. - The Doctor and his party returned in the evening with a quantity of water from the 'Saline' salt lick, which from taste appeared to be less impregnated than the former, and on trial its sp. grav. was found to be (when compared with the river water, which at that time was principally rain water) 1.017647. This salt pit was found in a low flat subject to be overflowed from the river, it was wet & 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 quarts evaporated produced six ounces of abaline mass, which from taste was principally marine salt.

The Bulb N^o 1 weighs in air $31 - 2\frac{3}{4}$ ^{wt. gr.}
 in water $6 - 15\frac{3}{16}$
 water of 7th Salt lik $6 - 2\frac{3}{8}$ Sp. gr. deduced 1.02116477
 of 2^d d^o $6 - 4\frac{9}{16}$ d^o — 1.017647

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

Made 7 miles 28 perches.

December 1st

Saturday } Therm^o: 32° - river water 54° - Clear - calm - river
 fallen 18 inches during the night.

Set off at 7^h 5^m, the morning cold, we had a considerable Island on the right about $\frac{3}{4}$ of a mile long called 'Isle du Bayu de roches' we were greatly impeded this day by rapids, it was ^{with} much difficulty & 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, & we began to observe that their fissures were penetrated by sparry matter; we made with appearance

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Dec. }

of iron very frequently, but no rich ore of that metal and hitherto we have seen no indications of any other species of metal: some of the hills seem well calculated for the Cultivation of the vine, the soil being a sandy loam with a great proportion of gravel & stone with a superficial covering of vegetable mould: the natural productions were sufficiently luxuriant, consisting of several varieties of oak, pine, dogwood, holly & other forest trees, with a scattering under growth of white berry, hawthorn, China briar & a variety of small vines. It is probable that a skillful vigneron who shall undertake the establishment of a large vineyard in this Country will find his account in it; the market of New Orleans will offer a ready & profitable sale for his Commodities of every quality in the article of wines.

We were detained upon a very bad rapid at noon by which we lost the opportunity of ascertaining the Latitude we landed also early in the evening on account of a rather long rapid we have to encounter in the morning; we are now encamped

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

Made this day 7 miles. 148 paces - Thermometer at 8^h p.m. 35°. Extremes 32° - 58°.

Sunday

2^h } Therm. 30° river water 50° - Clear - calm - river fallen 4 inches -

Set off and continued our voyage at 7^h 35; passed over a series of strong rapids which continued until ~~the~~ 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 fissures spar is to be frequently found, the Stone & gravel beaches also exhibit a great variety of fragments, some of which are flint & stone of the most solid kinds, the quality of the land also seems to improve, the superficial Stratum of Vegetable earth being of considerable thickness & of a dark brown colour mixed with loam & some sand, at 2¹/₂ p.m we passed a rock on the edge of the river consisting of excellent blue Slate, more of the same is to

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be seen higher up. About a league from the river a little above the slate 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; saw three swans today. made only 6 miles and 118 perches — Therm^y at 8 p.m 38. Extremes 30-59.

Turquoise stone, of this kind was a promontory which came in from the left 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, thro' which the water passed like a Cascade; before one of those 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 9 feet wide could find a passage sufficiently wide, & whether the point

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 this promontory presented some appearance of a precipitation of a dit-
 ferent kind at their base a small flag of brass having fallen from
 the river under the water were floating magnetically in front of the rock
 which proved to be a piece of iron in the magnetic away great effect.

ed rocks which were visible in the passages would permit us to pass over them. We stopped at the Chain of rocks & sent some men with a small canoe along shore with a good rope; they got above the fall & made fast the rope to a tree & 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 rapids, but after several fruitless efforts we found there was not water sufficient to float us; we dropped down again by the aid of our rope, & moved laterally by poling 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, & entered the strait, in which our barge appeared to stick fast at the bows, however by moving from one side and another she seemed

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D^y

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to advance by very slow degrees, & got about half way thro' when she stuck fast, and all our efforts to move her were ineffectual; the water thro' extremely rapid was not deep, and we got four of the boldest of our men to get into the water near her bow, as far as possible from the suction of the fall, who by raising her sides & feeling for the rocks on which the bark 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 altho' the weather did ^{not} freeze, yet it was far from being mild, the therm^r being about 45°. we therefore now repented that we had made the attempt to pass so late in the evening, & wished we had delayed it untill morning, at the same time the river was falling apace & it seemed not proper to postpone the attempt

let us should not get above the falls untill
 another rising of the river; in this situation
 we determined to lighten the barge by sending
 all the men ashore to haul upon the rope, ex-
 cept 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 atoms upon the rocks; we therefore
 immediately ordered every man to his pole
 on board to support the boat with all his might
 while the three four men in the water did their
~~own~~ held on to the sides, and in the mean time
 a man was dispatched thro' the water with

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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. the course of the rocks about S.W. and N.E. across the river made this day 7 miles 218 perches

Thermⁿ at 8^h p.m. 44°. Extremes 38°-59°.

Tuesday }
Wednesday }

4th

Thermⁿ 36°. river water 48 - clear - calm - river fallen 2 inches. - set off at 7^h 21' - good water until after breakfast; about 8^h a.m. passed a ledge of rocks crossing the river. of hard face 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 bald hill on the left, being chiefly rocks, we arrived at the foot of a tremendous rapid full of breakers from the number of great rocks

with which it was filled, the water descended along an inclined plane with an impetuous velocity; we stopped to view it & got out a good rope, which was carried along, shone 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 essays to pass upwards, at length we were obliged to pass the barge 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 landed above this rapid and by a good observation found the Latitude to be $34^{\circ} 25' 48''$; on our right stood a high rocky hill crowned by handsome pine trees, the strata of this rock were inclined 30° to the Horizon descending the river; this hill may be from 300 to 350 feet high; we have now frequently the hills on both sides; a list of green Cane skirts the margin of the river growing out of the alluvial soil, above is a high & sometimes barren hill. At 2 o'clock we passed on the left a hill of blue slate hanging over the river, about a quarter past 2, came to another rapid which

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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 & sent out our rope, but after many fruitless & some dangerous attempts we could not pass up on that side, we were therefore obliged to let the barge swing by the rope & by the force of poles passed 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 shore where we lay & passed up thro' 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 'Bays de la Saline'. about a league from the river up the Creek is a Salt lick, yielding by digging water impregnated with salt - there is also quarries of blue slate near the same situation. This afternoon our hunters shot twice at a Buffalo & wounded him, but he escaped, the blood flowing as he ran. Encamped on a gravel bank, our tents &c being completely paved with stones of great variety in kind & size. Made only 4 miles and 164 perches. Thermometer at 8 p.m. 36° - Extremes 36° - 50°.

Wednesday } Therm. $^{\circ}$ 23 - river water 47° - very serene - calm.
 5th } river fallen 2 inches.

Set off at 7^h 25' - this 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 $4\frac{1}{2}$ feet; we sent our rope a head along shore & 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 & every thing contained in it, the passage was full of breakers & studded all over with pointed rocks, so that it was necessary to guide with the utmost care to pass clear of those unfriendly objects: the men on shore exerted themselves, but were frequently obliged to rest, & the boat seemed often at an entire stand at length however the rope escaped from the rock which held it fast, which enabled us to pull in

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a more direct line, & by reiterated exertions and rests at intervals, in an hour & a half we got above 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 without ^{this rapid exceeding all we had passed, was denominated the Cascade.} bends: 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 ^{Turkey} ~~Jacquane~~ Stone.

Being embarrassed upon the rapids, we did not land to observe, we were obliged to use the rope again to get up a very impetuous rapid, altho' much inferior to that of the morning; at 1:45' passed on the right a Creek called 'fourche à 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 pass 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 us generally on both sides, altho' frequently

There are handsome bottoms of rich land; the upland also is sometimes levelled, 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 fissures by a white flinty or sparry matter. Last night a band of Woodchucks howled in our neighbourhood a part of the night. Squirrels now are extremely abundant & I suppose there be low our hunters 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 perches, altho' by the old computation it ~~was~~ our days voyage was little short of 3 leagues. Thermⁿ at 8^h p. m. 38° Extremes 23°-56°.

Thursday
6th } Thermⁿ. 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

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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^h 40' the weather being cloudy & threatening rain, we were in hopes of arriving ^{near} at the 'fourche of Calfat before the rain should set in, which is the point that is to terminate our navigation upwards, the hot Springs being about 3 computed leagues from the right bank of the river at that point. proceeded on without material interruption untill breakfast, carrying with us high hills on the left & good level lands on the right, Subject perhaps to overflow. At 9 o'clock we arrived at the foot of a long & very precipitous rapid, it seemed to be divided into four steps, one of which was at least 15 inches perpendicular exclusive of the inclined plane above and below, the whole could not be

left than $5\frac{1}{2}$ feet perp^r from the beginning to the end, which was about 400 yards, altho 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 themselves both on shore & aboard, the barge appeared to be ascending an inclined plane of at least ~~25~~^{12 or 15} degrees 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 reiterated exertions, we could neither advance nor retreat, we therefore unloaded about $\frac{1}{4}$ of the cargo & drew her easily over, we immed-

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ately reloaded having spent 3 hours in getting up this rapid, & proceeded a quarter of a mile farther to Ellis' Camp a little below the 'fourche à Calfat' / Caulker's creek / here terminates our voyage upwards upon this river for the present. our pilot considers this the most convenient landing, from whence to transport by land our necessary baggage to the hot springs, the distance being 3 of the computed ^{leagues} ~~miles~~ of this river, which will probably not exceed 7 miles. There is a Creek about 2 leagues higher up, called 'bayu de l'eau chaude' near which the hot springs are placed about 2 1/2 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 a admixture of other timber as before mentioned. soon after we arrived it began to rain, we were however tented before it commenced. The Thermⁿ at 8^h p.m. was 56° - Extremes 54° - 67°. our short voyage this day was only 2 miles 32 perches.

Friday
 At Ellis' Camp. Thermⁿ before Sun-rise 38°; river water 49°. Cloudy Wind N. W. river risen 4 inches. In the morning Doctor Hunter with the Pilot we 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 despatched the Pilot with the greater part of our people with their own baggage 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 baggage provisions, instruments &c so 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 $34^{\circ} 27' 31''$ - Thermⁿ at 3^h p.m. 50°. - the weather cleared up about 9 o'clock, and became very serene & cool with wind at N. W. a Deer & turkey were shot to day by our people; altho' we have frequently seen the tracks & other marks of buffalo we are hitherto disappointed in killing any of them.

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Dec. } Saturday
Friday 8th }

Thermⁿ. before Sun-rise 10°. river water 43° - very serene, light Wind N.W. river risen 4 inches. we found the weather this morning extremely cold, the thermⁿ. having sunk lower than we expected in this latitude, particularly at the present early seasons 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 atmosphere, we shall when we get to the hot springs, ascertain the degree of the thermⁿ. at which water boils, from which Scientific men may draw their own conclusions respecting the elevation of the land.

At 8 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 took of it after cooling a little & found it very agreeable, having a taste something like spice 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 resulting therefrom to be $34^{\circ} 27' 27''$ being 4" less than yesterday; should the more observations for the latitude be made here, we may therefore consider it

as fixed at $34^{\circ}27'29''$. The thermⁿ. at 3^h. p. m.
 47° ; we 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 per^h. above the
 present level of the river, & therefore I presume 30 feet clear of in-
 undation. 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 cul-
 tivation, the superstratum is of a darkish brown or blackish
 colour from 8 to 12 inches thick, lying upon a yellow-
 ish basis, the whole intermixed more or less with
 Stone of various kinds, some extremely hard, while
 others seem to have withered by exposure to the air,
 particularly, a lightish blue rock which divides into
 thin laminae like slate, but crumbles; Dr^r. Hunter thinks
 it would yield alumina. The thermⁿ. at 8 p. m. was
 26° very serene & calm, the Stars shone with uncommon lus-
 ture; in an hour or more after the heavens became
 overspread by a general cloud & not a star was to be

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seen; the Therm[?] rose to 36°, & we began to expect snow on
fleet, it how^{ever} cleared away after midnight & the Stars
recovered their splendor. Extremes of the Therm[?] 10° - 47°.

Sunday
9th

Therm[?] before sun-rise 19°. river water 41°. - very serene
Wind moderate at N.W. river risen 2 inches.

