Red River which was lost in the swamps and shallow lakes below. In order to prevent the entire destruction of the low-water navigation of Red River, the government has undertaken the closure of the bayou, which work at present is in course of execution.

After the junction of Tone's and Pierre, the latter continues for a distance of 12 miles, when it enters Lake Cannasanier. The upper part of this stretch is in very good navigable condition, but before we reach the lake we meet what is known as the raft, a vast accumulation of drift which has found its way mostly through Tone's Bayou. Part of this drift was run into Tone's several years ago, in order to attempt the closing up of that bayou. This raft obstructs all navigation and causes the overflow of a tract of land highly susceptible of cultivation. Lake Cannasanier is about 7 miles long by about 3½ wide. It is very shoal (being in fact a cypress brake), with scarcely any perceptible channel. What there is of the latter winds its way around the westerly side of the lake, making the distance for navigation about 14 miles.

Leaving Lake Cannasanier, the bayou has a good depth of water and is free from all obstructions for a distance of 9 miles. At this point it enters Round Lake. This lake is a portion of the greater sheet of water known as Bayou Pierre Lake. It is the only navigable part thereof, and has communication, through a smaller clear lake, with the town of Smithfield.

Bayou Pierre Lake is itself nothing but one impassable cypress-brake, without any navigable channel. At the lower part it narrows, at low-water, to about 350 feet in width, with an average depth of about 1 to 1½ feet, the length being about 2 miles. Here we reach Gravelly Point. At this place the low-water of Bayou Pierre is 17 feet above the low-water in Red River, 3 miles distant.

From Gravelly Point the bayou descends over a series of rapids, 12 in number, in a distance of 18 miles, and joins Bayou Winsey. The latter enters Red River, and is in length about 3 miles.

The above is the route which it is intended to improve and make navigable, the cost thereof being estimated by Mr. Wilson at $174,404. To make it such would require that a channel be made through Tone's Bayou around the present dam; that the raft and other obstructions be removed; and that a channel be dredged through the shallow lakes and bayous.

As to the advantages of the route via Red River over the proposed one, I do not think that there can be any question. The route to be opened requires that it should not only afford passage for boats at all stages, but should have sufficient capacity to carry the drift which will be continually passing down at every flood. The estimate above given is only for the navigable channel; to secure increased capacity it would have to be greatly increased. As it is, the main channel is the natural one, and affords secure and permanent navigation. The government has undertaken its improvement, which will be attained at comparatively small expense. In the matter of commercial interests the river route has greatly the advantage.

The removal of the raft in Bayou Pierre would be of great advantage to the land on the back bayou. It causes the water passing through the bayou from above to back up and overflow a tract of valuable land which otherwise could be put under cultivation. The cost of removing the raft is estimated at $75,000.

The government has undertaken to maintain the river route by damming up Tone's Bayou. This has been deemed the most advisable by the State engineers of Louisiana, and by the officer formerly in charge of

the work, and by myself. In this connection I quote the following from the report of Captain Howell upon the same subject:

The worst part of Red River for navigation during the low-water season is that between the head and foot of Bayou Pierre, the bars affording but from 2 to 3 feet of water. Throughout this reach the section of the river is quite uniform in width, and everything appears to favor the opinion that the channel may be greatly improved provided a large body of water can be thrown through it. It appears equally certain that navigation in Bayou Pierre would not be improved, even were the whole of Red River turned into it through Tone's Bayou, because all scouring effect from the water would be lost in the lakes.

From the foregoing it appears that the problem of improving navigation between Shreveport and Grand Ecore resolves itself into throwing all the water passing Shreveport into a single channel, either by closing Bayou Pierre at its head and at Tone's Bayou, by which the whole volume of the water will pass through, and deepen the main stem of the river, or by closing the main stem at Scopini's "Cut-off," thus throwing all the water into Bayou Pierre, afterward improving the latter by the removal of raft and snags, and forming a channel through the lakes by dredging and removing cypress stumps.

