20th Congress, 2d Session. [Doc. No. 99.] Ho. of Reps. Treas. Dept.

INUNDATED LANDS ON THE MISSISSIPPI.

LETTER

FROM

THE SECRETARY OF THE TREASURY,

TRANSMITTING

The information required by a resolution of the House of the 24th December last, in relation to lands on the Mississippi, in the State of Louisiana, which are rendered unfit for cultivation by the inundations of said river.

January 15, 1829.—Read, and laid upon the table.

Treasury Department,
14th *January*, 1829.

Sir: In obedience to the resolution of the House of Representatives of the 24th of December last, directing the Secretary of the Treasury to "communicate to the House any information in his possession, showing the quantity and quality of the public lands in the State of Louisiana which are rendered unfit for cultivation from the inundations of the Mississippi, the value of said lands when reclaimed, and the probable cost of reclaiming them," I have the honor to transmit, herewith, a report from the Commissioner of the General Land Office, dated the 12th instant; the statements and views contained in which are deemed to be of much interest on the subject embraced by the resolution.

I have the honor to be, with great respect,
Your obedient servant.
RICHARD RUSH.

The Hon. the Speaker
of the Ho. of Reps. U. S.

General Land Office, *Jan.* 12, 1829.

Sir: In compliance with a resolution of the House of Representatives; "directing the Secretary of the Treasury to communicate to this House any information in his possession, showing the quantity and quality of the public lands in the State of Louisiana which are rendered unfit for cultivation from the inundations of the Mississippi, and the value of said lands when reclaimed, and the probable cost of reclaiming them," I have the honor to report that the Mississippi, in its course between the 33d degree of north latitude, the northern boundary of Louisiana, and the Gulf of Mexico, inundates, when at its greatest height, a tract of country, the superficial area of which may be estimated at 5,429,260 acres; that por-

tion of the country thus inundated which lies below the 31st degree of latitude may be estimated at 3,183,580 acres; and that portion above the 31st degree of north latitude may be estimated at 2,245,680 acres, of which 398,000 acres lie in the State of Mississippi. This estimate includes the whole of the country which is subject to inundation by the Mississippi and the waters of the Gulf. A portion of this area, however, including both banks of the Mississippi, from some distance below New Orleans to Baton Rouge, and the west bank nearly up to the 31st degree of latitude, and both sides of the Lafourche for about fifty miles from the Mississippi, has, by means of levees or embankments, been reclaimed at the expense of individuals. The strips of land thus reclaimed are of limited extent; and, estimating their amount as equal to the depth of forty acres on each side of the Mississippi and Lafourche for the distance above stated, they will amount to about 500,000 acres, which, deducted from 3,183,580 acres, will leave the quantity of 2,683,580 acres below the 31st degree of latitude, which is now subject to annual or occasional inundations; this, added to the quantity of inundated lands above the 31st degree of latitude, makes the whole quantity of lands within the area stated, and not protected by embankments, equal to 4,929,160 acres.

By deepening and clearing out the existing natural channels, and by opening other artificial ones, through which the surplus water that the bed of the Mississippi is not of sufficient capacity to take off may be discharged into the Gulf, with the aid of embankments and natural or artificial reservoirs, and by the use of machinery (worked in the commencement by steam, and as the country becomes open and cleared of timber by wind mills) to take off the rain water that may fall during the period that the Mississippi may be above its natural banks, it is believed that the whole of this country may be reclaimed, and made, in the highest degree, productive.

The immense value of this district of country, when reclaimed, is not to be estimated so much by the extent of its superficies as by the extraordinary and inexhaustible quality of the soil, the richness of its products, and the extent of the population which it would be capable of sustaining. Every acre of this land lying below the 31st degree of north latitude might be made to produce three thousand weight of sugar; and the whole of it is particularly adapted to the production of the most luxuriant crops of rice, indigo, and cotton. Good sugar lands on the Mississippi partially cleared, may be estimated as worth $100 per acre, and rapidly advancing in value. The rice lands of South Carolina, from their limited quantity, are of greater value. It is believed that the exchangeable value of the maximum products of these lands, when placed in a high state of cultivation, would be adequate to the comfortable support of 2,250,000 people, giving a population of one individual for every two acres; and it is highly probable that the population would rapidly accumulate to such an extent as to banish every kind of labor from agriculture except that of the human species, as is now the case in many of the best districts of China; and this result would also have been produced in many parts of Holland, had not that country become, from the nature of its climate, a grazing country.