The people returned between 9 & 10^h a.m. and after some time
given 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 Stores. 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 4^h¹/₂ 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 hits, frequented by buffalo, Deer &c, the soil

around consisted of a white tenacious clay, probably fit for potter's ware; the french ^{hunters} have denominated the salt licks by the term 'Glaise', which signifies properly Clay or potter's earth, but is here understood always to mean a lick frequented by the beasts of the forest, altho' salt is not always to be found in such places: we saw on the way recent tracks of the Buffalo & several deer skipped along before us; we did not follow the game, being desirous of arriving at our head quarters before evening.

The people were very much fatigued with this days labor, altho' the road is by no means bad or hilly, 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 difficulties of moving our small baggage & provisions, altho' nothing but what is essentially necessary, to so small distance, naturally suggests the inconveniences which must arise in transporting over unknown mountains between the sources of the red & arcanse rivers, the

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baggage & provisions indispensibly necessary with the
tools and implements for the construction of a
boat or boats ~~upon~~ to descend the 2^d river
Soldiers not being accustomed to carry but only
moderate loads, think it a great hardship to
carry a burthen which would be thought light
by a Canadian or other woodsman exposed
to such fatigues: in this point of view the bag-
gage &c. which might be deemed indispensible
for an expedition around the heads of the rivers
including rations, 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 3000 pounds; of the whole number we
cannot calculate upon more than 10 carrying
some being necessary to watch the two Camps
while the Scientific Men would explore without
attendance; those 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 ^{is} 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 not 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, ~~perhaps~~ including bad weather, perhaps we shall still flatter ourselves, if we expect to complete this postage in 50 days: upon the whole then it may perhaps be more advantageous, if the expedition is to be carried on by the aid of soldiers, who cannot travel without their rations, tents, baggage & above all their whisky / to explore one river at a time, & when arrived at the head of the navigation, which ^{will} constitute 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

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provisions taken from the Camp: another advantage resulting from this plan will be the facility of transporting objects of Natural history which may be found 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^d 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 Canadian 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 parched meal, very light instruments, such as a Circle Sextant, which may

be graduated to 10" of a degree, a portable pocket Case con-
 taining a blow pipe, 2 or 3 fluxes ^{worthy} & half a dozen small
 vials of reagents, ^{a light compass & chain} & 3 or 4 days provisions in case of
 disappointment in finding game & spiritous liquors
 must be out of the question. — Such a party each
 carrying a light ax ~~in addition~~ for the purpose of
 building canoes may accomplish the object proposed,
 upon supposition that no hostility is to be apprehend-
 ed 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 scatter-
 ing 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 & rills which broke ^{out} from
 the hills: as we approached the springs, the hills
 became more elevated, & at a distance arose into
 what are here termed mountains, altho' none
 of those yet in view exceed 4 or 500 feet. We
 found at the Springs a summer Log Cabin

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open on all sides, which by the addition of a log
Chimney & a few pine, box 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 manners & 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, the water of which was too hot

to be drunk after some minutes repose, but by sipping; 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 fire; some of the people pretended to have discovered cathartic effects, which must be feble as I have ~~had no reason to suspect~~ ^{not detected the existences of} such a quality in the waters.

Therm^o at 8^h p.m. 28° - Extremes 19°-42°.

Monday

10th } Therm^o 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 Cabine, 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 Camp, there to remain during the night and return the day following with more necessaries, directing the loads to be made still lighter, altho' already moderate enough: This day proved

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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 huddled upon the west bank of the Creek, on the east bank are ~~three~~^{four} principal Springs, ~~which drop their waters almost into the Creek & ^{a fourth} one of which~~ ^{arises out of the gravel in the bed of the Creek;} a ^{fifth smaller spring} ~~fourth~~ ^{which} is the only hot Spring on the West side, rises out of the declivity of the descending bank of the Creek; ^{a 6th of the same magnitude in the highest on that East side} altho' they seem to be the only sources near to our tents 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 $13^h 17' + 1' 20'' - 4' 49'' =$
 $= 13^h 33' 31''$ the true app't. time of the beginning of total darkness.
the time at Greenwich by the Naut. Al. was $19^h 40'$ the difference
 $6^h 6' 29''$ is the Long: West of Greenwich, to which $13^h 4'$ we have
 $6^h 6' 42\frac{1}{2}''$ for the Long: of the Post of Washuta, 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 $\frac{1}{4}$ minute

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Continuation of the Survey of the hot spring

- N 44° W 30 p. in S 84° 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 Camp is the direction of the Course: gap of the ridge on the left distant $\frac{1}{4}$ mile.
- S 31° W 80 p. down the valley - Veins of the flinty rock run in the direction of the Course & fissures at right angles. Flint & hard silicious Stone above, Shistus at the base.

Courses and distances from Hot-spring Cabin to river Camp.

- S 15° E 788 perches to 1st Knoll 122 p. to 1st branch 162 p. to 2^d branch 282 p. to 3^d d. 322 p. to 4th d. 502 p. to Cropping Creek hot springs 614 p. to branch at 4th Station
- N 80° E 70 p. to top of ridge
- S 69° E 184 to 2^d branch
- S 25° E 160
- S 68° E 80 Big lick
- N 55° E 200 at 160 p. 3^d branch: 2^d lick at Station
- N 82° E 534 at 168 4th branch: 5th branch at Station
- S 84° E 122 at 56 Cross last branch. Calfat at Station course of Calfat S 38° E
- S 74° E 178 to 3^d lick
- S 54° E 304 at 94 a branch & to Camp on Washita

2620 equal to 8 miles 60 perches.

Monday
Tuesday 14th January - observed an eclipse of the moon
At 12^h 40^m p. watch uncertain the Beginning of the Eclipse
13-37 good observation 2^d. of total darkness
15th At 10^h 56^m 24^s. ap. dble alt. @ P.L. 66° 36' 45". In: ex: + 12' 20" at 2 miles below the bayou de bates. Latitude deduced 32° 49' 24". there is also a difference of long. between the place of observing the Eclipse that of correcting it watch of 593 perches East

Washita

Monday January 14th At a point on the bank of the river which we passed in ascending corresponding to Nov^r. 14th N 40° E 5^h 6', observed an Eclipse of the Moon as follows.

At 12^h 40' 11" watch Beginning of the Eclipse, uncertain
13, 37 ——— Beginning of total darkness - good observation

Tuesday 15th

At a point of our Voyage upwards corresponding to Nov^r. 14th N 10° W 8^h 8^h 1/2 took the Sun's altitude in

At 10^h 56' 24" ^{am.} @ ap: dble alt: low^r. limb 66° 36' 45" Ind: err: + 12' 20"

Thursday 17th

At the post of Washita the same station where we observed on our way up.

At 8^h 53' 7" @ ap: dble alt: low^r. limb 36° 44' 45" In: er: + 12' 30"

From the above observations with reference to the Journal, the Apparent time of the Eclipse may be ascertained & applied to the Meridian of Washita Post.

Calculation. on the astronomical 14th at 22^h 56' 24" W. watch the app^t. time was 22^h 51' 41" w^h cor^d. by difference of meridian 6^h 1/2 gives 22^h 51' 35" for the ap^t. 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' 7" W. watch the ap^t. time was 20^h 41' 31" w^h cor^d. by diff: of mer^{ns} + 13^h 1/2 gives 20^h 41' 46 1/2 for the true ap^t. time under the meridian afores^d. the watch was therefore fast 11' 22 1/2 hence the watch gained in 1^h 21^h 56' 43" the quantity of 6' 33 1/2: the time elapsed between the beginning of total darkness & the 1st observation of the @ alt: in order to find the ap^t. time, was 9^h 19' 24" 1/2 watch & the gain of the watch corresponding to this last quantity in the ratio found in 1' 20". hence in order

Washita River

Solar Observations continued

Dir: of the D's West limb from Aldebaran

At 7 ^h - 1' - 56	Dir: 84° - 52' - 0"	In: cr: + 13' 5" alt: dble D	P. limb 64° - 17' - 30"
4 - 00 —	51 - 0		In: cr: - 1 - 20
6 - 6 —	50 - 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 N 40° E
D^o. of the Creek upwards N 15° W

S 20° E an immense bed of blackish Shistus, at 8 p. the middle of the natural hot-bed over the Creek, a small hot-spring at its commencement: at 14 p. a hot-spring N^o 3 over the Creek: at 18 p. to the Station on the bank of the Creek.

S 25° W At 2 p. Spring N^o 1 over the Creek: at 12 p. Spring N^o 2 over the Creek, distant 4 p.: at 14 p. Spring N^o 4 on this side and Station.

S 3° E At 7 p. the Center of the Cabin close on the right: ^{Spring N^o 5} at 20 p. several small springs over the Creek: at 22 p. lowest hot-spring N^o 6: and at 34 p. to the Station all these Courses have been

S 42° E nearly parallel to the Creek, the continuation of which is S 13° 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. NE Corner of base of the hill & Station

N 23° E at 60 p. to the left, ridge parallel to the Course: at 174 p. Station

N 16° E 70 p. to a Rocky ridge perpend^m to the Course, a branch of the Calfat 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 Calfat & hot-spring branch.

1804

Washita River

January 5th Saturday - at Ellis' CampEqual altitudes ☉ dble ap: alt: $48^{\circ} 18' 30''$

Upper limb at $9^h 43' 10''$	} A. M. In: er: $+13' 15''$
Center — $45-12$	
Lower limb — $47-19$	

Lower limb at $2-59-22$	} P. M. In: er: $+13' 5''$
Center $3-1-27$	
Upper 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 sun shine, it has accordingly been noted when any change took place as in the last example & may account for any small irregularities, which notwithstanding, will not materially affect the result.

At $10^h 3' 42''$ ☉ Mag: az: S46E ☉ ap: dble alt: lo: limb $47^{\circ} 21' 10''$
In: er: $+ 13' 15''$

At noon took the ☉ ap: dble Alt: lower limb $65^{\circ} 8' 40''$
greater contact + In: er: + ☉ diam" $45-45$

Lat: deduced from the above $34^{\circ} 27' 28.8$ which is within 0.2 of the mean of the former two observations.

Solar Observations

Distance between the ☉ & ☽ limbs

At $2^h 22' 45''$ Dist: $54^{\circ} 1' 0''$ In: er: $+13' 5''$

25-50	2-0
28-45	3-0

Hot Springs

Equal altitudes

Monday }
24th }

☉ ap. dble alt: $43^{\circ}-32'-47''$ In: er: $+15'-41.6$

Contact of upper limb at $10^h-12-33\frac{1}{2}$ } A.M.
Center - - - - - $14-43$ }
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

☉ ap. dble alt: $32^{\circ}-43'-25''$ In: er: $+15'-27''$

Contact upper limb at $8^h-40-5\frac{1}{2}$ } A.M.
Center - - - - - $41-50\frac{1}{2}$ }
Lower limb - - - $43-45$ }

This observation having been made when the Sun was barely clear of the vapour of the hot Springs & trees on the brow of the hill I give the preference to the following observation for the variation & correction of the Chronometer

Clouds intervened in the afternoon

observation for the variation & correction of the Chronometer

At $9^h-6'-50''$ ap. all of ☉ lower limb $39^{\circ}-16'-40''$ Mag: Az: $S 89^{\circ} E$ In: er: $+15'-27''$

Lunar Observations

Lat: by Cal: $N 8^{\circ} 40' E$

on the Astronomical 25th Dec: took the following Distances of the Sun and Moon's limbs

Time	Distance	Dble Alt. of ☉ lower limb. by D. ^{rs} Hunter
At 22. 5.29	58. 14. 0 In: er: $-15'-27''$	
8. 5	13. 0	
11. 10	12. 0	53. 57. 30 In: er: $-1' 22.5$
19. 0	10. 0	55. 27. 10
22. 5	9. 0	
25. 0	8. 0	
39. 7	58. 4. 0	
42. 0	3. 0	
44. 35	2. 0	59. 12. 10
48. 40	1. 0	43. 15
54. 37	57. 59. 0	60. 25. 20
57. 47	58. 0	46. 20

18047
Dev. 3

Hot Springs

Sunday
16th Continued

Solar Observations

Distances Contacts of the East limb with ^{Forest} α Arctis

Times	Distances	Times	Distances	Times	Distances	Index error
At 10 ^h 31.50	55 ^o 38.20"	10 ^h 39.11	55 ^o 41.20"	10 ^h 47.12	55 ^o 44.50	
33.57-	39.10	41.53-	42.40	50.12	45.55	-16' 16"
36.46-	40.10	44.49-	43.45	53.48	47.20	

The above may be divided into 2 or 3 sets at the pleasure of the Calculator

Monday
17-

Equal altitudes

☉ ap. dble alt: 45^o 49' 0" In: cr: +15' 48" Mag: 22: S 44^o 30' E with the
☉ lower limb A. M.