The former involving the least expense, offering the most certain results, and according with the wishes of a great majority of those interested in the improvement of Red River, is the plan adopted by the Engineer Department, and also by the State engineer.

The reasons for the adoption of this plan, after considering the interests involved, Captain Howell states are—

1st. It is of course the intention and interest of the government to adopt not only the best plan, considered from a strictly engineering point of view, but also one that will best subserve the predominating local interest involved, the matter of economy being of but secondary importance.

2d. In this case the steamboat men and merchants interested are almost unanimously in favor of maintaining the route by way of the main stem of Red River.

3d. Fears heretofore entertained by the planters along Red River that their plantations would be damaged by the closure of Tone's Bayou have been allayed by the adoption of a plan for only the present partial closure of that bayou by a dam calculated to throw all the discharge through the main stem of Red River, while the river is at less than a half stage, and for higher stages to waste as much into Tone's Bayou as may be required to keep the main river within the levees on which the State is now engaged; after the main river channel has been sufficiently widened and deepened to permit such action, the closure of Tone's Bayou is to be completed.

4th. By this partial closure of Tone's Bayou, the planters along the lower portion of Bayou Pierre Lake will be slightly affected during low-water, inasmuch as their present dependence for supplies and for getting their produce to market is on the navigation of the lower bayous and lakes.

During high-water they will have no more trouble than at present. I have even been informed that the route through the bayou and lake is not navigable during low-water, and that low-water occurs at a season of the year when facilities for reaching a market are not of paramount importance. Be this as it may, the probable early completion of the Shreveport division of the New Orleans, Baton Rouge and Vicksburg Railroad along the southern border of the bayou and lake, to meet the wants of this interest, renders further consideration unnecessary.

The map of Tone's Bayou, Bayou Pierre, and Lakes Bayou Pierre and Cannasanier, and Bayou Winsey, will be forwarded to the department as soon as completed.

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Captain of Engineers.

Brig. Gen. A. A. HUMPHREYS,
Chief of Engineers, U. S. A.

REPORT OF MR. GEORGE R. WILSON, ASSISTANT ENGINEER.

SHREVEPORT, LA., *January* 15, 1879.

SIR: Having received your instructions of November 11, 1878, "to make examination of Bayous Pierre, Tone, and Winsey; also Lakes Bayou Pierre and Cannasanier

with a view to the improvement of that route. The lower part of Bayou Winsey is the only portion at present navigated. It is designed to extend the improvement so as to include the entire distance from the entrance at Tone's Bayou to where the Winsey enters Red River, it being contemplated at the same time to make that the route for the steamers navigating Red River, instead of the present one via Red River proper. The examination will be made with a view to the removal of all obstructions, cost, &c.; also what commercial advantages, if any, and a general description of the country," I have the honor to make the following report:

Learning that I would have considerable trouble in getting through the bayous on account of low water, and there being but very few settlements along the route, I was forced to take supplies for the whole trip with me. I procured two skiffs, one very light for running over the shoal lakes, and the other with provisions, tents, &c.

When I arrived at the mouth of the Bayou Winsey I found that those persons interested thought the examination was to extend over the entire Bayou Pierre, which enters Red River about 2 miles above Grand Ecore, and they all desired that that examination be made also. I concluded that it would take but little time and might be some satisfaction to you hereafter, so I proceeded on down to the mouth of Bayou Pierre proper and entered the same, commenced sounding and measuring the width and taking course of same with compass.

I found Bayou Pierre at its mouth 172 feet wide from top of bank to top of bank; surface of water 142 feet wide and 10½ feet deep, heading in a southwest direction for about 8 miles, and increasing in depth to 30 feet to near the point where it makes connection with Spanish Lake, free from snags and obstructions of all kinds. From this point it heads in a northwest direction and shoals commence, and for the next 16 miles the bayou is so full of snags and cypress knees (large) that it was very difficult to get a skiff through them, and seven rapids or shoals composed of blue mud, very similar to the mud lumps at the mouth of the Mississippi River. The snags are very numerous, as many as 420 to the mile, not including cypress knees (generally 10 feet high), and the water between shoals 3 to 5 feet deep, but this is dead low-water, the water on shoals about 1½ feet.