The alluvial lands of Louisiana may be divided into two portions: the first, extending from the 33d to the 31st degrees of north latitude, in a direction west of south, may be termed the upper plain, is 120 miles in length,

and generally from 25 to 30 miles in breadth, and, at particular points, is of still greater width. That portion below the 31st degree of north latitude may be termed the lower plain. It extends in a direction from northwest to southeast for about 240 miles, to the mouth of the Mississippi; is compressed at its northern point, but opening rapidly, it forms at its base a semicircle, as it protrudes into the Gulf of Mexico, of 200 miles in extent, from the Chafalaya to the Rigoletts. The elevation of the plain at the 33d degree of north latitude, above the common tide waters of the Gulf of Mexico, must exceed one hundred and thirty feet.

This plain embraces lands of various descriptions, which may be arranged into four classes:

The first class, which is probably equal in quantity to two-thirds of the whole, is covered with heavy timber, and an almost impenetrable undergrowth of cane and other shrubbery. This portion, from natural causes, is rapidly drained as fast as the waters retire within their natural channels, and, possessing a soil of the greatest fertility, tempts the settler, after a few years of low water, to make an establishment, from which he is driven off by the first extraordinary flood.

The second class consists of cypress swamps: these are basins, or depressions of the surface, from which there is no natural outlet; and which, filling with water during the floods, remain covered by it until the water be evaporated, or be gradually absorbed by the earth. The beds of these depressions being very universally above the common low water mark of the rivers and bayous, they may be readily drained, and would then be more conveniently converted into rice fields than any other portions of the plain.

The third class embraces the sea marsh, which is a belt of land extending along the Gulf of Mexico, from the Chafalaya to the Rigoletts. This belt is but partially covered by the common tides, but is subject to inundation from the high waters of the Gulf during the autumnal equinoctial gales: it is generally without timber.

The fourth class consists of small bodies of prairie lands, dispersed through different portions of the plain: these pieces of land, generally the most elevated spots, are without timber, but of great fertility.

The alluvial plain of Louisiana, and that of Egypt, having been created by the deposite of large rivers, watering immense extents of country, and disemboguing themselves into shallow oceans, moderately elevated by the tide, but which, from the influence of the winds, are constantly tending in a rapid manner to throw up obstructions at the mouths of all water courses emptying into them, it is fairly to be inferred that the alluvial plain of Egypt has, in time past, been as much subject to inundation from the waters of the Nile as that of Louisiana now is from those of the Mississippi; and that the floods of the Nile have not only been controlled and restricted within its banks by the labor and ingenuity of man, but have been regulated and directed to the irrigation and improvement of the soil of the adjacent plain: a work better entitled to have been handed down to posterity by the erection of those massive monuments, the pyramids of Egypt, than any other event that could have occurred in the history of that country.

That the labor and ingenuity of man are adequate to produce the same results in relation to the Mississippi river and the plain of Louisiana, is

a position not to be doubted; and it is believed that there are circumstances incident to the topography of this plain that will facilitate such results.