Contact upper limb at 9 ^h 44.56 ¹ / ₂	} A. M.
Center 47.12	
Lower limb 49.30	
Contact lower limb - 2 ^h 27.57 ¹ / ₂	} P. M.
Center 30.13	
Upper limb 32.31	

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

Sunday 23rd

Equal altitudes

☉ ap. dble alt: 43^o 42' - 25" In: cr: +15' - 27"

Contact upper limb at 10 ^h 8' - 2"	} A. M. watch supposed to be fast 45
Center 10-13	
lower limb 12-25	

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

Altitudes of ☉ lower limb with Mag: 22: In: cr: +15' - 27"

At 10 ^h 24.12	altitude 46 ^o 31' - 5"	Azim: S 43 ^o E
23-57	47-35-40	S 42 ^o E

Hot Springs

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

1st Station

- N 54 E 1/2 mile to the Cabin
- S 61 E 6 miles to the River Camp
- S 36 E 6 8^o to the mouth of hot spring fork
- S 18 E 6 8^o to the mouth of Lake fork (west side)
- S 10 W 9 8^o to 8^o of Mont-corne (East side)
- S 16 1/2 W 11 8^o to the top of Mont-corne
- S 76 W 1 1/2 miles to the source of the hot spring Creek
- N 76 E 3 miles to a hill in the fork of Calfat Creek
- N 32 E Course of a ridge looking back

S 60 W to 2nd Station being about 1 mile in a direct line making a curve to the arched form of the ridge - Courses from 2nd Station

- S 11 W to Mount-Corne
- N 68 W to the passage of the river between the hills about 12 miles
- S 3 W to the mouth of Bayou Mont-corne 1/2 mile S.E. is a great rapid or Cascade
- S 48 E to the mouth of Hot spring Creek
- S 72 E to the mouth of the River Camp
- N. 50 miles ridge of hills of the arcansa
- S.E. 50 miles a level of great extent, supposed to be the prairies of the river

Sunday 16th

Took the sun's magnetic azimuth before & after noon with the same altitude of the

A. M. at 9^h - 50' - 19" - ☉ lower limb dble alt 47° - 30' mag: az: 342° - 20' E
 P. M. time mixed ☉ 525 - 40 W

16-40
 8-20

Varⁿ E 1/2

Correction for change of Declination

Equal altitudes ☉ ap: dble alt: 54° - 27' In: cr: ~~15 46~~ + 15 46"

Contact upper limb at 10^h - 18' - 59" } A. M.
 Center - 21 - 56
 Lower limb - 24 - 59

Lower upper limb at 1 - 42 - 12 } P. M.
 Center - 1 - 45 - 15
 Upper limb - 1 - 48 - 12

1804
Dec^r

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 days latitude independently by itself to that of taking the means of several days altitudes, more especially as we were approaching the Solstice, but I have preserved the results of the same face of the Instrument as one series & taken the mean of the two series for the true Latitude

Face of the Circle to the East In: or: additions

Date	Ap: mer: alt: @ lower limb	1 st Index	In: or: +	2 nd Index	In: or: +	Latitude
Dec ^r 15 th	Ap: mer: alt: @ lower limb	63-35-0	15-48	63-34-30	16-13	
	3 rd Index under of hands could not apply the Microscope.			Means	16-05	34-30-50.8
17 th		63-25-10	15-48	63-24-40	16-13	
		Means	16-05	63-24-55	16-05	34-30-58.2
25 th		63-23-50	15-26.6	20	15-51.6	
		Means	15-39.1	63-23-35	15-39.1	34-30-58.75
27 th		63-34-50	13-33.6	20	14-3.6	
		Means	13-28.6	63-34-35	13-28.6	34-30-54
		Mean Latitude of the above				34-30-56.94

Face of the Circle to the West In: or: subtractions

Date	Ap: mer: alt: @ lower limb	1 st Index	In: or: -	2 nd Index	In: or: -	Latitude
16 th	Ap: mer: alt: @ lower limb	64-1-20	16-11.2	37	42.2	
		20	12.2	Means	16-21.9	34-31-4
24 th		63-51-50	15-41.4	20	16-13.4	
		52-20	15-48.4	51-50	15-48.4	
		Means	15-54.4	63-52-0	15-54.4	34-31-0
26 th		63-58-30	15-28.5	59-0	15-48.5	
		58-32	15-28.5	Means	15-35.2	34-31-4.2
		63-58-41	15-35.2	Mean Lat: from 2 nd Series		34-31-2.75
				Mean 3 rd from 1 st 2 nd		34-30-56.94
				Mean Lat: at the Hot Springs True Latitude		34-30-59.82

Note. The Index error was every day taken from a double contact of the Sun with his image immediately after the observation. When the error was additive, it was found by subtracting the diameter of the greater contact from when subtractive the lesser contact was subtracted from the diameter. But in practice the greater or lesser contact was added to the ap: dist: Alt: to save trouble, as explained in the beginning

1804

Hot Springs

December 8th At Elhi's Camp.

Saturday } Therm^y 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 degrees marked by the Thermometer: we had no reason to expect so great a depression of the therm^y: at this early part of the winter from the Latitude, we must therefore ascribe it to the elevation of the land & the neighbourhood of mountains: we have no barometer with us to give ~~an idea of the~~ us the degree of pressure of the atmosphere, but we shall ascertain the degree of the therm^y: at 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 the 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 2^d load of necessary baggage. Took the sun's meridian az: abt alt: $64^{\circ} 46' 58''$ In: or: $+14' 19''$ Lat. found $34^{\circ} 27' 27''$ being a difference of $4''$ from the result of yesterday: if we should not make any more observations here for the Lat. it may be considered as fixed at $34^{\circ} 27' 27''$
 Therm^y. at 3^h p.m. 47° at 8^h 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

1804 }
Dec. }

Courses and distances of the Washita

Set off at 4.54

N 45 W 4.59 rate $\frac{1}{2}$ Log 3 per:

S 45 W 5.1 Encamped made only 3 miles 128 perches.

Therm. at 8^h p.m. 38°. Extremes 23°-56°.

Thursday

6th } Therm. ^{in air} 45° - ⁱⁿ river water 48° - Cloudy - Wind S.W. light -
river fallen 2 inches.

Set off at 7^h 40'

N 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'

N 80 W 8.37 lost 12'

N 30 W 8.52 lost 2'

Breakfast

N 20 W $\frac{1}{2}$ mile a great rapid, very precipitous, 3 hours in getting over.

Set off at 1.8

S 75 W 1.16 rate $\frac{1}{2}$ Log 5 per: arrived at Ellis' Camp a little below the 'fourche à Calfat'. Encamped. Made 2 miles & 32 perches. Therm. at 8^h p.m. 56°. Extremes 45°-67°.

S 25 W the Course up the river. Calfat's mouth $\frac{1}{2}$ mile up on ^{right} left.

Friday

7th } Therm. ^{in air} 38° - ⁱⁿ river water 47° - Cloudy Wind N.W. river

risen 4 inches. Took the Sun's az. mer. obs. alt. 64°-59'-47"

Inscr: +14'5" Lat. found 34°-27'-31". Therm. at 3 p.m. 50°. at 8 p.m. 24°.

Courses and Distances of the Washita

- N 60 W 1.55
 W 85 W 2.3 rate pt. log 6 per: hills of blue slate ^{or Shistus} to the left
 S 80 W 2.17
 W 40 W 72 perches - violent rapid, long detention
 S 80 W 112 perches encamped - 'Bayou de la Saline' on the right.
 made 4 miles 164 perches - Therm: at 8^h p.m. 36° Extremes 36°-50°.

Wednesday } Therm: ^{in air} 23° - ⁱⁿ river water 47° - serene - Calm - river
 5th } fallen - 2 inches.

Set off at 7^h 25'

S 70 W 8.2 lost 25' - rocky hills on both sides - rate pt. log 5 per.

S 55 W 30 perches - a violent rapid or Cascade 4½ feet fall -
 { - in 80 yards.

Breakfast 10^h 57'

S 70 W 11.15 rate pt. log 6 per:

W 11.20

W 50 W 11.29

W 40 W 144 perches, a strong rapid - rocky hills on y^e right -
 high fresher 25 feet perpen^r. above the present
 level of the river, at the end of this reach on the
 right a Creek, called 'fourche au Tigre' (Tiger
 Creek). good land up this Creek.

Set off at 1.45

S 80 W 1.55 rate pt. log 4 per:

Dinner 3.50

W 3.55

W 70 W 4.23 rate pt. log 3 per:

W 45 W ¼ mile rapids

1804
Dec 7

Courses and distances of the Washita

N 20 E 3. 12
E 3. 28 lost 13'

N 45 E 3. 32

N 80 E 3. 35 rate N. log 3 per.

N 45 E 3. 45 rate p. log 4 per.

N — 4. 1 at 3.57 rock promontory on the right with masses in river
had flint. river 200 yds wide.

N 30 W 4. 18 arrived at the 'Chutes' passed over & encamped

Made 7 miles 218 paces - Therm. at 8 p.m. 44° Extremes 38°-59°

Tuesday 4th } Therm. ^{in air} 36° - in river water 48° - Clear. Calm. river fallen 2 inches

Set off at 7. 21

N 45 W 7. 34 rate p. log 4 per.

N 25 W 8. 15 at 8. passed a ledge of hard freestone rocks - rocky bottom. high rocky hill in front covered by pines a fine situation 350 feet high

N 60 W 8. 25

W 8. 33

Breakfast 9. 59

W. 10. 9 rate p. log 2 per.

N 45 W 10. 12 rate p. log 4 per.

N 20 W 10. 15

N 20 E 10. 24 at 10. 20 Bald hill on left arrived at the rapid

N 50 E 1/2 mile a very violent rapid. Landed to observe
@ ap: mer. dbl alt: 65° 47' 4" In. ex. + 13' 44"

Dinner 1. 45 - rocky pine hill 300 feet high on the right
N 20 W 1. 52 rate 5 per.

Courses and distances of the Washita

153

- N 55 E 2.33 'Isle de Chevreuil' / Deer island / to the
 - N 40 E 2.39 lost 3' - Free Stone & blue slate left. { de Champigne de
 - N 5 W 3.11 Strong rapids rate p^r. log 3 per: bay de prairie on the left
 - N 32 E 3.28 Therm. 59°-
 - N 45 E 3.46
 - S 85 E 3.51 lost 11' rate p^r. log 5½ per.
 - N 53 E 4.7 Encamped - Made 6 miles 118 paces
- Therm. at 8. p. m. 38° - Extremes 30° - 59°

Monday } Therm. ^{in air} 38° - ⁱⁿ river water 48° - Clear - calm - river fallen 8 inches

Set off at 7.12

- N 35 W 7.20 rate p^r. log 5 per:
- N 20 W 7.31
- N 10 E 8.4 lost 8'
- N 30 W 8.26 - Bayu^{de} l'eau froide on the left
- N 30 E 8.45 lost 3'

Breakfast 9.50

- S 70 E 10.8 rapid, rate 3 per:
- N 75 E 10.20
- N --- 10.42
- N 10 E 11.4 lost 18' - rate p^r. log 6 per:
- S 15 E 11.28 rapids 3 per: p^r. log

E. 11.40 rate p^r. log 5 per. Landed to observe

⊙ ap: mer: dble alt: 66°-12'-0" In: cr: +13'-48".5

Dinner 1.45 Latitude found 34°-21'-25".5

- N 35 E 2.6 rate p^r. log 3 per:
- N --- 2.15 rate p^r. log 5 per:
- N 25 E 2.42 lost 22'
- N 60 E 2.48 rate p^r. log 3 per:
- N 40 E 2.53
- N 10 W 3.8 lost 5' rate p^r. log 5 per:

1804
Dec. 7

Courses and distances of the Washita.

	h	m	
E	12	27	
Dinner	2	29	
E	2	44	
S 45 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
W 10 W	4	37	lost 38' encamped — Isle de Mellon on 4° right

Made 7 miles 148 perches. Therm. at 8. p.m. 35°. Extremes 32° - 58°.