From this point (the junction of Jim's Bayou) the bayou takes an almost due-north course, and for 3 miles is a deep river free from all obstructions; then it becomes perfectly dry up to Bayou Winsey, 2 miles farther north, except in holes, and through this dry bed I dragged my boat to the Winsey, at which point the bottom of Bayou Pierre is 13½ feet above the surface of water in Bayou Winsey. So you will see that a river would have to be dug from the Winsey 13½ feet deep and 2 miles long just to let the surface water through. I think the improvement of Bayou Pierre below the Winsey would be attended by an enormous expense, besides overflowing the whole Spanish Lake country, which is well settled by small farms. The surrounding country being very low, it now acts as an outlet to the Winsey in very high water, taking off the surplus, and that much to the dread of the settlers of Spanish Lake.

Bayou Winsey enters Red River about 6 miles below Campte. Red River at this point is 470 feet wide from top of bank to top of bank. Surface of water 340 feet wide; from top of bank to surface of water, 45 feet; depth of water in channel, 41 feet.

Bayou Winsey at the junction with Red River is 225 feet from the top of bank to top of bank. Surface of water, 127 feet; surface of water to top of bank, 42 feet; depth of water, 26½ feet. This bayou heads almost south for about 3 miles, where it forms what is called Bayou Pierre proper, and then for 3 miles the bayou is a fine deep stream, free from obstructions, but with caving banks on both sides, many dry beds of different old bayous crossing. At this point comes Rapids No. 1, which has a fall of 4 feet in 200 feet, and is filled with mud lumps of red clay, very hard, apparently insoluble. The water on the rapids is about 1½ feet deep, and very rough and rapid on account of the great fall and mud lumps.

Fifteen hundred feet above comes Rapids No. 2, having about 3 feet fall, and very rapid, as the surface of water contracts to about 30 feet wide. At this stage of water I could not even cordell our boats over; had to take them out and carry over. The river at this point is quite full of snags, and from this point up there is but little clearing on the bayou, and the banks are caving fast and badly on both sides, immense trees falling in every hour.

Fifteen hundred feet farther up comes Rapids No. 3, of about the same fall and length. Half a mile up comes Rapids No. 4, of little less fall. One mile farther, Rapids No. 5, about 4 feet fall in 600. Rapids No. 6 falls about 2 feet in 200. Rapids No. 7, about ¼ mile farther up, falls about 2 feet in 200 feet. Rapids No. 8, at King's Shed, falls about 6 feet in 1,500 feet, and at the head of which there is a perpendicular fall of 3 feet. Rapids No. 9, at the head of Dolets Bayou, which has been leveed across by the State, is about 800 feet long; fall, about 3 feet. Half a mile above, Rapids No. 10, 2 feet fall, 400 feet long. Rapids No. 11, below Greening Ferry, is about 800 feet long, with a total fall of about 4 feet. Rapids No. 12, just below the foot of the lake, is about 3 feet fall and 400 feet long. These rapids are all of very hard mud, except No. 12, which is mixed with soft rock. The water at present being almost dead low, nothing can come up them on account of the current and depth of water, which is only about 1 to 1½ feet deep.

The distance by the bayou from Red River to Bayou Pierre Lake being about 21 miles, the snags which it will be necessary to remove average (by count) 54 to the mile. Many of these snags have been cut off by a company (chartered in 1870) called "Bayou Winsey and Bayou Pierre Navigation Company," but at the present stage of water they stand about 3 feet above the surface, and will all have to be cut or taken out. These snags, as a general thing, are much smaller than those found in Red River, very few being over 1 foot in diameter, but the sides of the banks are lined with them, ready to fall in the next high-water. I understand when Red River is up the current is not so great and these rapids are not seen. The bayou is unusually crooked, with very abrupt turns. The water averages about 15 feet deep, except on the rapids, and an average width of 140 feet. There is certainly more water in it now, at its low stage, than there is in Red River. Steamboats now, in high-water, go up the bayou to the foot of Lake Bayou Pierre and over the lake.

