REPORT

ON THE

COTTON PRODUCTION OF THE STATE OF LOUISIANA,

WITH A DISCUSSION OF

THE GENERAL AGRICULTURAL FEATURES OF THE STATE.

BY

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LETTER OF TRANSMITTAL.

UNIVERSITY OF CALIFORNIA,
Berkeley, Alameda Co., Cal., April 18, 1881.

HON. FRANCIS A. WALKER,
Superintendent of Tenth Census, Washington, D. C.

DEAR SIR: I transmit herewith a tabular presentation of results of the census enumeration in the state of Louisiana, so far as these concern the production of cotton; also, a report on the physico-geographical and agricultural features of the state of Louisiana, prepared in accordance with your instructions, and with the plans subsequently outlined by me and approved by you, for a more instructive and readable presentation of the enumeration-results relating to the culture and production of cotton, than can be given by the tabular and graphic methods alone. Unlike the publications made on the latter basis, it is intended, not alone for the statistician and student of political economy, but for the information of the general public, and more especially for that of intending settlers and immigrants.

It has always been a matter of surprise to me that out of so many state surveys, so few have given this important subject the benefit of systematic investigation and presentation for popular use. In my own work in several states, I have throughout considered this as the most immediately important object to be compassed, as bearing most directly upon the life-pursuit of the vast majority of the population; and it has seemed to me that the greater part of the want of appreciation and the reverses with which state surveys have proverbially had to contend, are directly traceable to an omission to conform, in this respect, to the natural and, I think, just expectations of the agricultural population. It is difficult to see on what ground the study and publication of the most recondite details of geology, lithology, and paleontology, should have precedence of the fundamentally important work that concerns directly the productive industries; yet this has been the course very commonly pursued, usually at the cost of premature, and at least temporary, stoppage of the entire work, with enormous losses of valuable material and of personal knowledge acquired by the members of the corps.

It thus happens that, in the case of some states whose geological structure is very accurately known, no concise physico-geographical and agricultural description as yet exists; although by a close abstraction and collation of data scattered through the published reports, such a one may be laboriously obtained. As this process will generally be undertaken only by few and specially interested persons, the result is that the general public remains uninformed as to the facts most broadly obvious to the inhabitants themselves and most essential to those contemplating immigration, yet inaccessible except through personal travel, private correspondence, or the *ex parte* representations of interested parties. Even where state bureaus of immigration exist, the information to be obtained is usually of a fragmentary and unsatisfactory character, and incapable of conveying to the seeker for a new home the kind of knowledge he desires in order to make his choice intelligently.

It has been my endeavor, in the compilation of the present report, to supply this deficiency, so far as the state of Louisiana is concerned, and more especially with reference to the industry under my immediate charge, viz, the production of cotton.

The sources of information available for the present paper, apart from data existing in encyclopedias, have, in the main, been the following:

For the topography of the Mississippi bottom and delta, the *Report on the Mississippi River, by Humphreys and Abbot.*

For the classification and analyses of the soils of the Mississippi bottom, the *Manuscript Notes and Reports of Dr. Eugene A. Smith*, now of the University of Alabama, state geologist and special agent in charge of the subject of cotton culture in the states of Alabama and Florida. The manuscripts referred to form part of the unpublished records of the geological survey of Mississippi, courteously placed at our disposal by the board of trustees of the University of Mississippi, at Oxford. The field-work was done by Dr. Smith, under my direction as state geologist of Mississippi, in the year 1871.

The chief sources of information regarding the rest of the state are, in the order of time:

Manuscript notes and published papers, the results of an expedition undertaken by the writer in November and December, 1877, under the auspices and at the expense of the Smithsonian Institution, for the investigation of the geology of southern Louisiana, and especially of the rock-salt deposit of Petite Anse island. The route was from Vicksburg down the Mississippi river to its mouths, landing at various points on the way; then via New Orleans and New Iberia to Petite Anse island, Weeks' island or Grande Côte, and Côte Blanche, on the Gulf coast.

Manuscript notes and published reports and papers relating to a geological and agricultural reconnaissance of Louisiana, undertaken by the writer, under the auspices of the New Orleans Academy of Sciences and of the Louisiana state bureau of immigration, in May and June, 1869. The route lay from New Orleans, via New Iberia, to Opelousas and Chicotville; thence, west to the Calcasieu river and down that stream, through the Calcasieu prairie, to lake Charles; thence, north to the Anacoco region and to Sabinetown, Texas; thence, via Manny, to Mansfield, De Soto parish; thence, crossing Red river, to Coushatta chute, and north to the salines of Bienville parish, and, via Winfield and Funne Louis, to Harrisonburg, and to Waterproof, in Tensas parish. This expedition determined the general geological structure of Louisiana and its main agricultural and topographical features.(a) Eleven out of the twenty-five soil analyses, hereinafter given, were made at the time, of specimens then collected; and most of the remainder are of samples of the same collection.