Sunday } Therm. ^{in air} 30° in river water 50° - Clear - Calm - river fallen 4 inches
 } Set off at 7.35

W 10 W	7.44	rate p. log 3 per: rapids commence.
W 45 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	10.7	
W 42 E	10.35	rate p. log 5 per:
W 28 E	10.57	
W 15 E	10.58	
W 8 W	11.0	
W 12 W	11.12	
W 10 W	11.43	lost 15', rate p. log 3 per:
W 20 E	11.46	rate p. 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

N 15 W 8. 26 lost 3'

Breakfast 9. 45

N 10 W 10. 18 lost 6'

N -- 10. 27 'Fourche des Cadieux' on the left 100 yards wide - a hill ^{high} 300 feet

N 20 E 10. 32

S 85 E 10. 40

N 70 E 11. 5 lost 6'

N 40 W 11. 45 lost 21' landed to observe. @ Ap: mer: abt alt: 67°-25'-30"

Dinner 2. 0 In. ar: 13'-42" Lat: found 34°-11'-37" -

N 15 E 2. 15

N 50 E 2. 18 Bayu de roches on the left / rocky Creek /

E 2. 34

N 65 E 2. 40

N 35 E 2. 44 Encamped - Therm. at 3. 57° went to visit saline

Made 7 miles 28 perches.

Saturday
Dec. 1st } Therm. 32° - ^{in air} in ⁱⁿ river water 54° - Clear - calm - river falls
18 inches during the night.

Set off at 7. 5 'Isle de roches' / rocky island / 3/4 mile long on the right

N 35 E 7. 23 lost 10' - rate p. log 6 per:

N 75 E 7. 31 lost 5'

S 70 E 7. 42 lost 8'

N 65 E 7. 52

N 45 E 8. 0

N 32 E 8. 10

N 15 E 8. 34 lost 13'

Breakfast 10. 12

N 55 E 10. 18

~~S 80 E 10. 40~~

S 80 E 11. 10 lost 20'

N 15 E 11. 25 lost 11'

N 10 W 12. 5 lost 35' on the rapids no observation

N 45 E 12. 15 Bayu de l'isle de Mellon on the right

1804 }
 Nov- } Courses and distances of the Washita
 Thursday 29th Therm^{in air} 72° - in river water 62° - Cloudy - Wind South
 rain; remained in Camp untill after dinner.

Set off at 1^h 27'

N 85 W 1.34 rate p. log 7 per; Saline Bayw; about $\frac{1}{2}$ league North
 a salt spring.

N 65 W 1.58 lost 5'

N 35 W 2.12

N 70 W 2.25

N 40 W 2.37

N 5 W 2.50

N 45 W 3.18 lost 11' at 3^h Ecor à chicots

N - - 3.33 lost 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

N 70 E 4.18 lost 3'

N 30 E 4.22 lost 2'

N 60 W 4.31 lost 6' rapids

N 30 E 4.37

+ N 40 E 4.42

N 70 E 4.49

N - - 5.0 Encamped made 8 miles 2 perches

Therm^{in air} at 8^h p.m. 52°. Extremes 52° - 76°

Friday

30th } Therm^{in air} 38° - in river water 60° - Clear - calm - river risen 19 inches since last evening

Set off at 7^h 7'

N - - 7.22 rate p. log 6 per.

N 80 W 7.25

S 45 W 7.30

S 30 W 7.46 lost 10' rapids

S 60 W 7.49

N 75 W 7.53 lost 2'

N 55 W 8.19 lost 6'

Courses and distances of the Washita

- Breakfast 10.3 Beautiful pine woods on the right
 N — 10.32 lost 14' — Bayou de l'eau froide on the right - bank opposite
 W 10.36 } no Cypress to be seen above this Creek
 S 45 W 10.42 lost 3'
 N 75 W 10.46
 N 45 W 10.49
 N — 11.11 lost 11'
 N 40 W 11.15 lost 2'
 N — 11.25 lost 5'
 N 75 W 11.30
 S 70 W 11.46 lost 7'
 S 40 W 11.58
 N 75 W 12.2 Cloudy - no observation.
 N 45 W 12.7
 N 25 W 12.20
 N 40 W 12.30
 N 25 W 12.57 lost 3'
 Dinner 3.9
 S 70 W 3.22 lost 4'
~~N 70 W~~ 3.25
 N 40 W 3.42 lost 5'
 N 80 W 3.44
 S 45 W 3.54 lost 3'
 W 4.1 on 4th left 2 miles dist.
 N 40 W 4.21 lost 7' - at 4.7 Grand glaise bayou de Cyproe opposite
 N — 4.25 } in the interior.
 N 45 E 4.28
 N 55 E 4.31
 E 4.34 - river 170 yards wide
 S 75 E 4.44
 E 4.54
 N 45 E 4.58
 N 10 E 5.4
 N 20 W 5.8 Encamped. Made 12 miles 255 perches.

Therm. at 8 p. m. 73° - Extremes 63° - 78°.

1804
No. 73

Courses and distances of the Washita

N 36 W 12.4 at 12^h. Cache à Maçon & bayou on the right
about 1 1/2 mile N N W explored the banks of a
Creek in search of a coal mine, and found only
some fragments of ^{Carbonated wood} ~~matter resembling coal~~

Dinner 2.15 former Coals river risen 4 inches in 2 hours

N 60 W 3.0 rate 1/2 log 6 1/2 per.

W 3.25 lost 17'

N 45 W 3.34

N --- 3.40

N 45 W 4.0 lost 6' river 150 yards wide

N 70 W 4.9

~~N 70 W~~ 4.23 lost 7'

N 70 W 4.32 lost 6'

N 45 W 4.49

N 85 W 4.52

N 70 W 5.0 Encamped

Therm. at 8 p. m. 66° - Extremes 54° - 71°

Made this day 12 miles 39 perches.

Wednesday 28th

Therm. 68° - river water 60° - fallen 4 inches in the night -
cloudy - calm.

Set off at 7^h 5'

S 65 W 7.13 rate 1/2 log 6 1/2 per.

S 80 W 7.22

S 65 W 7.29 'Cior à poux de bois'

N 60 W 7.37

N -- 7.42

N 35 E 8.16 lost 22'

N 50 E 8.30

N 30 E 8.39

E 8.54 lost 10'

N -- 8.57

Courses and distances of the Washita

Tuesday 27th Therm^{in air} 54° - river water 58° - cloudy - river risen about
a foot.

Set off at 7.11 rate ft. log 6½ per:
 N 70 W 7.17
 N 45 W 7.21
 N 10 W 7.33
 N 20 E 7.38 rapids commence
 N 80 E 7.46 last 6'
 N 40 E 7.55
 N 30 W 8.0
 N 70 W 8.9 last 7' pirangue à Gallien
 S 70 W 8.15 last 3' left the rapids
 N 50 W 8.20
 N -- 8.33
 N 90 W 8.48

Breakfast 9.51 river rises ½ inch during the hour

N 9.55
 S 30 W 10.10
 N 10.13
 N 45 W 10.17
 N 10 W 10.30
 N 45 W 10.32
 S 70 W 10.36
 S 30 W 10.40 last 2'
 N 70 W 10.48
 N 40 W 10.52
 N -- 10.54
 N 45 E 11.12
 N 25 E 11.29 last 8' a large Island to y^l left
 N 40 E 11.30
 N -- 11.35
 N 45 E 11.42
 N 25 E 11.46
 N -- 11.52 Cloudy - no observation

Courses and distances of the Washita

304 }
 Nov 7 }
 26 N -- 10. 20

W 10. 24

N 40 W 10. 39 lost 6'

N -- 10. 50

N 80 E 10. 53 lost 1'

N -- 11. 3

N 45 W 11. 24 lost 2' - 'petite Cote' an Island

N -- 11. 27

N 22 E 11. 33

N 79 E 11. 41

N 35 E 11. 46

+ N 85 E 11. 50 Landed to observe - @ ap; mer. dble alt: 69°-29'-52"

Dinner 1. 47 In; er: +13'-38" Lat: found 33°-54'-6.5

Con. N 85 E 1. 50

N 38 E 1. 57 lost 4'

N 20 E 2. 3

N 85 W 2. 15

N 70 W 2. 20

N 45 W 2. 29 many Islands

+ N 25 W 2. 52 lost 16'

N 70 E 3. 0

N 25 W 3. 15 lost 9'

N 65 W 3. 28

N 50 W 3. 33 at 3. 31 Baye de Cypre on the left. Birch & Asir

N -- 3. 40

E 3. 46 lost 5'

N 30 E 3. 55 lost 4'

N 55 E 4. 40 lost 38' Cut away some logs

N 20 W 4. 47

N 75 W 4. 52

S 65 W 4. 55

S -- 5. 1 Encamped - Therm. at 8 p.m. 62. Extremes 50°-68°

Made 12 miles 21 perches

Courses and distances of the Washita

N40^hW 3-37^m

N60W 3-41 lost 3'

N45W 3-46 lost 2'

N20W 3-53 lost 4' } petit Washita on the left, runs into the

N70E 3-58 lost 1' } Little Missouri.

N45E 4-18 lost 9'

E 4-22 - 'belle ance'

N35E 4-25

N30W 4-47 lost 15'

N25E 4-54

N60E 4-56

S85E 5-7 lost 5'

N60E 5-13 Encamped - Therm. at 8^h p. m. 59°.

Made 11 miles 152 perches

Monday } Therm. ^{in air} 50° - ⁱⁿ river water 57° - Clear - calm - river risen
26^h } 3¹/₂ inches during the night.

Set off at 7^h 7'

N40E 7. 52 lost 30'. rate per log 6¹/₂ per:

N - - 8. 5 white maple

N45W 8. 13 lost 2'

N20W 8. 25 Bear's head Camp

N60W 8. 30

N80W 8. 98 Cane land

S35W 8. 42

S75W 8. 47

W 8. 58 lost 2'

N30W 9. 11

N35E 9. 15

Breakfast 10. 8

E 10. 18 lost 8'

BO4 } Courses and distances of the Washita
 Nov. }
 24 Saturday 24th. Therm^{in air} 48° - River water 54° - light clouds -
 Calm - river at a stand.

Set off at 6^h - 56'

N 10 W 7 - 4 rate p^r. log 6 per:

S 45 W 7 - 8 Iron ore - black sand - auger d'Arclon.

N 25 W 7 - 36 lost 22'

N 60 E 7 - 53 river in gen^l. 80 yds wide

N 25 E 8 - 3

N 70 E 8 - 6

S 50 E 8 - 22 lost 3' - rocky bottom - strong rapid.

N 40 E 8 - 30

N - - 8 - 39

Breakfast 9 - 49

N 35 W 10 - 0

N - - 10.3

N 40 E 10.56 lost 30' long & strong rapids.

N 70 E 11.20 lost 18'

E 11.27

S 45 E 11.30

S 15 E 11.39 lost 2'

S 45 E 11.48 lost 3' - a deserted corn patch.

N 15 E 12.8 Cloudy - no observation.

N 41 W 12.18 Oziers or hoop willows.

N 65 W 12.25

W 12.34 Bayou Tallien on the left

N 60 W 1.0 lost 5' on a Rapid.

N 55 W 1.14 Forks of the Washita & Little Missouri, the latter

Dinner 3.10 coming in p^r. left in the direction of the last course

N 20 W 3.20

N 30 E 3.25 lost 3'

N - - 3.33 lost 5'

Courses and distances of the Washita

S70W 1-58

N45W 2-6

Lost 2-20 Stop to cut willows

N45E 2-22

N75W 2-30

W30W 2-43

N10E 2-53

N35E 2-56

N60E 3-7

North 3-9

N45W 3-12 Therm. 72°

N80W 3-17

S75W 3-24

S55W 3-37 last 6'

S - - 3-40

S45W 3-45

W 3-51

N50W 4-2

N30E 4-5

turn E 4-13

N25E 4-17

W - - 4-30 last 2'

N45E 4-33

W - - 4-38

N75W 4-46 Rapids

N20W 5-00

N - - 5-5 Encamped

Made 13 miles 28 perches

Thermometer at 3^h p. m. 54°

Nov. } Friday 23rd. Therm. ^{in air} 48° - ⁱⁿ river water 54° - light clouds - calm: river on the fall.Set off at 7^h-4ⁱ

N 15 W 7-8 rate p. log 6 per:

W 7-11

N 55 W 7-13

N 25 W 7-15

N 10 W 7-34 lost 5' rapids

W 45 E 7-39

N - - 7-43

N 60 W 7-47

W 7-53

S 45 W 8-2 lost 2' rapids

W 8-5

N 60 W 8-8

N 20 W 8-26 lost 2' on rapids

N 45 W 8-28 lost 1'

S 45 W 8-35

Break fast 9-54 Dunkard's Islands

N 45 W 10-1

N 15 E 10-5

N 25 E 10-12

N 45 E 10-17

N 45 W 10-25 lost 5'

S 45 W 10-37 lost 5'

N 45 W 10-54 lost 5'

W 85 W 11-0

N 45 W 11-5

N 10 E 11-9 'Cote a Sofrion' / Sofrion's hills, ...