The Mississippi river, entering this plain at the 33d degree of north latitude, crosses it diagonally to the high lands a little below the mouth of the Yazoo; from thence, it winds along the highlands of the States of Mississippi and Louisiana to Baton Rouge, leaving in this distance the alluvial lands on its western bank; from a point a little below Baton Rouge, it takes an easterly course through the alluvial plain, and nearly parallel to the shores of the Gulf of Mexico, until it reaches the English Turn; and from thence, bending to the south, it disembogues itself into the Gulf of Mexico by six or seven different channels. The banks of the Mississippi, which are but two or three feet above common tide water near its mouth, gradually ascend with the plain, of which they constitute the highest ridges, to the 33d degree of north latitude, where they are elevated above the low water mark of the river from thirty to forty feet. The banks are, however, subject to be overflowed throughout this distance, except at those points protected by levees or embankments: this arises from a law incident to running water courses of considerable length, which is, that the floods in them acquire their greatest elevation as you approach a point nearly equidistant from their mouths and sources. The depth of the Mississippi is from 120 to 200 feet, decreasing, as you approach very near the mouth, to a moderate depth. Exclusive of a number of small bayous, there are three large natural canals or channels, by which the surplus waters of the Mississippi are taken off to the Gulf. The first of these, above New Orleans, is Lafourche, which, leaving the river at Donaldsonville, reaches the gulf in a tolerably direct course of about 90 miles. The Lafourche is about 100 yards wide; its bed is nearly on a level with the low water mark where it leaves the river; its banks are high, and protected by slight levees; and in high floods it takes off a large column of water. Above Lafourche, the Bayou Manchac, or Iberville, connecting with the Lakes Maurepas and Ponchartrain, takes off into the Gulf, through the Rigoletts and other passes, a considerable portion of the surplus water of the Mississippi: the bed of this bayou is 14 feet above the level of the low water of the Mississippi; and as it reaches tide water in a much shorter distance than the Mississippi itself, it would take off a large column of water if its channel was not very much obstructed.* Nearly opposite to Manchac, but lower down the river, is Bayou Plaquemine, a cut-off from the Mississippi to the Chafalaya; but as there is a considerable declination, in this part of the plain, of the alluvial lands, and being unobstructed in its passage, it is rapid, and takes off a large body of water; where it leaves the river, however, its bed is five feet above the level of the low water mark. About 88 miles above Manchac, and just below the 31st degree of latitude, is the Chafalaya. This is one of the ancient channels of the Mississippi river, and being very deep, carries off at all times great quantities of water; and were its obstructions removed, it would probably carry off a much larger quantity. As the distance from the point where the Chafalaya leaves the Mississippi, along its channel, to the Gulf, is only 132 miles, and that which the Mississippi traverses, from the point of separation to the Gulf, is 318 miles, it is evi-

* The difference between the highest elevation of the waters at the efflux of the Manchac, and the lowest level of the tide in Ponchartrain, is from 27 to 30 feet.

dent that a given column of water may be passed off in much less time through the channel of the latter stream. From this topographical description of that portion of the plain south of the 31st degree of latitude, it is evident, that, independent of the general and gradual declination of this plain, descending with the Mississippi it also has a more rapid declination towards the Lakes Maurepas and Ponchartrain on the east, and towards the valley of the great Lake of Attakapas on the west; and it may, as to its form and configuration, be compared to the convex surface of a flattened scollop shell, having one of its sides very much curved, and the surface of the other somewhat indented: there is, therefore, good reason to believe that by conforming to the unerring indications of nature, and aiding her in those operations which she has commenced, this plain may be reclaimed from inundation.

The quantity of water which has been drawn off from the Mississippi, through the Iberville, the Bayou Lafourche and the Chafalaya, has so reduced the volume of water which passes off through the Mississippi proper, that individual enterprise has been enabled to throw up embankments along the whole course of that river, from a point a little below that where the Chafalaya leaves the Mississippi nearly to its mouth, and for forty or fifty miles on each side of the Lafourche: the lands thus reclaimed will not, however, average forty acres in depth fit for cultivation, and may be estimated at four hundred thousand acres. This is certainly the most productive body of land in the United States, and will be in a very short period, if it is not at present, as productive as any other known tract of country of equal extent.