Almost simultaneously with the expedition just referred to, a *Geological and Topographical Survey* of the state was begun, under the auspices of the University of Louisiana, at Baton Rouge, and was continued for three years by Professors Samuel H. Lockett and H. V. Hopkins of that institution. The excellent work done by these gentlemen, during that time, has remained almost unnoticed, in consequence of the limited number of copies (200 each) printed of their annual reports. The latter so far amplify and complement the data obtained by me personally, as to leave no considerable portion of the state entirely undescribed; and I have thus been enabled to draw a measurably complete picture of the whole. As it is scarcely possible to give credit separately to the observations of each, and of myself, I can only state broadly, that by far the greater part of all the data not referring to portions of the state visited by me (as above noted), is derived from these reports; and that particularly the admirable and summary descriptions given of a number of parishes by Professor Lockett have, in some cases, been almost literally transcribed by me from his reports. This is especially true of the alluvial parishes from Pointe Coupée to Terrebonne, and from Vermillion to Cameron; also as regards those lying along, and north of, the North Louisiana and Texas railroad. A few valuable data have also been obtained from the *Botanical reports* of Mr. A. Featherman, accompanying the reports above referred to.

Some data and soil specimens were also obtained by Special Agent Dr. R. H. Loughridge, on the route from Shreveport to Bastrop, on his return from the Indian territory in 1880.

Finally, some general information has been derived from the returned schedules of questions on cotton culture, sent out by the Census Office. From some cause, these responses have not been as numerous as could be desired, and, as a consequence, the cultural and commercial details from some portions of the state are very imperfect. It

a See the following publications: *On the Geology of Lower Louisiana and the Rock Salt Deposit of Petite Anse*, American Journal of Science, January, 1869; *Final Memoir* on same, Smithsonian Contr. to Science, No. 248, June, 1872. *Preliminary Report of a Geological Reconnaissance of Louisiana*, De Bow's Review, September, 1860; American Journal of Science, November, 1869. *Report on the Geological Age of the Mississippi Delta* (examination of the shells brought up from the artesian well bored at New Orleans in 1856). Report of U. S. Engineer Department, 1870. *On the Geology of the Delta, and the Mud Lumps of the Passes of the Mississippi*, American Journal of Science, vol. 1, 1871. *On the Geological History of the Gulf of Mexico*, ibid., December, 1871. *On some points in the Geology of the Southwest*, ibid., November, 1872. *Supplementary and Final Report of a Geological Reconnaissance of Louisiana*, New Orleans, 1873.

is perhaps to be regretted that sugar-cane and rice were not provided for in our inquiries, inasmuch as nearly the whole of southern Louisiana was thus thrown outside of the scope of our questions, and has furnished only meager reports or none at all in some parishes.

The following is the general arrangement of the subject-matter, adopted in this report:

1. The tabulated results of the enumeration, so far as they concern the production of cotton, form the opening portion of this report. For convenience of discussion, I have thought it best to place on one table only the data relating to areas, population, and the production of cotton, making a separate one serve for the comparison of the several crops. Among the latter, I have selected those which, being of prime necessity, influence in either a direct or inverse ratio the production of cotton. Corn (maize) and sweet potatoes are, almost throughout the cotton-growing states, considered next in importance to cotton, as being the staple food-crops, upon whose success and production, as compared to cotton, the question of profit and loss chiefly turns.

2. A brief general outline of the physical geography of the state.

3. Description of the several agricultural regions, with analyses of soils and discussion thereof.

4. Separate descriptions of the several parishes, grouped under the heads of the agricultural regions to which they predominantly belong. In determining the group to which parishes embracing several distinct agricultural features should be assigned, I have endeavored to follow popular usage, and the character of the chief areas of production, rather than mere predominance of area; but in some cases the grouping might perhaps as well have been made otherwise. Each parish-description is preceded by statistical data relating to area, population, distribution of woodland and other agricultural divisions, production of cotton and other chief crops. The figures regarding areas are the results of map measurements made with care in the case of regional fractions; and in view of the discrepancies existing between the various maps of the state, and the more or less uncertain location of the limits of the several agricultural areas, these figures have, as a rule, been placed at the number divisible by five, nearest to the one actually resulting from the measurement; thus avoiding an apparent pretense of accuracy greater than the state of our knowledge at present warrants. County areas, population, and production are, of course, given in accordance with the results of the Tenth Census. In the case of parishes (counties) from which schedules have been received, abstracts of the latter, embracing answers to schedule-questions 1 to 39 inclusive (*i. e.*, those relating to the natural features and cotton production of the several soils), and those relating to the direction, mode, and cost of shipment, are appended.