N 15 W 11-15 banks from 9 to 12 feet high; yellowish Clay.

N 65 W 11-20 lost 4'

N 45 W 11-43 } landed to observe - Dip: abt Mer: alt: 70°-59'-13"

Dinner. 1-43 } In: er: + 14'-8" Lat: found 33°-41'-35"

N 45 E 1-51 'pointe Coupée', old channel to the East.

N - - 1-54 lost 2'

W 1-56

Courses and distances of the Washita

N 30 W	11. 25	
N 70 W	11. 31	
N 25 W	11. 33	
W --	11. 36	
N 65 E	11. 41	
N 20 E	11. 43	
N 10 W	11. 45	
N 45 W	11. 56	Cloudy no observation
N 75 W	12. 2	
<u>S 85 W</u>	12. 17	lost 8' - at 12-15 'petit cor à Fabri' / small cliff of Fabri /
N 45 W	12. 20	
N 10 W	12. 26	
N 30 W	12. 31	
Dinner	2. 34	
N --	2. 37	
E	2. 44	
S --	2. 45	a rapid
S 45 E	2. 47	
E	2. 50	
N 40 W	2. 58	
N 15 W	3. 8	
N 45 W	3. 10	
W	3. 13	river 30 yds wide only here enclosed by bars &c
S 45 W	3. 16	
S 15 E	3. 20	
S 45 W	3. 23	
W	3. 27	
S 70 W	3. 28	
N 75 W	3. 31	
N 20 W	3. 34	
N 26 E	3. 56	lost 9'
N 60 E	4. 6	
N 20 E	4. 8	
N 5 W	4. 11	
N 50 W	4. 15	
W	4. 18	rapids
S 50 W	4. 25	d.
N 60 W	4. 53	lost 18' strong rapids & shoals
<u>N 10 E</u>	5. 00	Encamped

Made this day 14 miles 317 perches
 Therm. at 8 p.m. 54° Extremes 40° - 68°

No 22 } Thursday 22. Therm ^{in air} 40° river water 53° - light clouds - calm.

Set off at 7^h - 6'

S 62 W 7-15 rate p^r. log 6¹/₂ per.

W 7-20

N 53 W 7-36

N 32 E 7-42

N -- 7-51

N 45 W 7-58

N 20 W 8- 2

N 20 E 8- 9

N 25 W 8-12

N 55 W 8-18

N 8-31

N 45 W 8-33

N 20 W 8-41

N 40 W 8-45

N -- 8-53

N 45 W 8-58

Breakfast 10-7

S 80 W 10-16

W 85 W 10-21

S 70 W 10-25

or Cadodaguiz

S 40 10-33 at 10-28 the Cadodaux path crosses the river leading to the
Utterman

At 10.48 at 10-43 'Ecor à Fabri' Fabri's cliffs 80 to 100 feet high
Lead said to be varied on the Ridge by Fabri in the dis-
section of the french & spanish line.

N 60 W 10.52

N 40 W 10.55

+ W -- 10.59

~~N 45 E 11.21~~

N 45 E 11. 8 last 7' - 40 yds wide

S 80 E 11.20

N 45 E 11.21

N -- 11.23

Courses and distances of the Washita

S 40 E 2-12

S -- 2-15

S 40 W 2-25

N 80 W 2-33

S 80 W 2-47 lost 8'

West -- 2-52 a break to the left

W 10 W 2-57

N 75 W 3-22 lost 7' Thermometer 72°

N 15 E 3-33

N 55 E 3-35

N 80 E 3-46

N 45 W 3-51

S 82 W 4-3

N 60 W 4-9

N 52 W 4-14

N 70 W 4-20

'posite Coupee / a cut off / old channel in continuation with
this course, the boat Channel to the right

N 50 E 4-24

N 68 E 4-28

N 35 E 4-33

N 58 E 4-40

N -- 4-43

N 49 W 4-48

N 15 W 4-51

N 90 E 5-00

N -- 5-5

N 45 W 5-9 Encamped on the right Made 18 miles 36 perches

Therm. at 8 p. m. ^{58°} Extremes 49°-72°

Course and distances of the Washita

- N 40 E 2-3
- W -- 2-13
- N 55 W 2-27

N 35 W 3-30 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.

- N 10 W 3-40 rate of log 7 per: Low Country commences -
- N 15 E 3-53
- N 35 E 3-59

N 45 E
 N 45 W 4-4 river from 50 to 60 yards wide

N 75 W 4-7
 W -- 4-15 small timber - our camp W. of: Oak along the banks sub-
 N 35 E 4-19 just to be overflowed.

- N -- 4-22
- S 70 W 4-26
- N 60 W 4-28
- N -- 4-29
- N 50 E 4-33
- N 20 W 4-35
- N 45 W 4-39
- N -- 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

- N -- 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 14th Jan. we observed an Eclipse of the moon at this place, from whence the Longitude was deduced 1805

1804 }
 Nov. } Courses and distances of the Washita

21 Wednesday } Therm. ^{in air} 43° - ⁱⁿ river water 54° fog - calm -
 21⁵

Set off at 7-3

Course cont. S 85 W 7-15 rate p. log 7 per:
 N 35 W 7-17 Fin's hill a cliff 100 feet perpendicular.

- North 7-44 lost 6' by a rapid
- N 25 W 7-52
- N 10 W 7-57
- N 25 E 8-19
- N 35 W 8-29
- - W 8-32
- S - - 8-35
- S 40 E 8-43
- S 55 W 8-53 river 80 to 90 yards wide
- S 85 W 9-5

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

- W 10 E 10-20
- W 45 W 10-26
- S 75 W 10-32
- N 45 W 10-35
- N 15 W 10-47
- N 45 E 10-55
- S 55 E
- S 45 E 11-11

- W 45 E
- N 45 W 11-20
- N 10 W 11-26
- N 35 E 11-34
- N - - 11-46

Landed to observe ^{mer:} ☉ ap. dble. alt: 72°-14'-48" In. or. + 13' 51"
 Latitude found 33°-29'-29"

Dinner - - 1-30

- N 55 W 1-39 rate 7 per:
- S 80 W 1-45
- N 75 W 1-51
- N 60 W 1-55
- N 85 W 1-59
- S 45 W 2-2
- S - - 2-4

Courses & distances of Washita.

N 60 W	12. 4	
N 20 W	12. 15	
N 25 E	12. 22	
S 75 E	12. 32	
N 40 E	12. 36	
N 10 W	12. 50	
+ W	12. 54	
S 80 W	1. 4	
Dinner	3. 0	Therm ^r . 62°.
N 10 E	3. 16	feruginous 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. 56	
N 75 W	4. 0	
S 70 W	4. 10	
S 50 W	4. 32	lost 7'
S 85 W	5. 3	at 4.54 a hill of pine on the left at 5 ^h an island we passed ^{thru} a small channel to the right.
Made this day 18 miles 308 paces.		
Thermom ^r at 8 ^h p.m. 54°. Extremes 59° - 62°.		

1804 }
 No. 7 }
 20 }

Courses and distances of Washita

Tuesday 20th. Therm. ^{in air} 59° - ⁱⁿ river water 54° - Cloudy - calm.

Sat off at 6^h = 48'

North 6. 56 rate p^r. log 7¹/₂ per:

West . 6. 58

S 40 W 7. 4

+ S 60 W 7. 17

+ N 55 W 7. 30

N 20 W 7. 39 a deep Creek on the left called 'Chemin couvert'

W - - 7. 48

N 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

N 60 W 8. 20

N 20 W 8. 37 a narrow passage to the left 60 feet wide - a

W 45 W 8. 44 small narrow Island

W 25 W 8. 50

W 25 E 9. 4

W 30 W 9. 20 lost 10'

N 55 W 9. 32

Breakfast 10. 50

S 80 W 11. 7 rate p^r. log 7¹/₂ 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 ^{river}

S 30 W 11. 53 timber Birch, maple, holly &c

S 75 W 12. 2 cloudy & uncertain, did not go ashore to observe

Courses and distances of the Washita

- N70W 7-26 Bayou de Hachis on the left
- N30W 7-31
- N70W 7-40
- N52W 7-49
- N-- 7-52
- N70E 7-58

points of high land touch the river at various places - the valley about 1 league broad on each side

- N45E
- N47E 8-17
- N-- 8-25
- W 8-26
- S55W 8-37
- N80W 8-40
- N50W 8-45
- N50E 8-52
- N30E 8-53

- N60W 11-58
- N40W 12-4
- N80W 12-8
- S60W 12-16
- S40W 12-22
- S55W 12-32
- S45W 1-4 lost 20'
- N55W 1-11
- N-- 1-30

- Breakfast 10-6
- N30E 10-15
- N30W 10-28
- S25W 10-42
- W 10-44
- N58W 10-46
- N15W 10-53
- N40W 11-8
- W 11-10
- S25W 11-26
- S10E 11-29
- S35E 11-34
- S50W 11-38
- W 11-48
- N20W 11-53

- Dinner 3-24 Cloudy
- Com. N-- 3-29
- N50W 3-33
- W 3-36
- S55W 3-44
- N70W 3-45
- N-- 3-47
- N55W 4-00
- N-- 4-7
- N60W 4-15
- N20W 4-20
- N25E 4-30
- N80W 4-34
- S80W 4-42
- N35W 4-45 Cabane Champignolle
- N60W 4-52 rain
- N10W 4-55 Encamped. Therm. at 8 p.m.

Made this day 18 miles 120 perches 62°

Courses and distances of the Washita

1804 }
Nov. }
18

N 30 E	2-9	
W - -	2-14	Bay Morau - a large inlet on the right, which swells into a considerable Lake during an inundation.
N 80 W	2-26	
South	2-43	
S 45 W	2-46	Large pine trees
S 65 W	2-56	
S 15 W	3-10	
S 50 W	3-27	lost 14'
S 75 W	4-19	hill on the left called 'Cote de hachis'
S 55 W	4-30	
S 85 W	4-32	
<u>N 30 W</u>	4-34	
W - -	4-39	
N 35 W	4-41	
N 60 W	4-44	
S 30 W	4-52	
S 70 W	4-57	
N 70 W	5-00	
m + N 40 W	5-2	
W	5-5	Encamped - Therm. ^{at 8 p.m.} 57° - Cloudy

Made this day 18 miles 75 perches.
~~foot back the watch 10' which makes 30'~~
since leaving the Post.

Monday }
19th } Therm. ^{in air} 54° - River water 54° - cloudy - calm. river at a stand.
Set off at 6^h - 56'

Cont. °

N - -	7-00	rate w. log 7 1/2 per:
N 60 W	7-15	
N 35 W	7-18	
S 15 W	7-23	
S 70 W	7-24	

Courses and distances of the Washita

Sunday 18th } Therm^{in air} 32° -ⁱⁿ river water 52° - Serene - Calm. river rises a little.

Set out at 7^h 20'

Cont^d W. 7-23 rate $\frac{1}{2}$ per. Log $7\frac{1}{2}$ per:

S 20 W 7-34

S 80 W 7-49⁺ At 7-41 an Island and passage round to the right, the old channel that up by a sand bar; the whole river runs thro' the narrow channel of about 70 feet wide. *lost 9' by the rapid.