If the waters drawn off in any given time from the Mississippi, through the natural channels, now formed, were delivered into the Gulf through those channels in the same given time, then they would not overflow their natural banks, and the adjacent lands would be reclaimed; but this is not the fact; and the object can only be accomplished by increasing the capacity and numbers of outlets of the natural channels by which the water is now disembogued, and by forming other artificial ones, if necessary, by which the volume of water that enters into the lower plain of Louisiana in any given time may be discharged into the Gulf of Mexico within the same time. If that volume were ascertained with any tolerable degree of accuracy, then the number and capacity of the channels necessary for taking it off into the Gulf might be calculated with sufficient certainty. A reference to the map of that country will show that the rivers which discharge themselves into the lower plain of Louisiana, and whose waters are carried to the Gulf in common with those of the Mississippi, drain but a small tract of upland country: for Pearl river, and, if necessary, at a very moderate expense, the Teche, may be thrown into the ocean by separate and distinct channels.

At the thirty-first degree of north latitude, and near to the point where Red river flows into, and the Chafalaya is discharged from, the Mississippi, the waters of that river are compressed into a narrower space than at any other point below the thirty-third degree of north latitude: this may be considered as the apex of the lower plain. The contraction of the waters of the Mississippi at this point is occasioned by the Avoyelles, which, during high water, is an island, and is alluvial land, but of ancient origin: from this island a tongue of land projects towards the Mississippi, which, though covered at high water, is of considerable elevation. It is probable,

therefore, that, at the point thus designated, a series of experiments and admeasurements could be made, by which the volume of water discharged, in any given time, on the lower plain, by the Mississippi, at its different stages of elevation, might be ascertained with sufficient accuracy to calculate the number and capacity of the channels necessary to discharge that volume of water into the Gulf of Mexico in the same time. With this data, the practicability and the expense of enlarging the natural, and excavating a sufficient number of new channels to effect this object, might readily be ascertained. If that work could be accomplished by the Government, every thing else in respect to the lower plain should be left to individual exertion, and the lands would be reclaimed as the increase of the population and wealth of the country might create a demand for them.

The contraction of the plain of the Mississippi by the elevated lands of the Avoyelles, and the manner in which Red river passes through the whole width of the upper plain, in a distance of nearly thirty miles, has a strong tendency to back up all the waters of the upper plain; therefore it is, that, immediately above this point, there is a greater extent of alluvial lands, more deeply covered with water than at any other point perhaps on the whole surface of the plain of Louisiana; and at some distance below this point, the embankments of the Mississippi terminate. To enable individuals to progress with these embankments, and to facilitate the erection of others along the water courses, and to reclaim with facility the lands of the upper plain, it will probably be found to be indispensably necessary to draw off a considerable portion of this water by artificial channels. The Red river, arrested in its direct progress by the elevated lands of the Avoyelles, is deflected in a direction contrary to the general course of the Mississippi, and traverses the whole width of the upper plain in a circuitous course of upwards of thirty miles before it reaches that river. There is good reason to believe that the waters of the Red river, or a very large portion of them, in times past, found their way through Bayou Bœuf and the lake of the Attakapas to the ocean: and during high floods, a small portion of the waters of that river are now discharged into the Bayou Bœuf, at different points between the Avoyelles and Rapide. A deep cut from the Red river, through the tongue of elevated alluvial land east of the Avoyelles, to the Chafalaya, and opening the natural channels by which it now occasionally flows into the Bayou Bœuf, would probably take off the waters which accumulate at the lower termination of the upper plain with such rapidity, and reduce their elevation so much as to enable individual enterprise and capital to continue the embankments, which now terminate below this point, not only along the whole course of the Mississippi, but along all those extensive water courses running through the upper plain.

The Tensa, a continuation of Black river, is, for fifty miles above its junction with Red river, a deep water course, and in breadth but little inferior to the Mississippi. It draws a very small portion of its waters from the high lands, but communicates with the Mississippi by a number of lakes and bayous, at different points, from near its mouth to its source, which is near the thirty-third degree of latitude, and through these channels aids in drawing off the surplus water of the Mississippi, while it continues to rise: when the Mississippi, however, retires within its banks, the waters in these bayous take a different direction, and are returned through the same channels into the Mississippi. Particular local causes will produce this effect at particular points; but the general cause, so far as these