The rapids, I learn, are all moving up the river at the rate of about 1 mile a year. At that rate, in 20 years, the bayou will wash itself out if no new ones should form. The current of the bayou at the present stage of water between these rapids is very swift. We were not able to pull our boats up with the oars; compelled to cordell all the way. I think if a channel should be cut, say 25 feet wide, through these rapids, in a very few days it would wash out the full width of the river. That would require on this portion of the bayou (21 miles) the removal of about 20,000 cubic yards of earth, costing, with the aid of a dredge-boat, 50 cents per cubic yard, $10,000; cutting out 1,124 snags, at $3 each, $3,372; clearing, say, 60 feet on each side, will be 302 acres, at $15 per acre, all cut up, $4,530; in all, about $17,902; and this would give navigation at all seasons to Gravelly Point, or the foot of Lake Pierre.

From Gravelly Point the bayou widens out to about 350 feet (that is the surface of water at this stage; at high-water it is nearly half a mile). This narrow neck continues about two miles, the water being shoal, averaging about 1 to 1½ feet, the entire distance to the lake proper, which lake is nothing but a dense and almost impassable cypress brake, except in the northwest corner; this is a clear lake called Round Lake, water about 8 feet deep, and about one-third of a mile in diameter. Northwest of this Round Lake, for 8 miles, or, rather, the northwest arm of this lake, is nothing but a marsh, full of grass, no channel of any kind, and at present only about 0.8 foot of water, but many feet of mud. If the channel be cut in Lower Lake Bayou Pierre this arm would be drained perfectly dry. I could not get my boats through this dense grass, so went along the edge on foot. The lake covers about 15,000 acres of land. There is what is called the boat-channel, through this lake, 2½ miles long, into Round Lake. The trees have been cut for about 50 feet wide; and in high-water a boat or two will pass through during the year going up to Smithfield, situated on the northwest arm of the lake, running over the high grass, &c.

The water in the boat-channel at present is from 10 inches to 2 feet deep, full of cypress-knees and drift-logs, which, of course, are not in the way in high-water. The past summer, I am told, the channel was perfectly dry.

From Gravelly Point to the entrance of boat-channel is about 2½ miles, which will have to be dredged out all the way to a depth of at least 3 feet to collect water enough to wash it out. The current is very rapid; cannot pull up with oars at the present stage of water. The bottom is generally soft, and would require the removal of about 37,800 cubic yards of earth at, say, 30 cents per cubic yard, $11,340. No clearing to be done on the 2½ miles, no snags. From the entrance of the boat-channel to Round Lake, about 2½ miles, the work would be very heavy. It would be necessary to clear a channel 200 feet wide and 2½ miles long, equal to about 61 acres, at $15 per acre, $915, and dig a channel 4 feet deep and 30 feet wide through the cypress-knees and trees, equal to about 63,000 cubic yards, at 60 cents per cubic yard, $37,800.

From Round Lake to the foot of Lake Cannasanier, a distance of about 9 miles, the bayou is a clear, beautiful river 156 feet wide, water not less than 15 feet up to 40, free from all snags and obstructions of all kinds. Two miles below the foot of Lake Cannasanier, on the beautiful river enters Cross Bayou, which is formed by Prairie River and Bayou La Chute, which same Bayou La Chute will cause much trouble if not closed soon. It leaves Red River about 60 or 70 miles below Tone's Bayou at Powell's Plantation. It is caving very fast; current very rapid.