N 10 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

N 80 W 8-48

S 25 W 8-51

~~S 45 W~~

S 45 E 9-2

S - - 9-7 Cache la Poudre / Talipa's hiding place /

Breakfast 10-11

Cont^d S - - 10-22 rate $\frac{1}{2}$ per. Log $7\frac{1}{2}$ per:

W 10-34

N 20 E 10-40

N 15 W 10-44

N 40 W 10-52

N 10 W 11-7

W 11-13

+ S 25 W 11-20 lost 3' by a rapid

S 60 W 11-25

N 80 W 11-30

N 50 W 11-41 Landed to observe @ ap. mer: dbh alt: 74°-1'-25" In. cor: +12"

Dinner 1-33 Latitude found 33°-17'-13"

S 75 W 1-46 rate $\frac{1}{2}$ per. Log $7\frac{1}{2}$ per:

N - - 1-55

Courses and distances of the Washita

18047
Nov 7

- 17 .. W - 10 - 52
- .. S45W 11 - 1 Persimmons & small black grapes
- .. N45W 11 - 18
- .. S75W 11 - 25 Small Cane - Sun breaks out - Serene
- .. W55W 11 - 30 - no long moss / *Tilandsia* / seen since we entered the low alluvial lands
- .. W - - 11 - 42 Landed to observe @ mer: ap: dble altitude
74°-37'-52" In; ex: +13'-57".5 Lat: 33°-13'-16".5

- Com^o Dinner 1-42
- W - - 1-49 rate 8 per:
 - N45E 1-50
 - E 2-5
 - W - - 2-9 a rapid
 - W 2-21 - Cane - Pines
 - N70W 2-39
 - N45E 2-52 Saw an Aligator
 - W - - 3-10
 - N80W 3-30 The Eagle
 - S45E 3-31
 - S30E 3-48 lost 10'
 - S15W 3-52
 - S70W 3-57
 - N80W 4-4
 - N60W 4-17
 - S80W 4-19
 - S55W 4-29
 - N80W 4-32
 - N30W 4-35 sand beaches
 - W - - 4-47
 - N70W 4-53
 - W 5-7

Therm. at 8 p.m. 44° - Extremes 40° - 51°
* Made this day 15 miles 308 perches.

Courses and distances 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°. Extremes 38°-51°.

Made this day 17 miles 185 perches

Saturday } Thermom. ^{in air} 40° - ⁱⁿ river water 54 - fog on the river - Calm
 17th }
 River rose 2½ inches in the night.

Set off at 7^h-19

Course cont. S. 7-23 rate p. log 6 per:

- .. S75E 7-27
- .. N - - 7-40
- .. W 7-42
- .. S45W 7-55
- .. N45W 8-0
- .. N20E 8-9
- .. N60E 8-17
- .. N30W 8-18
- .. N80W 8-27
- .. N20W 8-30
- .. N5W 8-56

.. W 8-58 marais de Cannes / Cane marsh / on the right

Breakfast 10-7

.. S15W 10-23 rate p. log 7 per:

.. S65W 10-42 long leaf - Pine

.. N45W 10-49 Saw the first swan, shot by one of the hunters

1804 }
Nov. 7 }

Courses and distances of Washita

.. N10 W 8-10
.. N45 E 8-22
.. W - - 8-27
Breakfast 9-35
Con. N 9-42 rate pt. log 7 1/2 per.

.. N65 E 9-45
.. S60 E 9-50
.. N45 E 9-55
.. 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
.. N50 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 ^{great}
.. S45 W 12-33 Saline Bayou on the right

Dinner 2-34
S45 W 2-39 rate pt. log 7 1/2 per.

.. W 2-43
.. N20 W 2-45
.. N30 E 2-57
.. N75 W 3-4
.. S80 W 3-24
.. S25 E 3-34
.. S60 W 3-39
.. W 3-54

Courses and distances of the Washita

- .. S45W 3-24 Therm: 60
 - .. W 3-33 rate pt. Log 8 par: Bayou grand marais on the left
 - .. N45W 3-35
 - .. Stop. 3-47
 - .. N-- 3-57
 - .. N50W 4-5
 - .. W-- 4-7
 - .. N60E 4-12
 - .. N-- 4-15
 - .. N40W 4-34
 - .. N-- 4-42 Cypressie Chatteraou on the right - apt. of high land approaches within half a mile of the river on the same side
 - .. N45W 4-46
 - .. S80W 4-56
 - .. S75W 5-2
 - .. N45W 5-5 Encamped on the left - Therm. at 8 p.m. 50° Extreme 33-60
- Made this day 16 miles 42 perches.

Friday
 16th } Thermom. ^{in air} 38° ⁱⁿ river water 54° - Cloudy - Calm.

Set out at 6^h-58'

- .. Cont? N45W 7-10 rate pt. Log 7¹/₂ par:
- .. N10W 7-16
- .. N45W 7-23
- .. N15W 7-26 a Creek on the left
- .. W 5E 7-35
- .. ~~N45E~~
- .. N45W 7-39
- .. W 7-40
- .. S70W 7-43
- .. S80W 7-49
- .. N45W 7-51
- .. N45E 7-54
- .. N65E 7-58
- .. N25E 8-2

1804 }
Nov. }

Courses and distances of the Washita

Thursday 15th Thermometer ^{in air} 33° - River water 55° - boat frost - some clouds.

Set off at 9-14

Contm. N 30 W 9-35 rate p. log 7 1/2 per:

W 10 W 9-42

W 40 W 9-50

W - 10-3

W 50 W 10-10

S 70 W 10-24 Cost 8'

W - 10-53 Cost 5' a rapid

W 70 E 11-00 Bank low - overflows 20 feet per pen.

W 20 E 11-4

W 20 W 11-7

W 45 W 11-23

W 30 E 11-24 No more long moss (Tilandsia) seen above this.

W 45 E 11-35 at 11-35 Slide Mallet - landed to observe & placed the

Instrument on the left shore 90 yards higher than the point of the Island: Cap: dble mer: alt: 76°-5'-28"
In: cr: +13'-30" Latitude found, 32°-59'-27".5 - The division line between the Territory of Orleans & that of Louisiana will traverse the river 32 1/2 of a degree north of the place of observation, & may be found at any time by following the above remarks respecting the situation of the N.E. end of the Island of Mallet.

put back the watch 10 minutes and 10 before makes 20 since we left the Post

Set off after Dinner at 1-28

W 10 W 1-46

W 35 E 1-55

W 25 W 1-58

W 30 W 2-10 rate p. 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 3-13

Course and distances of the Washita

- N 80 E ^h 2-3
- W -- 2-13
- N 55 W 2-27
- N 35 W 3-30 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...
- N 10 W 3-40 rate 1/2 log 7 per; Low Country commences -
- N 15 E 3-53
- N 35 E 3-59
- ~~N 15 E~~
- N 45 W 4-4 river from 50 to 60 yards wide
- N 75 W 4-7
- W -- 4-15 small timber - our cup Wk: Oak along the banks sub =
- N 35 E 4-19 feet to be overflowed.
- N -- 4-22
- S 70 W 4-26
- N 60 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
- W 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; 1805 we observed an Eclipse of the moon at this place, from whence the Longitude was deduced

1804 }
Nov }

Courses and distances of the Washita

- N 10 E 12.36 a shower of rain - landed to dine
 - Set off at 3. 3 Thermom: 66°
 - Cont. N 10 E 3. 17 rate p: log 8 per:
 - N 35 E 3. 30
 - W 15 E 3. 50
 - N 40 E 4. 0 at 3.54 Bayu Bartolomei - 12 computed leagues from the Post
 - N 55 W 4. 11 rate p: log 6 1/2 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 Pauva
 - N 20 W 5. 20 Encamped on the right
- Made this day 16 miles 312 perches
- At 8 1/2 p. m. Therm: 62°.

Wednesday
14th } Therm^{main in} 44° - river water 55° - Clear - calm.

- Set off at 7 1/2 - 6' rate p: log 5 1/4
- N 20 W 7. 24 Bayu Mercur 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 70 W 10. 35 Wind N. W.
- N 40 W 11. 19 at 11-3 Bayu Buttes on the right
- W -- 11. 21
- N 65 E 11. 25 rate p: log 6 per:
- N -- 11. 30
- N 70 W 11. 40 Landed to observe Cap: mer: dbh alt: 76° 54' - 35" In: cr: 13' 47".5

after dinner
Set off at 1. 40 Latitude found 32° - 50' - 8".5

Cont. N 70 W 1. 47
* Note on our return we landed 37 perches below q. end of this course i.e. at 8. 3 1/2 on the 15th Jan:
1805 & took q. Sun's alt: to correct q. time of the watch, at 10° 56' 24" a.m. alt. 0. 1. 56° 36' - 45" In: cr: +12.20

Courses and distances of the Washita

1804
Nov.

after dinner 2.00
Set off at 1.48
Com^d E 1.53

N - 2.0
N70W 2.10
N - 2.15

EN40E 3.3 at 2.30 a rapid - at 2.45 another rapid & Shoal
S70W 3.17 lost 5' upon a shoal
Stop until 4.27 upon a shoal

UN30W 5.30 lost 25' Encamped - Therm^m at 8^h pm. 54°
Made this day 16 miles 92 perches

Tuesday

13^h } Thermom. ^{in air} 33° - ⁱⁿ river water 56° - fog - calm

Set off at 6^h - 51' W. Log 8 per. ~~W. B. put the watch forward 12'~~

Com^d N50W 6-55
N - 7-2
E 7-23
N45E 7-40
N45W 7-44
S85W 8-0

S55W 8-40 lost 10' at 8^h is an Island - at 8^h - 12 a strong rapid - landed to Breakfast
Set off at 9-42 - 9 computed leagues from Positan Island on the right - rocks called Roque near

N - 9-46 rate of log 7 per.
W45E 9-53 Wind South
W45W 10-31 river 150 yards wide - banks about 25 feet high Bayou
N - 11-10 lost 17' on shoals - at 11^h - 3 gradually rapids to a house on the right - other B. on left
at the end of the Course - an island at the mouth of the Bayou

S70E 11-30 lost 12' the river has a more spacious appearance than below
N80E 11-55 ^{at} settlements at the end of this Course in the right, called Peor aux
Voyant. 30 feet bank, 4 feet clear at high water. Some Cypress
grows along the Bank.

N30E 12-10

N70E 12-31 at 12-26 a house on the right

1804ⁿ
Nov.

Courses & Distances of Washita

tion is 450 feet North; I consider the true Latitude of the
Post as fixed at $32^{\circ}-29'-37''.8$ - made this afternoon
3 miles.

Monday

12th } in air Thermometer 36° - ⁱⁿ river water 54° - Clear - Calm

Set off at 8^h 26' took in some fresh beef &c

W 55 E 8-35 rate N. Log 8 per:

W - - 8-39

W 60 W 9-15 lost 24' upon Shoals

W 10 W 9.20

W 25 E 9.40

W - - 9.46 Bayou Siard, ^{my right} computed 2 leagues $\frac{1}{2}$ fort

W 70 W 10.15 river 100 yards wide

W 30 W 10.23 at 10^h 20' Bayou 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
is East: & the new channel with high banks is
from 30 to 40 yards wide.

W 30 E 10.25

W 60 E 10.31

E 10.33

S 45 E 10.45 at 10-39 return to the great river

W 60 E 10.55

W 30 E 11.20

E 11.50 Landed to observe - Obs: sp. dba alt: $78^{\circ}-28'-52''$
In. or W $3^{\circ}31''$ Latitude $32^{\circ}-34'-47''$

1804
Nov.

Courses and distances of the Washita

N 70 E 2.52

N 2.55

N 25 W 3.25 arrived at the Post of Washita

Wednesday

made this day 9 miles 257 perches, amounting
in the whole from mouth of red river 196 miles
and 256 perches.

7th. Took the ☉ ap: mer: d. alt. $81^{\circ}-28'-00''$ In: cr: $+13^{\circ}-33''.5$

Latitude found $32^{\circ}-29'-52''.5$

The place where the observation was made is about
450 feet to the South of the Post, where Lieut: Bawman
& his garrison are stationed, the Latitude of the
Post is therefore $32^{\circ}-29'-57''$

8 and 9th both cloudy days - remained at the Post. 9th therm: $42-72$
Saturday - Therm: 40° river 61°

10th made the following observations

AM	17 th	+ 10 ^h 0 ^m 18 ^s ☉ ap: mer: d. alt. $65^{\circ}-5'-50''$ ☉ mag: (12: 44°)	In: cr: $+13^{\circ}-47''.5$	by Cal: 10.9				
					10-12-15	$65-5-30$	S 43 E	10.8
					10-16-12 ⁺	$66-50-34$	S 42 E	10.8

~~Times of triple Contact ☉ ap: mer: d. alt. $65^{\circ}-59'-48''$ In: cr: $+13^{\circ}-47''.5$~~

AM { ~~Upper limb at $70^{\circ}-21'-14''$~~
~~Center 10-23-42~~
~~Lower limb 10-26-14~~

☉ ap: mer: d. alt. $79^{\circ}-45'-3''$ In: cr: $+13^{\circ}-47''.5$ Lat: found $32^{\circ}-29'-35''$

There is a difference of $17''$ between the Lat: found this day and
on the 7th. I give the preference to the observation of this
day, because on the 7th some interruption from visitants occa-
sioned a moment's inattention, & it is believed the sun might
have dipped a little before the altitude was taken.