bayous connect with the Tensa, will be found in the fact that there is not a sufficient vent for the waters of the upper plain at the point of connexion with the lower plain of Louisiana. The Tensa is also connected, in times of high water, at several points, with the Washita and its branches. When the Mississippi has risen to a point a few feet below its natural banks, the whole of the upper plain of Louisiana is divided by the natural channels which connect the Mississippi with the Tensa, and the Tensa with the Washita, into a number of distinct islands of various extent. The banks of the rivers, and the natural channels which connect them, are very generally the most elevated lands; and each and all these islands might be reclaimed from inundation by embankments thrown entirely around them, of from six to twelve feet high; provision being made to take off the rain water, and that occasioned by leakage and accidental crevasses in the banks, with machinery. While the Mississippi is rising, the waters are carried off through these natural channels and their outlets into the lakes and the lowest and most depressed parts of the plain: during this process, there are currents and counter currents in every possible direction; but when the floods have attained their greatest known height, then this whole plain becomes covered with water, from a few inches to twelve feet deep, as its surface may be more or less depressed; and if it could be exposed to view, would exhibit the appearance of an immense lake, with a few insulated spots dispersed throughout it, such as the Island of Sicily, the banks of the lakes Concordia, Providence, and Washington, and some very narrow strips partially distributed along the banks of the Mississippi and the other water courses. If the whole of the upper plain were reclaimed in the manner above mentioned, then the waters, being contracted into much narrower channels, would necessarily be very considerably elevated above the point to which they now rise; and passing off on the lower plain with greater elevation and greater rapidity, and having only the present natural channels of outlet to the Gulf, the inevitable consequence would be, that the whole of the lower plain would be inundated, and probably parts of Attakapas and Opelousas would again be subject to inundation.

The reclamation of both of the plains of Louisiana will depend, under any possible plan that may be proposed, upon the practicability of tapping the Mississippi and Red rivers at one or more points, and to an extent that may draw off rapidly such a quantity of water as will prevent the refluent waters now collected just above the 31st degree of latitude from rising to the heights to which they now do, and the practicability of delivering the waters into the ocean within periods equal to those in which they were drawn off. We have seen that the natural channels of the Lafourche, Plaquemine, Iberville, and the Chafalaya have so reduced the mass of water in the Mississippi below their points of efflux, as to enable individuals, by very moderate embankments, to confine that part of the Mississippi within its banks. The Lafourche is the only one of these natural channels that takes off the waters to the ocean so rapidly and directly as to enable individuals to erect levees or embankments along its whole course. The passes at the Rigoletts and at Berwick's bay not being sufficient to take off the waters which flow through them as fast as they are discharged into their reservoirs, it is evident that no beneficial effect could be derived from tapping the Mississippi at any point on its eastern bank, or at any point on its western bank above the Lafourche, unless the capacity of the outlets at Berwick's bay and the Rigolets be greatly enlarged. The passes at the

Rigoletts are well known; and it is probable that, by enlarging them, and cutting off that portion of the waters of Pearl river which now flows through them, they might be made adequate to take off, in a sufficiently short period, the waters of Iberville and those of the short rivers of Feliciana, so as to prevent that portion of the plain between the Iberville and the city of New Orleans from being inundated, except so far as the waters of Ponchartrain, elevated by high winds and tides, may produce that effect. It is only, therefore, on the west bank of that river, or the south bank of Red river, that the proposed tappings can be made with the prospect of a successful issue.