Cannasanier Lake is quite a large lake, 7 miles long and 3½ miles wide, but as a general thing very shoal water. The east half of the lake is a cypress-brake, and that portion not covered with cypress trees is so full of cypress-knees, that no skiff can get through on the present stage of water. The channel as you enter the lake passes around the westerly side close to shore. Water at the immediate entrance being only 1½ feet, and running along from 1½ to 2½ feet for 6 miles (following the meanderings of the lake), then at that point the channel makes a northeast course across the head of the lake until near the northeast corner. We follow that around to the mouth of Bayou

Pierre. The lake along the western side is lined with willow islands until you get to the 6-mile point, when the channel runs northeast across the lake among willow islands, and forms a deep bayou not over 50 feet wide for ½ mile, but with a depth of 20 feet, when it enters into a broad (160 feet wide) deep river, free from all obstructions, for 1½ miles, when you strike the foot of the raft.

The current from the raft to the Lake Cannasanier is very rapid, fully 6 miles per hour (at the present stage of water).

It was a mystery to me where all this water came from, but I find that Wallace Lake alone is the great reservoir, as the raft closes its mouth and its waters are backed up far in the country, and only let out through a small channel under the raft. The distance from the foot of Lake Cannasanier to the foot of the raft is about 14 miles, following the present channel. I think by digging out about two miles at the lower end of the lake a deep channel will wash entirely through in a few days, as the whole bottom of the lake is of very soft mud. This would require the removal of about 29,000 cubic yards at, say, 30 cents per cubic yard, $8,700. No clearing or snags.

I examined the raft on both sides, hoping to find some bayou that might be used to run around. There are 9 bayous on the east side, but they are so crooked and full of cypress trees, and all running into a large flat lake, through which a channel would have to be dug. It would cost fully as much to do this as to remove the raft, not taking into consideration the great benefit that its removal would be to the planters on Red River and Wallace Lake, who are now overflowed by the water in Bayou Pierre backed up by the raft. The lower 2 miles of this raft is solid, just exactly as the old one in Red River above Shreveport. My estimated cost of removing these 2 miles is $50,000. The bayou is filled with small islands of logs, upon which quite large trees, a foot in diameter, are now growing. The 2½ miles above appear to be of much more recent date. The logs under do not seem to be so imbedded in mud, and the depth is about 13 feet, width of bayou 190 feet. I believe when the 2 lower miles are taken out the upper 2½ miles could be taken out for $10,000 per mile, $25,000; making in all for the removal of the raft $75,000.

The bayou from the head of raft to Tone's Bayou, 6½ miles, is a fine deep stream, needs no improvement at present, with a depth of 15 to 30 feet and a width about 210 feet. You have already the survey of Tone's Bayou, with all its dimensions; the distance from the mouth to dam being about 1¾ miles, and an average width of 175 feet, and a depth of about 25 feet; the distance from dam to Red River being about ½ mile. The whole distance from the mouth of the Winsey, on Red River, to the head of Tone's Bayou, also on Red River, is about 62 miles via Bayou Pierre.

The distance from Shreveport to the mouth of Winsey, via Tones Bayou and Bayou Pierre, is about 45 miles shorter than by Red River proper. The amount of land reclaimed would be about 40,000 acres. The people say that much more could be reclaimed, but they are counting all the land bordering on Bayou Pierre; much of this land does not require draining. The banks of Bayou Pierre are about 4 feet lower than the banks of Red River (by Louisiana State engineer's report), and fall rapidly back to the swamp, leaving comparatively a very narrow belt for cultivation along the bayous and lakes.

From the most authentic data I can get, the total amount of cotton which would be shipped via Bayou Pierre would be 10,000 to 12,000 bales, and by this gain on Bayou Pierre 25,000 bales would be without transportation on Red River and Lake Bisteneau. The turning of Red River would ruin the navigation of that lake and also Boggy Bayou. Minden and the whole of Bossier Parish interior would be without navigation. The planters along Red River would have to haul their cotton across the swamp, which is always bad, to Bayou Pierre, crossing several bayous. Those on the east side of Red River would have to cross that stream also.