☉ Triple Contact as follows

PM { Lower limb at 3-1-6 } ☉ ap: d. alt. $49^{\circ}-4'-30''$ In: cr: $+13^{\circ}-47''.5$
Center 3-2-50
Upper limb - 3-4-36

Note the center contact was uncertain from intervening branches

Course & distances of Washita

Set off at 3^h. 0

- N75W 3.12 rate p^r. log 6 per.
- S50W 3.55 - Thermom^r. 68° - Sun shines dimly thro' a blackish mist
- W 4. 2
- N60W 4.25 lost 2'
- N30W 4.39
- N - - 4.55
- N35W 5. 8
- W15W 5.25 Encamped on a sand bar on the right.

Made this day 14 miles 276 perches.

Tuesday

6^h. } Therm^r. 45° - river water 64° - heavy fog - Wind West.

Set out at 6^h. 32'

- N80E 6.48 rate p^r. log 5¹/₂ per:
- S 7.10 lost 1'
- N45E 7.30
- E 7.40
- N65E 7.55
- Breakfast 8.57
- cont. N65E 9.42 rate p^r. log 4¹/₂ per:
- N35E 9.55
- N45W 10.28 lost 5'
- W - - 11.13 lost 3'
- W40W 11.18
- S65W 11.30 landed & observed - Cap. 2. alt. 82° - 5' - 33" In. or. 43° 30"
- Sinner 1.30 Latitude found 32° 28' 58"
- cont. S65W 1.52 rate p^r. log 5 per:
- S60W 2.00
- N10W 2. 6
- N15E 2.20
- E 2.25
- S55E 2.47

1804

Courses and distances of the Washita

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

4th } Set off at 9^h 18' got a ground in the morning

- N 45 E 9. 26 rate p^r. log 4 per;
- N 25 E 9. 36
- N 20 W 9. 44
- N 45 W 10. 26 lost 16' upon a shoal.
- S 75 W 10. 50 lost 3'
- N 65 W 11. 0
- W 50 W 11. 29 Landed and observed the \odot app: mer: alt: double

Dinner

Set out at . . . 1. 36 83°-33'45" In: er: 19°-32" Lat: 32°-21'-10"

N 20 W 3. 25 lost 57' upon a shoal rate p^r. log 2 per;

same course N 20 W 4. 00 lost 12'. got out the tow-line to track - p^r. log 5¹/₂ per:
N 20 E 1/2 miles. This course being over shoals and rapids could only be estimated by sight.

Made this day 4 miles 233 perches.

Monday

5th } Therm. 52° - River water 62° - heavy fog. had to un:

load two times of our Canoe to get over a shoal

Set off at 9^h 55'

last course } Continued } 10. 4 rate p^r. log 5 per:

- N 20 W 11. 15
- W 45 W 11. 21 lost 3'
- W 11. 32

Dark, misty & cloudy

- N 45 W 12. 0 lost 5'
- N 45 E 12. 13
- N 25 E 12. 42 lost 2'

- N 45 E 1. 34 lost 10'
- W 10 W 1. 43

Dinner

Wind N. W.

1804 Courses and distances of the Washita

Set out. 9^h. 8

S 70 E 9.42

S 40 E 9.47

S 10 E 10.00 lost 3'

S 40 E 10.5 rate $\frac{1}{2}$ per. log 5 $\frac{1}{2}$ per.

S 75 E 10.11 Wind E.S.E.

N 10 E 10.34 lost 5'

N 50 E 10.47

E 11.00

S 45 E 11.8

Stop 11.15 by a shoal

S 10 E 11.23 went ashore & prepared to observe

Dinner 1.31 @ ap: do: alt: 84°-18'-40" In: or: +13'30" Lat: 32°-17'-17"

S 10 E 1.38

S 60 E 1.45 towing the boat rate 5 $\frac{1}{2}$ per.

N 60 E 1.55

N 30 E 2.4

N -- 2.17

Stop 2.32 upon a shoal

N 20 W 2.45

N -- 3.5 lost 3' therm. ^m 86°

N 45 W 3.25 lost 10' - rate $\frac{1}{2}$ per. log 4 $\frac{1}{2}$ per.

S 65 W 3.57 lost 14' upon a shoal

N 45 W 4.3

N 20 E 4.20 lost 8' - towing. rate $\frac{1}{2}$ per. log 5 $\frac{1}{2}$ per.

N 45 E 4.35 current - rate 4 per.

N -- 5.5 lost 9'

N 45 E 5.15 Encamped on the left. therm. ^m at 8^h. p.m. 72°

made this day 11 miles 140 perches

1804 Courses and distances of the Washita continued

Novem^r

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

Set off at 6^h. 50'

N 45 E 7. 16 - rate per log 4½ per.

N - - 7. 23

N 65 W 7. 30

S 55 W 8. 26 lost 3'

Breakfast 9. 19

W 10. 00 lost 20' on a shoal

N 55 W 11. 54 lost 1½ hour on a log under water

+ N 10 E 12. 30 lost 7' on a shoal

+ N 15 W 12. 53

Dinner set off 2. 25 got immediately upon a log, & after getting off

set out again 4. 00 Thermometer 84°

. N 75 W 4. 14

. N 25 W 4. 30

. N - - 4. 37 a cliff and pine hill on the left

. N 85 E 4. 50

. S 80 E 5. 23

. N 30 E 5. 39 lost 4'

. N 45 W 5. 50 Encamped at a sand bar on the right
 made this day 8 miles 2.04 perched

Saturday

3^d Therm. 52° - River water 64° - light clouds

Set out at 6^h. 19'

N 45 W 6. 34 by log 4½ per.

. N 22 W 7. 12

. N 40 E 7. 22

. S 70 E 8. 10 lost 25' on a shoal

Breakfast

1804
October

Courses and distances of y Washita continued

N10 E W 11. 18'

N25 E 11. 35 p: log 4½ per: Landed and took the Sun's ap: mer:
Dinner double alt: 86°-27'-10" In: or: + 13' 40" Lat: found 32°-10'-18"
at setting out got upon a bar which detained us.

Set out again at 2.00 got over the bar

N25 E 3.00 lost 6' - p: log 4 per:

N74 W 3.10 a small plantation on the right

S 25 W 3.35 Thermometer 84°

W 3.40

N5 W 4. 8

N35 W 4.45 to a small plantation - another joining below.
This day made 6 miles 165 perches.

November

Thursday } Thermom: 48° - River water 62° - Calm - clear
1st

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 we effected about 12 noon - it may be put down at half a mile

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 crowned by pines, lost 12' 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 4.36 lost 22' upon a shoal

N25 E 4.40

W 5.24 Sand bar half way across - river 50 yards wide

N70 W 5.44

X - - 5.50

N45 E 5.55 at 8th therm: 64° - Extremes 48° - 85°
made this day 4 miles 115 perches

1804 Courses and distances of y^e Washita continued

October

- N 50 W 11.7
 - N - - 11.14
 - N 60 E 11.34 - landed and took the Sun's mer. Doubt: Altitude 87°-16'-10" In: ex: +13' 20", some uncertainty attended this observation; the alt. observed may have been a minute too small, which would place the Lat. $\frac{1}{2}$ minute too far north; it is however recorded with this remark - Lat: found 32° 5' 24"
 - Set off at 1.20
 - N 50 W 2.8 rate p^r. log 5 per:
 - N 30 E 2.35
 - N 45 W 2.42 Wind W.
 - W 2.48
 - S 60 W 3.37 lost 9'
 - ~~N 45 W 2.42~~
 - N 55 W 4.7 lost 4' a rapid - river 30 yds wide
 - N 60 E 4.28
 - N - - 4.34
 - W 5.15 lost 14' Creek on the left, perhaps 'Baye Calumet'
 - N - - 5.25 to the left - Encamped
- Extremes of the therm. ° 47° - 83°
Made 15 miles 150 perches

Wednesday 31st Thermomⁿ. 44° - River water 62° - Wind N.N.W. Clear.

- Set out at 6^h 30'
- N 45 E 6.50 ^{Current} Strong - rate p^r. log reduced 2 per:
- N 20 W 6.55
- S 65 W 7.46 lost 5'
- N 40 W 8.10 got upon a Shoal
- Breakfast set off .. 9.58
- N 40 W 10.44 lost 10'

Courses & distances of the Washita continued

N 85 W 3^h. 15' rate p^r. Log 6 per: therm. 85°

N - - 3.25

N 85 E 3.58 lost 4'. Cliff and pine woods soil thin greyish sandy loam

N 80 W 4.14

N 45 W 4.32

S 55 W 4.55 Wind S.W. Log 5 per:

W 5.13

~~4.95~~

N 35 W 5.28

N 55 E 5.35 to the right - Encamped - Soundings 3 fathoms therm 62°

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

This day made 14 miles 65 perches

Tuesday

30th Thermometer 49° - Temper. of W. river water 60° - fog on y^r river - Wind W.N.W. - clear.

Set off at 6^h. 5'

N 75 E 6.26 rate p^r. Log 5 per:

N 20 E 6.34

N 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

N 82 E 9.47

N 68 E 10.25

S 50 W 10.55 Wind W.

Courses & distances of the Washita continued

1804
 October }
 Monday } Thermometer 41° - Temp. of w^o River water 62° - Wind N.W.
 29th } fog on the river.

Set out at 6^h. 22' rate p^r. Log 5½ per:

S32W 6. 31

N35W 6. 40

N65W 7. 8

W 7. 20 to the right bank

+ N45W 7. 30 to the left

N55E 7. 48 a Creek on y^e left, landed & made the following observations of the distances between the nearest limbs of the Sun & moon.

AM. {
 At 8^h. 57' - 10" dis: 41° 58' - 20"
 9 - 6 - 10 — 41 - 55 - 40 } In: Cr: + 13' 45"
 9 - 26 - 78 — 41 - 50 - 10 }
 Took the following D. Alt: of the Sun & azimuth
 At 9^h. 47' - 46" D. Alt: 68° 44' 30" Sun's Az: S45° E
 In: Cr: the same + 13' 45"

Set off at 10^h. 4' -

N55E 10. 20 rate p^r. Log 5½ per:

N30W 10. 31

N15E 10. 43

W 11. 1

N -- 11. 7

N45E 11. 41

W 11. 47 took the ☉ mer. az: D. Alt: 88° 10' 00" In: Cr: + 13' 45"
 Lat: found 31° 58' - 2"

Dinner 1. 12 p.m.

continued W 1. 19

N25W 1. 42

N65W 2. 4 to the left

N 2. 35

N45W 2. 46

1804

Courses and distances of the Washita continued

October } Thermometer 40° - temperature of the river water 63° - Wind
Sunday } N. W. - Clear - fog on the river.
28

- N 45 W 0^h. 17' rate by Log 4¹/₂ per;
- N - - 0. 17 at 5' a prairie or flat meadow on the left. to pt. left
- N 15 W 0. 13 Bayou Douef on the right - at 5' rocky hill on right
- N 45 W 0. 17
- N 15 E 0. 18
- N 70 W 0. 20
- S 55 W 0. 10 on y^e right - Here we made the following observations

Lat: 31° 53' a.m. @ D. Alt: 53° - 19' - 00" at 9^h - 5' - 16" - mag: Az: S 60° E 79. Er: 2° - 58' - 14" - 10 at 9^h - 20' - 28" - d° S 57° E 74.58" By Calculation
Ap: Dis: of the Sun & moon's nearest limbs 53° - 24' - 50" In: Er: + 10' 58" at 9^h - 47' - 28¹/₂ S 60° E var. 8' 19.2
Same course
Continued - - 0. 6 on the right - tracking y^e boat - by Log 5 per: S 57° E - 8.25.2
mean var. 8.22.2

- N 10 E W. 0. 14 d°
- N 10 E. 0. 14
- N 10 W 0. 17
- W 0. 17

Diurnal cont. S 10 W 0. 17 to y^e right. Landed to observe. @ ap: D. Alt: 88° - 58' - 45" In: cr: + 13' 58" Lat: found - - - - - 31° 53' 35.5

- S 78 W 0. 8
- S 80 W 0. 10
- N 30 W 1. 8 a large prairie or savannah on y^e right - therm. 78° at 5.
- S 45 W 0. 32
- N 45 W 0. 13 to the left
- N 80 W 0. 31
- S 45 W 0. 15
- S 30 E 0. 20 rate by Log 5¹/₂ per:
- S 82 W 0. 12 to the Encampment. founded 3 fathom - mud of sand.