5. A summary of the rest of the subject-matter of the schedules, relating to agricultural practice, is placed under headings embracing either one or several correlated questions; special answers are sometimes given, with the name of the parish from which the answer comes.

One point of great importance may, however, even now be noted and in a measure commented on. This is: the wide discrepancy between the capabilities of the soils of the several regions as reported by the inhabitants, and their *actual* production as resulting from a comparison of the acreage with the number of bales reported. The average weight of the latter, as given by the New Orleans Cotton Exchange, was, in 1879, about 475 pounds; and on this basis the fraction of bales and weight of lint produced per acre, as given in the tables, has been deduced; also, by multiplication by the number 3, the average product expressed in "seed-cotton". It will be seen from a comparison of the figures so obtained with those given in reports from the several parishes, that the actual product per acre varies usually between 35 and 50 per cent. of the product claimed, and only in few cases rises to 70 per cent., the latter in the case of the fresh soils of the river parishes.

This state of things may well give rise to serious reflections as to the causes of such wide discrepancies. Something may be credited to a natural and unconscious bias on the part of the reporters, to give the best possible account of their region, and, therefore, exceptional and maximum results, instead of averages, as showing what can be done under favorable circumstances. It is hardly to be regretted that this should be so, since the actual averages are easily obtained from the returns, and we are thus enabled to compare possibilities with actual performance.

Three chief causes present themselves as contributing to the result expressed in the latter, viz: unfavorable seasons; accidents from insects, diseases, overflows, &c.; and imperfect tillage and culture.

The first-mentioned cause is, of course, not controllable. The growing season of 1879 was somewhat dry, and a falling off of the cotton crop to the extent of one-third was a common estimate, though it may be questioned that it was justified by the general result. The second category already embraces much that is preventable by energetic and concerted action on the part of the producers. But even supposing that the crop of 1879 (which is the one to which the enumeration refers) was actually cut short by an unfavorable season, and accidents, to the extent claimed, there still remains a wide margin to be accounted for by the third cause, viz, imperfect culture.

Upon this point the answers given to the schedule-questions, and tabulated in Part III, throw important light. The shallow tillage and the rarity of fall-plowing, both tending to aggravate the washing away of the best portion of the soil by the winter-rains, are conspicuous among the probable factors, so far as tillage is concerned. As regards the general system of culture, the failure to rotate crops sufficiently, the imperfect return even of the cotton-seed to the soil, and the rarity of any effort to maintain its original productiveness by the other means known to advanced agriculture, are patent. It is a curious comment upon human nature, that the nearest approach to actual maintenance of the original product is found in some of the least productive regions, viz, in the pine flats of eastern Louisiana. Here the use of manure has already become a recognized part of the system, and the fact, that high production thus maintained pays better than to cultivate a large area of poor land, is being appreciated.

Many other interesting and important practical conclusions, that might be deduced from the data here given, are best left for a fuller consideration based upon more extended comparisons.

Very respectfully, your obedient servant,

EUGENE W. HILGARD.

TABULATED RESULTS OF THE ENUMERATION.

TABLE I.—AREA, POPULATION, TILLED LAND, AND COTTON PRODUCTION.