There is a company, before mentioned, called the "Bayou Winsey and Bayou Pierre Navigation Company," headquarters at Mansfield, who have a charter for 25 years, dated from 1870, with the object of clearing out these bayous and collecting toll. They have done considerable work in the way of cutting out snags in the Winsey and also the boat-clearing in Lake Bayou Pierre. I talked to several of the stockholders. They are willing to give up their charter and put in all the work they have done free if the government will finish the work.

RECAPITULATION OF THE COST OF CLEARING OUT THE ENTIRE DISTANCE FROM TONE'S BAYOU TO THE MOUTH OF THE WINSEY.

From the mouth of Winsey to Gravelly Point, 21 miles (at foot of Lake Bayou Pierre).

Cutting channel through rapids, 20,000 cubic yards, at 50 cents per cubic yard	$10,000
1,124 snags, at $3 each	3,372
Clearing 302 acres, at $15 per acre	4,530

From Gravelly Point to entrance of steamboat channel.

37,800 cubic yards excavation, at 30 cents per cubic yard	$11,340

From entrance of steamboat channel to Round Lake.

63,000 cubic yards excavation, at 60 cents per cubic yard	37,800
Clearing 61 acres, at $15 per acre	915

Lower end Lake Cannasanier.

29,000 cubic yards excavation, at 30 cents per cubic yard	8,700
Removal of raft	75,000
	151,657
To which add 15 per cent. for accidents, breakage, and cost of getting material and supplies to the works	22,747
Total cost	174,404

Respectfully submitted.

GEO. R. WILSON,
Assistant Engineer.

Capt. W. H. H. BENYAURD,
Corps of Engineers, U. S. A.

L 22.

EXAMINATION OF BAYOU BARTHOLOMEW, ARKANSAS AND LOUISIANA.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., January 22, 1879.

GENERAL: I have the honor to forward herewith the report of Mr. M. L. Lum, assistant engineer, of an examination of Bayou Bartholomew, Ark. and La., made under my direction.

The total length of the stream examined was 325 miles (pilot's measurement), extending from Baxter Station to State Line, 167 miles, and thence to the Ouachita, 158 miles.

An examination of the bayou below the State line was made in 1872 by Mr. A. H. Blaisdell, assistant engineer, under the direction of Lieut. Col. W. F. Raynolds, the report upon which will be found in that of the Chief of Engineers for 1872–'73, Part 2, page 383.

The obstructions to navigation consist of snags, sunken logs, and overhanging trees, and the improvement of the stream will consist in their removal. This can be done by means of a flatboat, rigged with crane machinery for pulling the snags, with additional crew for cutting the overhanging trees along the banks.

The estimated cost of this work is $23,005.

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Captain of Engineers.

Brig. Gen. A. A. HUMPHREYS,
Chief of Engineers, U. S. A.

REPORT OF MR. M. L. LUM, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., January 21, 1879.

CAPTAIN: I have the honor herewith to submit a report on the recent examination of Bayou Bartholemew, in the States of Arkansas and Louisiana.

The principal source of the bayou is Bird's Spring, situated among the pine hills in the westerly part of Jefferson County, and distant 16 miles northwest from Pine Bluff.

Before reaching the Louisiana line, the bayou flows through Jefferson, Lincoln, Drew and Ashley Counties, touching Desha and Chicot Counties on the west, the general course being parallel with the Arkansas River, at distances from it varying from 15 to 30 miles. The current is very sluggish, there being very few places where the velocity is 2 miles per hour, and the course of the bayou exceedingly tortuous. In the vicinity of Pine Bluff the Arkansas River is distant only 4 miles from the bayou, and at its highest stage has been known to flood the intervening country, and here it is proposed by parties interested in the bayou to have a canal cut, thus relieving the Arkansas River, in a measure, at its highest stage, and increase the current in the bayou, thereby removing some of the obstructions and benefiting the health of the people along its banks.