The course of the Mississippi from Donaldsonville to New Orleans being nearly parallel to the Gulf, and the distance to the Gulf across that part of the plain being much shorter than that by its natural channel to tide water, that portion of the river presents eligible points for tapping, particularly near to New Orleans; the commerce of which, in time not perhaps distant, may require a deep cut to be made to the Gulf. The width of the river at Donaldsonville being about seven hundred yards, the rise above its natural banks about one yard, and its velocity two and a half miles an hour; if, then, by one or more tappings below this point, a volume of water of the above dimensions could be carried off to the ocean with equal velocity, then would the highest elevation of the river be reduced very considerably every where below such tapping, and for some distance above. Such a reduction of the elevation of this part of the river, aided by the clearing out of the rafts from the Chafalaya, would possibly produce so great a reduction of the refluent waters at the junction of the Red and Mississippi rivers as to enable individuals to proceed gradually to the reclamation of the whole of the upper plain by common embankments. It would then require only an increased capacity to be given to the outlets of the lake of Attakapas to ensure the reclamation of both plains. But if this effect cannot be produced by the tappings below the Lafourche, then they must be made at points higher up, either between Plaquemine and the Chafalaya, or at a point about the mouth of the Bayou Lamourie, or Du Lac, on Red river. A reference to the map will show that the waters of Red river can be taken to the Gulf from this point in an almost direct course, through channels that it is more than probable they formerly occupied, and in a distance of less than one half of that by which they reach the ocean through the channel of the Mississippi, and by forty or fifty miles less than that through the channel of the Chafalaya. A deep cut at this point of ten miles, through an alluvial soil, would discharge the waters of Red river into Bayou Bœuf; and as these waters would pass through an alluvial plain having probably a fall of not less than sixty feet in seventy miles from the point of tapping, there is reason to believe that they would work for themselves, without much artificial aid, a channel of great capacity.

The question then arises, how are these waters, in addition to the superabundant waters of the Chafalaya, which already overflow all the valley of the lake of Attakapas, to be taken off to the Gulf? To solve this question satisfactorily, it will be necessary to take a view of the outlets of the lake of Attakapas. The Teche is a natural canal, almost without feeders or outlet, except at its mouth; and having no doubt been a channel for a much larger mass of water in time past, its adjacent lands have been formed precisely as those of the Mississippi have been, and its banks of course

occupy the highest elevation of the country through which it runs. For forty miles above its mouth it is contracted by the waters of the Attakapas lake on the one side, and by those of the Gulf on the other, so as to exhibit almost literally a mere tongue of land just above high water mark. It enters Berwick's bay about eighteen miles from the Gulf. Nearly opposite to the mouth of the Teche, is the mouth of Bayou Black, or Bayou Bœuf: this bayou, like the Teche, is also a natural canal, occupying the highest elevation of a narrow tract of land extending eastwardly nearly to the Bayou Lafourche, that is seldom inundated, and which would seem to be a prolongation of the Attakapas country; inducing a belief that the Teche formerly discharged its waters, at a point farther east, into a bay that occupied the whole of the present plain, from the Attakapas lake to Bayou Lafourche and the Mississippi. It is this elevated ridge that causes the indentation in the lower plain to be deluged by the waters of the Mississippi, which, forcing a passage for themselves across the Teche, have formed an outlet, called Berwick's bay. This pass is narrow, and is about seven or eight feet deep, passing in part of its course through lands not of recent alluvion, and disembogues into the bay of Achafolia, through the lake of that name, and two or three other outlets.

Following up then this indication of nature, by cutting artificial outlets from the lake of Attakapas across the Teche, at different points, for a distance of fifteen or twenty miles above its mouth, at such places as the drains emptying into the ocean may approach nearest to Attakapas lake, giving to such cuts any width that may be required, and a depth that may be on a level with low water mark, and embanking the lake of Attakapas so as to raise it three feet above its present surface, it is believed that a capacity may be obtained for taking off any volume of water that it may be necessary to throw into the lake of Attakapas, and at an expense very trifling in comparison to the object to be obtained. All the waters of the Atchafalaya being thrown into lake Attakapas, and that lake embanked, the whole of the plain between it and the Mississippi would be exempt from inundation. The rain water, and that from the weepings and crevasses in the embankments, would find a reservoir in the deeper lakes and beds of Grand river, the surplus being taken off by machinery, or by tide locks in some of the bayous, which now connect with these lakes in the highest floods.