Made this day 12 miles 116 fathoms per:

Note The rate of going of the watch to be ascertained from the morning altitudes of the Sun of y^e this day and of the 26th -

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

1804

Courses and distances of the Washita continued

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

Last Course
continued N 15° W 0^h. 20 at 82' pine point & Villemont's prairie. p^r Log 4 per:
N 45 E 0. 3 to apt. on 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 these

Breakfast N

rapids
so many shoals in this course that no time or Log
could be kept - by estimation we went one mile &
then were completely conveyed, being enclosed by
a bar of gravel & sand with only ^{10, 12} 8 inches of water
Cloudy, no observation.

This day we made only 3 miles 120 perches

Friday 26th Thermⁿ. 40° - Wind N.W. light Clouds
Took the @ doub: alt 82°-9°-10' In: or: +13' 48" at 10^h-42' a.m mag: or
0 - 2° - 88-10-5 - - - - - at 11-20-45 - S. 20^h 4
At noon took @ Mer: alt: (doub) 90°-30°-10' In: or: +15' 48" Lat: 31°-48'-57".5
Thermⁿ in the Evening, 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 } efforts being employed to get thro' a gravelly bar, untill 1 o'clock
Continued } N.
The rapids continuing occasioned frequent stops
so that we could only estimate the remainder
of this course at $\frac{3}{4}$ of a mile, the rocky part which
completed the rapids being 200 yards from the
end of this last course.

W. 0^h. 15' to apt. on the right - p^r Log 4 $\frac{1}{2}$ per:
N. --- 0. 38 at 11' a bayou on the left - apt on left. Encamp

Extremes of the Thermometer 32° - 73°

This day made 2 miles 77 perches

1804

Courses & distances of the Washita continued

October
24th

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

Temperature of the river 71° - no Current worth estimating

N 65 W 0.9 Continued to the right shore - rate of going per Log 4½ per:

N 35 E 0.23 along shore

N - - 0.20 2° highland on the right

Track - W 0.12 2° by Log 5 per: Bayou Ka-ha on right 1/2 East

N - - 0.12 2° oblique strata of Clay, some dipping to 30° in the direction of the river

N 60 E 0.11 to the left shore

Breakfast

N 30 E 0.27 along shore by Log 5 per: Cloudy

N 45 W 0.13 2° - River 80 yds wide

W 0.18 to pt. on right - luxuriant vegetation, grape vines &c in rich dark festoons.

N 30 W 0.6 along shore

N 30 E 0.3 clearing up - wind north

N 50 E 0.19

N - - 0.49 landed on right to observe

Doubt; alt: 92° 4' 50" In; or: +13' 45"

Land high no appearance of overflowing, oak forest, white, red, black, rich shrubbery.

Dinner

continued N - - 0.42 to the right shore

N 55 W 0.31 rich herbage along shore

N 40 E 0.11 along shore - low & small timber upon the high bank

N 70 E 0.17 2°

E 0.17 2°

N 45 E 0.5 2°

N - - 0.8 2°

N 60 W 0.83 2°

} continue tracking all day

} rate per Log 5 per:

W 0.9^A to the left - a large bayou going to S.W.

N 15 W 0.39

7.38 made this day 14 miles 48 per:

1804

Courses & distances of the black river continued

October 22 Thermometer before Sun-rise 65°. Wind S.S.E. Cloudy, rain before day.

continued $N 77 \frac{1}{2} E$ 0^h. 20 to a pt. on the right
 $S 65 E$ 0. 35 along shore - by Log 5 per. pt. $\frac{1}{2}$ min.
 E 1. 14 to a pt. on the left - cloudy
 N .. 0. 30
 halt fail $N 40 W$ 0. 18 to a pt. on the left - by Log 8 per. pt. $\frac{1}{2}$ min.
 wind fails .. W 2. 12 to pt. on right - by Log 4 per. long reach
 $N 20 W$ 0. 35 rain at noon - no observation
 $N 40 E$ 1. 3 to pt. on left - by Log 5 per. Thermometer 79°
 $N 10 W$ 0. 19 along shore
 $N 45 W$ 0. 20 to a pt. along shore - sounded 3 $\frac{1}{2}$ fathoms bl. sand
 7. 26 Extremes of the thermometer 65° to 79°

Tuesday made this day 13 miles 76 perches
 23 Thermometer 68° before sun rise. Wind W.N.W. The river fell 3 inches in the night.

~~N 60~~
 $N 65 W$ 2^h. 5 along shore by Log 5 $\frac{1}{2}$ per.
 $N 10 W$ 0. 50 to pt. on the left right
 $N 10 E$ 0. 38 along shore Contrary wind - by Log 3 $\frac{1}{2}$ per.
 Dinner Lat 31° 42' Observed @ Doubt. 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 shore, wind N.N.W. arrived at
 the mouth of Catahoola ^{W.C.} Thermometer 78°
 $N 10 E$ 0. 8 the mouth of Washita - Bayou Tense forks
 with washita $N 88 E$ Log 5 $\frac{1}{2}$ per.
 $N 65 W$ 0. 7 Shore on the right Encamped.
 4. 53 Extremes of the Thermometer 68° - 75°

Took information at the mouth of the Catahoola which detained us 2 $\frac{1}{2}$ hours. Sounded 6 fathoms.

Made this day 9 miles 77 perches
 By our reckoning the mouth of Washita is distant from the mouth of red river 77 miles 57 perches; and by the old estimation 32 french leagues

1804
 October Courses & distances of the Black river continued

Saturday 20th Thermometer before Sun rise 47°

W. 0^h 30' along shore - have the Log 4 perches p^r. 1/2 min.
 N 45 W. 0. 45 to a p^t. on the right - temperature of the river 79°
 W 10 W 0. 28 to a p^t. on the left - Calibrated Spring temper: 66°
 W..... 0. 16 along shore
 Same Course 0. 42 to a p^t. on the right. hoist sail 6 1/2 perches p^r. Log
 N 20 W 0. 30 along shore rate of going 4 per: p^r. log
 N 50 E 0. 30 d^o. - river 80 yds wide - came on wth right
 E 0. 10 to the left shore. landed to observe at noon & dine.
 @ doub: mer: ap: alt: 95° 34' 5" In: er: +13-32, 5
 Fault to East S 75 E 0. 58 to the right & continue to the left - Log 4 1/2 per: p^r. 1/2 min:
 Lat. 31. 22. 46. 6 N 63 E 0. 47 to a p^t. on the right & continue to a p^t. on y^e left Therm^m. at 3h
 N 25 E 0. 40 along shore - Came on the right 80°
 N 45 W 0. 27 d^o
 S 80 W 1. 6 d^o encamped for the night. regarding 5 fathoms
 7 49 Black Sand

This days voyage makes 13 miles 40 perches

Sunday 21st Thermometer before sun rise 60° a little cloudy near horizon

last course Continued
 S 80 W 0. 48 along shore
 N 45 W 0. 51 to an Island - rate p^r. log 4 1/2 per
 N 19 W 7. 3 hoist sail rate p^r. log 8 per: came broke, loda fallen
 N 20 W 0. 25 to a p^t. on left. rate p^r. log 4 1/2 per:
 N 25 W 0. 14 to a p^t. on right
 N 40 E 0. 6 to the left Landed to observe and dine, Clouds came
 over just the moment before the Sun came upon the
 meridian, went off in a little time, he had clipped, took
 the double alt: is 94° 37' 0" (In: er: +13' 34") which is too
 small, the latitude is too far north.

N 75 E 0. 40 along shore
 W 40 E 0. 22 d^o - Thermometer 83°
 S 30 E 0. 23
 S 13 E 0. 46 continue tracking across & on to a p^t. on left
 N 75 E 0. 35 to the right - encamped for the night
 7. 19 Extremes of the Thermom^t? 80° to 83° Cloudy Wind
 S. S. E

made this day 14 miles 59 perches

The meanders of the Red River up to the mouth of the
Black river taken by course and time, the value of
the times 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

Thence $N 4^{\circ} E$ 0^h 23' (the river 550 yards wide) to a point same side

$N 8^{\circ} W$ - . 47 to a pt. left side (no Current)

$N 20^{\circ} W$ - . 23 to a pt. right side

$N 5^{\circ} E$ - . 5 along shore - river 300 yds wide

$N 22^{\circ} E$ - . 22 to pt. left side - a Creek on the right

$N 10^{\circ} W$ - . 9 along shore. rate of going $1\frac{1}{2}$ mile per hour

$N 25^{\circ} W$ - . 6 do

$N 45^{\circ} W$ - . 11 a lake on the right side

$N 80^{\circ} W$ - . 22 to point right side

$N 40^{\circ} W$ - . 4 - river 250 yds wide

$N 10^{\circ} W$ - . 4 - no sensible Current

$N 32^{\circ} E$ - . 17 to a pt. on left - 200 yds wide Lat $36^{\circ} 8' 54.6$

$N 25^{\circ} W$ - . 11 to a pt. on the right

$N 10^{\circ} W$ - . 16 to a pt. on the left

$N 15^{\circ} W$ - . 6 to a pt. on the right

$N 25^{\circ} W$ - . 27 to a pt. same side a bend to the right

$N 38^{\circ} W$ - . 7 along shore

$N 40^{\circ} E$ - . 20 do

$S 75^{\circ} E$ - . 42 to a pt. on the left

$N 40^{\circ} E$ - . 7 along shore

$N 5^{\circ} E$ - . 41 to a pt. on the right

$N 40^{\circ} E$ - . 6 to a pt. on the left - a large Creek on the right

$N 80^{\circ} W$ - . 24 to a pt. on the right

~~$N 75^{\circ} W$ - . 23~~

$N 10^{\circ} E$ - . 13 along shore

653

Octoberth Meander by Course & time continued
Red river

Amo. time bot. over 6^h 53

- N 75 W --- . 23 along shore
- S 85 W --- . 16 do.
- N 75 W --- . 19 do
- S 50 W --- . 46 to a pt. on the right

made this day $\frac{8.37}{296}$ miles $\frac{12.55}{60}$ or $\frac{12}{12}$ perches

Friday 19th thermometer before sun rise 46°

N 75 W . 0. 19 to a pt. on left rate 7 perches p^r 1/2 min:

Same course 0. 27 to do. on the right

N 30 W 0. 30 along shore

W 0. 11 do

N 60 W 0. 14 a pt. on left - rate of going 7 perches p^r 1/2 minutes

W 0. 23 along shore

Same course 0. 26 a pt. on right

N 75 W - 0. 33 along shore

N 50 W 0. 26 to a pt. on left at 5' a creek on the left

N 70 W 0. 22 pt. on right - wind contrary howe the log rate of going 4 perches

N 35 W 0. 22 along shore

N 10 W 0. 13 a pt. on left landed to observe and dine

~~Face of Circle to the West W 1/2~~

Lat. 38° 12' 50" 1
O double ap: alt: 97° index cor: -13' 21.5

N 60 W . 0. 40 a pt. on right .. rate 5 perches

N 50 W 0. 20 along shore to mouth of bl. river 150 yds wide
red river the same width, ent. bl. river

Said to be 10 leagues off bl. river by our glass only 26 miles 105 perches 1/5

N 35 E . 0. 25 a pt. on left

N 10 E 0. 31 along shore

N 40 W 0. 25 do. riv: 100 yds wide

S 75 W 0. 20 to a pt. on right: sounded 20 feet, bl. sand
encamped for the night.

made this day 15 miles $\frac{192}{296}$ perches

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 fathoms, which is understood to be run out for half a minute unless otherwise expressed, consideration is had for the velocity of the Cur^t by deducting it from the rate by log when it merits 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 ^{UN} Altitudes or other altitudes of the Sun, ^{OR MOON} above the horizon, it is to be understood of the lower limb, unless otherwise expressed in the following observations.

An excellent Circle of reflection made by Troughton of London 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 solidity & 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 additive & the lesser when subtractive; which being added to the ap: dble alt: of the lower limb, gives at once the dble ap: alt: of the Sun's center cleared of the Index error, altho' this 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 to that found in the Naut: Almanac.

Exploration of Red, Orachitta &
Black rivers, by Sir Wm Dunbar,
of Adams Co, Miss^{is}ippi, undertaken
at the instance of Thos. Jefferson