For a distance of 20 miles below Pine Bluff, on the right bank of the bayou and adjacent to it, are found bluffs 50 feet in height, covered with pine and scrub-oak, with soil of a sandy nature, while on the opposite side it partakes of the character of the Arkansas River Valley, the soil being, in most places, what is termed "buckshot," and the land being overflowed in high-water for a distance of one-half mile back from the bayou, the overflow having an extensive growth of gum, cypress, water oak, and hickory.

Here the pine hills on the right bank diverge from the bayou until, at Baxter (the crossing of the Little Rock, Mississippi River and Texas Railway), they are 4 miles distant, and the estimated distance by the bayou in all its meanderings being 130 miles to this point.

Baxter, distant 20 miles from Gaines' Landing, on the Mississippi River, has one store and six houses, and is of recent growth.

In this part of the bayou there is no appreciable change in the channel from year to year, it being from 50 feet to 100 feet in width for the first 70 miles above Baxter, winding between bluffs from 14 feet to 20 feet in height, and distant 500 feet apart, which is the width overflowed at high-water.

Small steamboats have been as high as Dr. Taylor's place (60 miles above Baxter), but the stream above that point is very shallow and the navigation impracticable. It is laid down on old maps as navigable to Able's Creek, distant 50 miles above Baxter, but at the present time this part of the bayou is very much obstructed with overhanging trees and fallen timber. Here, as above, the current is quite sluggish, the bottom of stream clay or mud, and fords are numerous.

CHARACTER OF ADJACENT COUNTRY.

The valley of the bayou is covered with a dense growth of cypress, gum, water oak, and hickory, while the bluffs which the bayou touches from side to side in its meanderings, and which are from 16 to 22 feet above low-water, are covered with ash, holly, chincapin, and the different varieties of oak, embracing red, post, cow, overcup, and white, which last is found in unlimited quantities, and all of it the finest quality of timber.

From the edge of the bluffs along the bayou on either side the ground descends at the rate of 8 feet per mile for 2½ miles, when on the right it rises abruptly to the pine hills, and on the left imperceptibly to the low divide between the Bayou Bartholomew and the Arkansas River waters.

For 1½ miles back from the bayou on either side the soil is very productive, having a subsoil of clay mixed with sand. Cypress brakes from 1 acre to 200 acres in extent are numerous 2 miles back from the bayou, having the finest quality of timber. This part of the bayou is thickly settled and the clearings are almost continuous along its banks.

At Baxter (the crossing of the railroad) the main channel of the bayou is 100 feet wide, the depth at low-water being 3 feet. The trestle-work obstructing the stream is 350 feet long, the pile-bents being 12½ feet center, and the height of rail 22 feet above bed of stream. Ordinary high-water comes within 4 feet of the rail, thus allowing only the passage of stave-boats 11 feet in width in certain stages of water, a number of which, 110 feet in length and drawing 6 feet of water, are now being built 11 miles above the bridge, which after passing, two of them will be lashed together.

No improvements have ever been made in the bayou above Baxter, with the exception of a few trees cut by the men engaged on the stave-boats, and which have been allowed to remain as obstructions in the channel.

In the year 1871, the railroad (which starts from Arkansas City on the Mississippi River) was completed to this point, and the track is now laid to Collins, 4 miles west of the bayou. Trains have run until within a month, three trips per week being made to this point; at present no trains are running over the road, the alignment at the Mississippi River end being changed in order to get the track above overflow.

Flatboats, 110 feet in length by 22 feet in width, and drawing 6 feet of water, went from this vicinity last season, carrying 147,000 oak staves to the mouth of the bayou. Shipment of cotton from Baxter, by rail, in 1878, within a radius of 5 miles on the north and 10 miles on the south, was 1,500 bales. No steamboat has come up to the railroad since 1875.