Parishes.	Areas.	POPULATION.						TILLED LAND.			COTTON PRODUCTION.						
		Total population.	Male.	Female.	White.	Color'd.	Average per square mile.	Acres.	Average per square mile.	Per cent. of area.	Per cent. of tilled land in cotton.	Area in cotton.	Total bales (475 lbs.).	Product per acre.			Cotton, acres per square mile.
														Bale.	Seed cotton.	Lint.	
	Sq. mls.											*Acres.*			*Lbs.*	*Lbs.*	
The State	45,420	939,946	468,754	471,192	454,954	484,992	20.7	2,507,935	55.2	8.6	34.9	864,787	508,569	0.59	840	280	19.0
ALLUVIAL REGION.																	
North of Red river.																	
East Carroll	400	12,134	6,325	5,809	1,023	11,111	30.3	56,793	142.0	22.2	70.7	40,167	38,160	0.95	1,353	451	100.4
West Carroll	380	2,776	1,402	1,374	1,339	1,437	7.3	10,071	26.5	4.1	54.7	5,517	4,012	0.73	1,041	347	14.5
Morehouse	842	14,206	7,086	7,120	3,547	10,659	16.9	57,379	68.1	10.6	49.8	28,590	23,481	0.82	1,170	390	34.0
Ouachita	640	14,085	7,384	7,301	4,502	10,183	22.9	48,847	76.3	11.9	59.5	29,040	18,720	0.64	912	304	45.4
Caldwell	535	5,767	2,886	2,881	2,870	2,897	10.8	18,267	34.1	5.3	54.3	9,910	6,504	0.66	939	313	18.5
Richland	578	8,440	4,430	4,010	3,161	5,279	14.6	31,409	54.3	8.5	50.3	15,800	11,631	0.74	1,053	351	27.3
Franklin	596	6,495	3,280	3,215	2,701	3,794	10.9	22,054	37.0	5.8	57.0	12,563	8,472	0.67	954	318	21.1
Madison	672	13,906	7,087	6,819	1,261	12,645	20.7	48,395	72.0	11.3	58.1	28,103	23,391	0.83	1,182	394	41.8
Tensas	612	17,815	9,039	8,776	1,571	16,244	29.1	78,679	128.6	20.1	64.3	50,555	41,859	0.83	1,182	394	82.6
Concordia	680	14,914	7,526	7,388	1,320	13,594	21.9	45,816	67.4	10.4	91.8	42,044	33,110	0.79	1,125	375	61.8
Catahoula	1,378	10,277	5,245	5,032	5,724	4,553	7.5	29,823	21.6	3.4	53.3	15,885	11,766	0.74	1,056	352	11.5
Total	7,313	121,415	61,690	59,725	29,019	92,396	16.6	447,533	61.2	9.6	62.2	278,192	221,115	0.79	1,125	375	38.0
South of Red river.																	
Avoyelles	852	16,747	8,665	8,082	8,483	8,264	19.7	84,787	99.5	15.5	28.0	23,722	18,355	0.77	1,098	366	27.8
Rapides	1,498	23,563	11,964	11,599	9,512	14,051	15.7	76,149	50.8	7.9	33.6	25,622	17,990	0.70	996	332	17.1
Pointe Coupée	575	17,785	9,102	8,683	4,785	13,000	30.9	56,594	98.4	15.4	42.6	24,136	18,935	0.78	1,110	370	42.0
West Baton Rouge	210	7,067	3,965	3,702	2,252	5,415	36.5	26,753	127.4	19.9	14.1	3,784	2,426	0.64	912	304	18.0
Iberville	646	17,544	8,892	8,652	4,784	12,760	27.2	42,122	65.2	10.2	1.8	771	570	0.75	1,068	356	1.2
Saint Martin	618	12,663	6,327	6,336	5,783	6,880	20.5	39,876	64.5	10.1	17.4	6,942	2,232	0.32	456	152	11.2
Assumption	327	17,010	8,631	8,379	8,038	8,972	52.0	36,511	111.7	17.4	0.8	285	119	0.42	600	200	0.8
Ascension	378	16,895	8,506	8,389	5,968	10,927	45.3	37,908	101.6	15.9	3.4	1,285	592	0.46	657	219	3.4
Saint James	308	14,714	7,630	7,084	4,850	9,864	47.8	54,675	177.5	27.7	.....	.....	.....	.....	.....	.....	.....
Saint John Baptist	190	9,680	5,023	4,663	3,855	5,831	51.0	29,213	153.8	24.0	.....	.....	.....	.....	.....	.....	.....
Saint Charles	284	7,161	3,719	3,442	1,401	5,760	25.2	21,171	74.5	11.0	.....	51	47	0.92	1,311	437	0.2