It is believed that three brigades of the topographical corps, operating for a few seasons from the 1st of November to the 1st of July, would be able to obtain sufficient data to decide upon the practicability of devising, and the expense of accomplishing, a plan that would effect the reclamation of both plains; but if it should be found to be impracticable, or too expensive for the state of the population and wealth of the country, yet the minute knowledge which they would obtain of the topography of the entire plain would enable them to designate different portions of it in both plains which could be reclaimed from inundation at an expense commensurate with the present capital and population of the country.

The gradual elevation of the plain of the Mississippi * by the annual de-

* The gradual elevation of the plain is not perceptible, because the gradual elevation of the beds of the water courses, arising from the same cause, occasions as general an overflow of their banks as formerly; but that which is perceptible is the rapid filling up of the ponds and shallow lakes; and there can be no question that the great annual alluvion and vegetable deposite must produce similar effects through the whole plain.

posites, and the accumulation of population and capital, will ultimately accomplish its entire reclamation from the inundations of the Mississippi; but the interposition of the Government, and the judicious expenditure of a few millions of dollars, would accomplish that object fifty or perhaps a hundred years sooner than it will be effected by individual capital, aided by the slow operations of nature.

I attach a small diagram of the country, as illustrative of some of the points referred to in this report.

With great respect,

Your obedient servant,

GEO. GRAHAM.

The Hon. RICHARD RUSH,
Secretary of the Treasury.

An estimate of the expense of excavating outlets from the Lake of the Attakapas to the Gulf of Mexico.

On the presumption that the waters of the Gulf of Mexico, at low tide, reach within six miles of the lake—and it is believed that they do, at several points between the Bayou Cypress and Berwick's Bay—let positions at one or more of the most favorable of these points be selected, the aggregate width of which shall be two thousand yards: let such portions of these positions as may be inundated at high water be drained by common embankments, so that oxen may be used in removing the earth: let excavations be made through them, of such numbers and of such widths as may be best adapted to the removal of the earth, leaving, however, the proportion of excavation to that of embankment as three to one. A number of canals will be then formed, with an embankment between each, the excavation of which, their beds being on a level with low water, would not average a depth of three feet. These proportions will give the amount of excavation as equal to 15,840,000 cubic yards, which, at 20 cents the cubic yard, gives $3,168,000 as the expense of excavating outlets, which, at low tide, would have the capacity of discharging from the lake, with great velocity, a column of water of fifteen hundred yards in width and one yard in depth, at the point where it left the lake.

No estimate, with any tolerable approximation to accuracy, can be made of the expense of excavating a deep cut from Red river to the Bayou Bœuf, and of enlarging the bed of that bayou: of the embankments along the Lake of the Attakapas, necessary to give it the required elevation; or

The Mississippi river is among the muddiest in the world, and deposites its muddy particles with great rapidity: its waters hold in solution not less than one sixteenth part of their bulk of alluvion matter, and some experiments are stated to give a greater proportion. If, then, within the embankments of the Mississippi, a piece of level ground be surrounded by a dike sixteen inches high, and filled with the waters of the Mississippi when above its banks, and those waters drawn off when they have deposited all their muddy particles, nearly one inch in depth of alluvion matter will have been obtained: if this process be repeated as often as practicable during a season of high waters, a quantity of alluvion will have been accumulated of not less than six or eight inches in depth. This process is similar to that termed warping in England, and is in use to some extent along the waters of the estuary of the Humber for manuring lands; and it is a process by which the lands of the plain of Louisiana will be rendered inexhaustible, so long as the Mississippi continues to bear its muddy waters to the ocean.

for tide-locks, machinery, &c. until an accurate survey on the ground be made. It is possible that the judicious expenditure of five millions of dollars by the Government would be sufficient to make the excavations and erect embankments, tide-locks and other machinery, that would be necessary to give such a control over the waters of the Mississippi and its outlets as to reduce them so nearly within their banks at high floods as to enable individual capital to progress with the entire embankment of them, and the reclamation of the whole plain.

The quantity of land belonging to the Government within the limits of the alluvial plain may be estimated at upwards of three millions of acres, which, at a minimum price of ten dollars per acre, would be upwards of thirty millions of dollars.

GALES & SEATON,
Printers to House of Reps.