I made no examination of the bayou above Baxter, but the above information was obtained from reliable persons. This part of the bayou having been used so little by steamboats, I deemed an estimate for its improvement unnecessary.

BAXTER STATION TO LOUISIANA LINE.

[Estimated distance, 167 miles.]

In the first 25 miles (from Baxter to Rust's) the bayou varies from 50 feet to 150 feet in width, and at the time of examination was from 5½ feet to 10 feet in depth, being at that time 4 feet above low-water. This part is very much obstructed with overhanging trees and fallen timber, it being difficult to get along in our skiff, and at low-water it would be impossible.

No steamboats have been above Rust's since the running of the railroad to Baxter, and three trips per season to this point being the average.

From Rust's to the Louisiana line the bayou varies in width from 90 feet to 180 feet, and except at the fords and shoal places is from 5 feet to 10 feet in depth at low-water. Straight reaches of over a mile in length and nearly 200 feet in width are often met with. The current for the greater part of the distance does not exceed 1½ miles per hour, and comparatively few caving banks are met with, and those, with a few exceptions, are well protected by trees. No change of any account has been perceived in the channel for the last 20 years. The bed of the stream is for the most part mud or clay, inclining to sand on the shoals and fords. The lowest water usually from 1st of July to 1st of November.

TRIBUTARIES.

On the right bank 14 streams flow into the bayou, averaging from 5 feet to 25 feet in width, with the exception of Hill Bayou, Bare House Creek, and Cut-off Creek, which are from 30 feet to 40 feet in width at the mouth. In the vicinity of last-named, and distant from Baxter 64 miles, Spanish moss first makes its appearance and continues to the mouth of the bayou.

On the left bank 10 streams from 3 feet to 16 feet in width flow into the bayou; the streams on both sides draining the swamps and cypress brakes from 1½ to 3 miles back from the bayou.

CHARACTER OF ADJACENT COUNTRY.

The soil for 75 miles as you go down the bayou is very productive, and in good seasons will average one bale of cotton per acre, being a mixture of dark sand and clay, with sand or clay subsoil on the bluffs above overflow. In this part, as above Baxter, the highest ground is found at the bayou banks, which are 600 feet apart, and from 25 feet to 30 feet above low-water. The bayou winds from bank to bank, having the overflow first on one side and then on the other. Cypress and water-oak line the water's edge on either side, while gum, elm, and hickory cover the rest of the overflowed part. The banks are covered with a luxuriant growth of white oak, ash, holly, chincapin, and some walnut.

The greater part of the soil along the lower portion of this part of the bayou is not so productive; on the right bank at Hill Bayou (distant from Baxter 68 miles), pine hills from 30 feet to 40 feet in height are found adjacent to the bayou, which follow the stream for nearly a mile, when they give place to the banks found on the upper part, but at Sanford's Ford, 111 miles below Baxter, they again make their appearance, continuing for some distance, when the low banks, with a more fertile soil, take their place.

On the left bank in the vicinity of Portland the soil is very thin, the productive land being 1½ miles back from the bayou.

The clearings are continuous, either on one side or the other, from Baxter to the Louisiana line, and each plantation has its own cotton-gin. There are 60 steamboat landings and 10 wagon ferries.

At the Dean and Hancock places, distant respectively 47 and 59 miles from Baxter, high-water in 1874 ran into the overflow coming from the Mississippi River. The Hancock place is distant 17 miles by land from Collins Station, and the greater part of the intervening country is swampy, with no settlements.

There are only two settlements of any importance on this part of the bayou. Portland, situated on the left bank, and distant 99 miles from Baxter, has 3 stores and 6 houses, with a weekly mail. Poplar Bluff, also situated on the left bank, on a bluff 30 feet above low-water, and distant 135 miles from Baxter, has 5 stores and 15 houses; has a daily mail. From this point to the Mississippi River the distance is 35 miles; the country swampy, and the roads almost impassable in the rainy season. "Gum