Total	5,881	161,435	82,424	79,011	60,611	100,824	27.5	505,759	86.0	13.4	17.1	86,598	61,275	0.71	1,011	337	14.7
Tide-water parishes.																	
Jefferson	395	12,166	6,184	5,982	4,864	7,302	30.8	19,767	50.0	7.8	.....	.....	.....	.....	.....	.....	.....
Orleans	187	216,090	100,892	115,198	158,367	57,723	1,155.6	4,436	23.7	3.7	.....	7	12	1.71	2,436	812	.....
Saint Bernard	680	4,405	2,437	1,968	2,104	2,301	6.5	11,850	17.4	2.7	0.2	248	146	0.59	840	280	0.4
Plaquemines	930	11,575	6,242	5,333	4,254	7,321	12.4	36,908	39.7	6.2	.....	.....	.....	.....	.....	.....	.....
Lafourche	1,024	19,113	9,761	9,352	11,282	7,831	18.7	44,802	43.7	6.8	.....	.....	.....	.....	.....	.....	.....
Terrebonne	1,800	17,957	9,300	8,657	8,613	9,344	9.9	40,403	22.4	3.5	.....	.....	.....	.....	.....	.....	.....
Saint Mary	648	10,891	10,564	9,327	6,717	13,174	30.7	66,326	102.4	16.0	.....	.....	.....	.....	.....	.....	.....
Cameron	1,545	2,416	1,216	1,200	2,087	329	1.6	5,743	3.7	0.6	28.9	1,662	636	0.38	543	181	1.1
Total	7,215	303,613	146,596	157,017	198,288	105,325	42.1	230,235	31.9	5.0	0.8	1,917	794	0.41	585	195	0.3
BLUFF REGION.																	
West Feliciana	370	12,809	6,352	6,457	2,287	10,522	34.6	28,985	75.0	12.2	72.7	21,072	11,810	0.56	798	266	57.0
East Feliciana	483	15,132	7,341	7,791	4,497	10,635	31.3	52,218	108.1	16.9	54.3	28,368	11,098	0.39	555	185	58.7
East Baton Rouge	442	19,966	10,038	9,928	7,103	12,863	45.2	40,026	95.6	14.1	29.5	11,808	5,756	0.49	699	233	20.7
Total	1,295	47,907	23,731	24,176	13,887	34,020	37.0	121,229	95.1	14.6	50.5	61,248	28,664	0.47	669	223	47.3
ATTAKAPAS REGION.																	
Iberia	582	16,676	8,532	8,144	8,100	8,576	28.7	49,604	85.2	13.3	15.0	7,443	2,482	0.33	474	157	12.8
Lafayette	262	13,235	6,708	6,527	7,694	5,541	50.5	62,704	239.3	37.4	20.0	12,517	3,489	0.28	399	133	47.8
Saint Landry	2,276	40,004	20,538	19,466	20,473	19,531	17.6	137,370	60.4	9.4	30.7	42,135	23,148	0.55	783	261	18.5
Vermillion	1,226	8,728	4,364	4,364	6,771	1,957	7.1	25,380	20.7	3.2	9.4	2,379	537	0.23	327	109	1.9
Total	4,346	78,643	40,142	38,501	43,038	35,605	18.1	275,008	63.3	9.9	23.4	64,474	29,656	0.46	657	219	14.8
LONG-LEAF PINE REGION.																	
Calcasieu	3,400	12,484	6,473	6,011	9,919	2,565	3.7	14,003	4.1	0.6	10.7	1,493	514	0.34	486	162	0.4
Vernon	1,540	5,160	2,520	2,640	4,783	377	3.4	16,308	10.6	1.7	20.4	4,791	1,662	0.35	498	166	3.1
Grant	642	6,188	3,096	3,092	3,320	2,868	9.6	24,094	37.5	5.9	46.3	11,155	5,158	0.46	657	219	17.4
Winn	970	5,846	2,914	2,932	4,797	1,049	6.0	22,548	23.2	3.6	32.7	7,379	3,002	0.41	585	195	7.6
Livingston	600	5,258	2,694	2,564	4,265	993	8.8	10,467	17.4	2.7	37.0	3,876	1,344	0.35	498	166	6.5
Saint Helena	423	7,504	3,803	3,701	3,328	4,176	17.7	28,285	66.9	10.4	48.2	13,626	5,328	0.39	555	185	32.2
Tangipahoa	790	9,638	4,882	4,756	5,608	4,030	12.2	21,021	26.6	4.2	36.5	7,682	2,934	0.38	543	181	9.7
Saint Tammany	923	6,887	3,521	3,366	4,258	2,629	7.5	3,895	4.2	0.7	5.8	225	102	0.45	642	214	0.2
Washington	608	5,190	2,635	2,555	3,475	1,715	7.8	18,224	27.3	4.3	35.0	6,371	2,338	0.37	528	176	9.5
Total	9,956	64,155	32,538	31,617	43,753	20,402	6.4	158,840	16.0	2.5	35.6	56,598	22,382	0.40	570	190	5.7

TABLE I.—AREA, POPULATION, TILLED LAND, AND COTTON PRODUCTION—Continued.

Parishes.	Areas.	POPULATION.						TILLED LAND.			COTTON PRODUCTION.					
		Total population.	Male.	Female.	White.	Color'd.	Average per square mile.	Acres.	Average per square mile.	Per cent. of area.	Per cent. of tilled land in cotton.	Area in cotton.	Total bales (475 lbs.).	Product per acre.			Cotton, acres per square mile.
														Bale.	Seed cotton.	Lint.	
OAK UPLANDS.	*Sq. mls.*											*Acres.*			*Lbs.*	*Lbs.*	
Sabine	1,008	7,344	3,691	3,653	5,486	1,858	7.3	18,524	18.4	2.9	32.1	5,952	2,313	0.39	555	185	5.9
Natchitoches	1,290	19,707	9,760	9,947	7,638	12,069	15.3	58,969	45.7	7.1	45.4	26,784	15,320	0.57	813	271	20.8
De Soto	856	15,603	7,722	7,881	5,116	10,487	18.2	82,239	96.1	15.0	46.0	37,807	11,298	0.30	426	142	44.2
Caddo	852	26,296	13,157	13,139	6,921	19,375	30.9	95,409	112.0	17.5	48.5	46,238	20,963	0.45	642	214	54.4
Bossier	773	16,042	8,189	7,853	3,256	12,786	20.8	69,420	89.8	14.0	53.5	37,133	25,078	0.68	969	323	48.0
Webster	612	10,005	5,143	4,862	4,322	5,683	16.3	42,402	69.3	10.7	38.7	16,401	6,255	0.38	513	181	26.8
Red River	386	8,573	4,347	4,226	2,507	6,066	22.2	33,930	87.9	13.7	56.6	19,200	11,512	0.60	855	285	49.7
Bienville	856	10,442	5,234	5,208	5,455	4,987	12.2	45,089	52.7	8.2	40.6	18,242	7,208	0.40	570	190	21.3
Jackson	590	5,328	2,636	2,692	2,925	2,403	9.0	26,604	45.1	7.0	38.1	10,138	3,753	0.37	528	176	17.2
Lincoln	485	11,075	5,555	5,520	6,177	4,898	22.8	108,084	222.9	34.8	21.2	22,990	9,723	0.42	600	200	47.4
Claiborne	790	18,837	9,460	9,377	8,541	10,296	23.7	126,000	158.3	24.7	36.0	46,567	19,568	0.42	600	200	58.5
Union	910	13,526	6,739	6,787	8,014	5,512	14.9	62,661	68.9	10.8	45.2	28,308	11,692	0.41	585	195	31.1
Total	9,414	162,778	81,633	81,145	66,358	96,420	17.3	769,331	81.7	12.8	41.0	315,760	144,683	0.46	657	219	33.5

TABLE II.—PRODUCTION OF LEADING CROPS.

Parishes.	COTTON.		SUGAR-CANE.			CORN.		SWEET POTATOES.		RICE.		OATS.	
	Acres.	Bales (475 lbs.).	Acres.	Sugar (hhds.).	Molasses (gallons).	Acres.	Bushels.	Acres.	Bushels.	Acres.	Pounds.	Acres.	Bushels.
ALLUVIAL REGION.													
North of Red river.													
East Carroll	40,167	38,160	.....	.....	.....	7,115	126,691	15	920	.....	.....	15	350
West Carroll	5,517	4,012	.....	.....	.....	3,868	58,062	27	3,545	.....	.....	9	215
Morehouse	28,590	23,481	78	.....	10,601	17,846	286,294	496	19,158	.....	.....	301	3,568
Ouachita	29,040	18,729	36	.....	4,100	13,143	130,993	379	28,310	.....	.....	143	1,158
Caldwell	9,919	6,504	39	.....	3,192	5,717	53,312	182	17,609	3	2,625	188	1,616
Richland	15,809	11,631	3	.....	455	9,378	140,855	66	6,643	.....	.....	19	195
Franklin	12,563	8,472	.....	.....	.....	7,235	100,708	149	20,670	.....	.....	94	1,280
Madison	28,103	23,301	.....	.....	.....	7,797	127,459	140	5,830	.....	.....	15	250
Tensas	50,555	41,859	.....	.....	.....	11,427	205,797	271	25,893	.....	.....	.....	.....
Concordia	42,044	33,110	.....	.....	.....	6,114	109,333	162	16,098	.....	.....	7	75
Catahoula	15,885	11,766	24	.....	2,100	11,094	134,053	264	28,161	.....	.....	35	509
Total	278,192	221,115	180	.....	20,448	100,734	1,473,557	2,151	172,837	3	2,625	826	9,216
South of Red river.													
Avoyelles	23,722	18,355	890	1,374	90,835	21,403	456,039	510	36,917	178	201,390	18	340
Rapides	25,622	17,990	1,875	1,832	134,531	29,366	488,370	232	26,814	2	923	108	2,481
Pointe Coupée	24,136	18,935	6,027	4,933	334,985	14,817	305,470	188	11,362	.....	.....	5	75
West Baton Rouge	3,784	2,426	6,400	6,325	471,365	7,263	170,591	68	4,554	.....	.....	17	340
Iberville	771	579	16,687	15,273	1,220,518	11,991	231,596	52	3,431	3,129	2,198,550	16	320
Saint Martin	6,942	2,232	3,525	3,253	181,617	11,283	211,995	412	30,427	7	3,187	.....	.....
Assumption	285	119	12,945	11,931	789,898	14,055	356,995	138	9,023	1,420	226,880	6	40
Ascension	1,285	592	15,545	13,427	848,381	6,112	110,137	241	14,103	616	333,001	38	320
Saint James	.....	.....	15,227	14,251	1,017,352	11,303	189,700	130	12,595	5,870	2,718,586	.....	.....
Saint John Baptist	.....	.....	9,453	9,614	586,563	2,888	89,906	3	148	696	501,960	.....	.....
Saint Charles	51	47	7,787	8,892	559,755	1,287	11,015	28	1,820	1,320	609,943	.....	.....
Total	86,598	61,275	96,361	91,105	6,235,800	131,768	2,622,714	2,011	151,194	13,238	6,794,420	208	3,976
TIDE-WATER PARISHES.													
Jefferson	.....	.....	6,136	6,041	529,630	2,065	30,210	88	4,253	1,841	825,774	.....	.....
Orleans	7	12	1,102	864	72,890	35	610	48	2,189	1,332	1,239,240	.....	.....
Saint Bernard	248	146	2,879	3,373	149,580	395	6,945	215	11,572	1,807	1,027,200	.....	.....
Plaquemines	.....	.....	12,684	14,017	970,324	1,767	30,469	46	855	10,181	6,609,054	.....	.....
Lafourche	.....	.....	12,249	11,185	832,943	16,018	292,668	331	27,382	9,732	4,692,334	.....	.....
Terrebonne	.....	.....	15,390	13,751	897,355	14,338	291,833	459	30,405	705	397,554	.....	.....
Saint Mary	.....	.....	17,396	16,536	913,843	11,802	210,074	136	5,586	.....	.....	.....	.....
Cameron	1,662	636	51	10	3,087	2,726	43,255	184	13,991	12	7,050	.....	.....
Total	1,917	794	67,947	65,777	4,369,652	48,646	905,764	1,507	96,213	25,610	14,799,106	.....	.....
BLUFF REGION.													
West Feliciana	21,072	11,810	22	4	2,220	9,000	140,595	271	20,712	5	5,000	64	1,425
East Feliciana	28,368	11,098	169	9	18,520	16,522	206,307	1,067	57,394	19	7,326	501	7,752
East Baton Rouge	11,808	5,756	3,584	3,366	292,650	11,735	211,449	443	27,727	6	750	218	3,453
Total	61,248	28,664	3,775	3,379	313,390	37,257	558,351	1,781	105,833	30	13,076	783	12,630
ATTAKAPAS REGION.													
Iberia	7,443	2,482	6,501	6,399	297,654	23,740	508,430	917	54,413	33	21,280	165	1,270
Lafayette	12,517	3,489	783	631	30,889	21,713	350,604	469	27,805	110	40,063	.....	.....
Saint Landry	42,135	23,148	2,711	2,877	190,937	57,411	831,181	1,376	63,643	856	246,643	81	1,725
Vermillion	2,379	537	1,574	1,295	66,672	13,554	166,709	360	14,440	606	368,623	7	66
Total	64,474	29,656	11,569	11,202	586,152	116,418	1,856,924	3,122	160,301	1,605	676,609	253	3,061
LONG-LEAF PINE REGION.													
Calcasieu	1,493	514	67	28	3,676	7,995	98,317	517	40,834	600	337,224	337	3,057
Vernon	4,791	1,662	22	.....	2,570	8,320	74,234	284	32,538	31	10,865	682	5,083
Grant	11,155	5,158	.....	.....	.....	8,177	95,179	22	1,630	.....	.....	.....	.....
Winn	7,379	3,002	41	.....	3,730	8,588	81,651	250	27,024	4	4,900	986	7,931
Livingston	3,876	1,344	127	43	8,989	3,936	52,911	399	35,122	166	61,050	91	975
Saint Helena	13,626	5,328	114	1	10,147	10,540	113,855	661	52,775	68	23,722	1,115	11,053
Tangipahoa	7,682	2,934	396	138	43,346	6,617	82,268	677	61,982	248	104,080	2,256	24,844
Saint Tammany	225	102	90	14	7,513	1,224	16,086	441	30,202	127	49,719	108	1,370
Washington	6,371	2,338	68	.....	7,210	7,974	85,306	480	42,581	264	166,915	1,733	15,936
Total	56,598	22,382	925	224	87,181	63,371	699,807	3,781	324,688	1,508	898,475	7,308	70,249

TABLE II.—PRODUCTION OF LEADING CROPS—Continued.

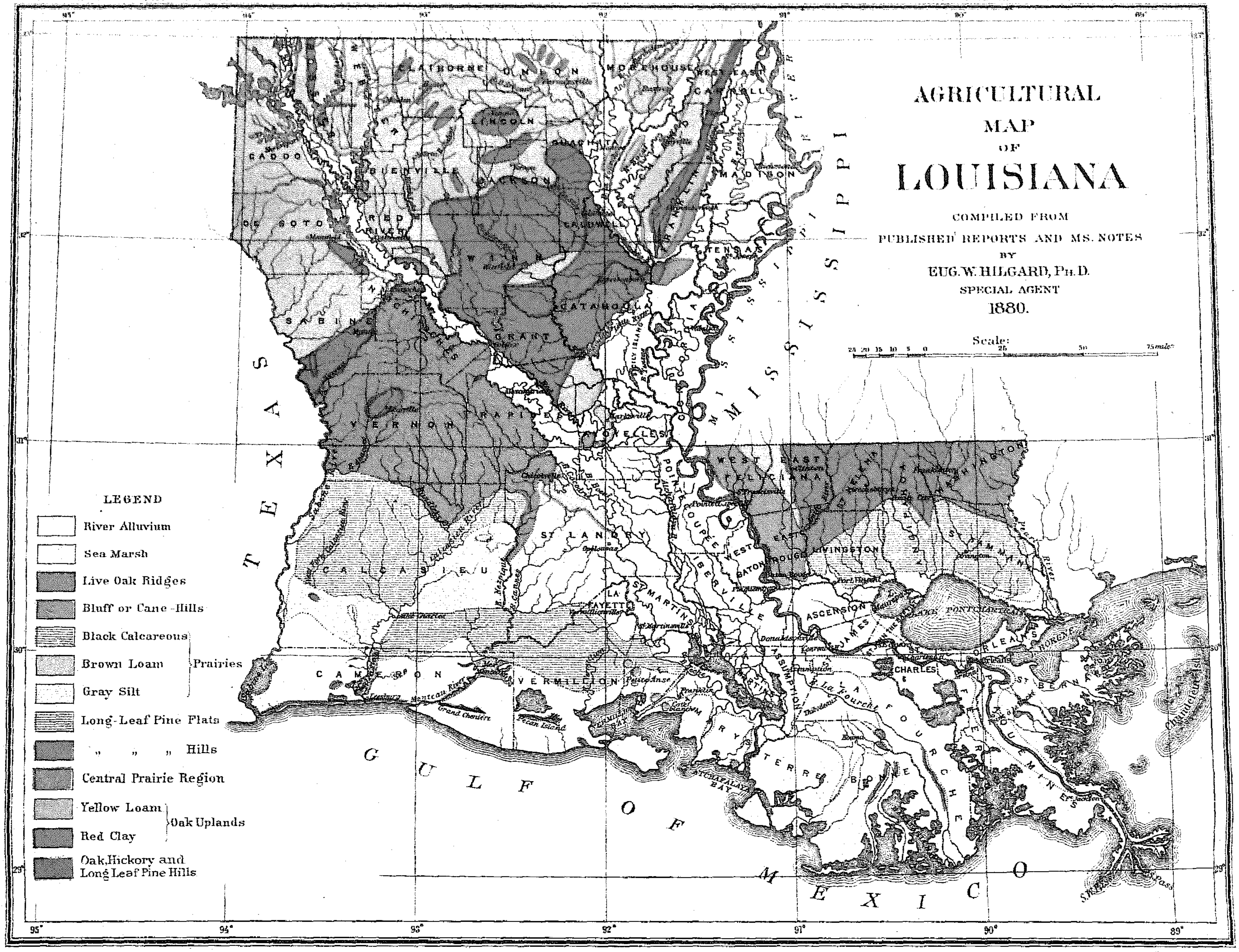
Parishes.	COTTON.		SUGAR-CANE.			CORN.		SWEET POTATOES.		RICE.		OATS.	
	Acres.	Bales (475 lbs.).	Acres.	Sugar (hhds.).	Molasses (gallons).	Acres.	Bushels.	Acres.	Bushels.	Acres.	Pounds.	Acres.	Bushels.
OAK UPLANDS.													
Sabine	5,952	2,313	85	.....	9,539	7,971	60,897	101	19,821	2	1,900	487	4,355
Natchitoches	26,784	15,320	28	.....	1,875	17,871	151,545	197	19,541	3	1,500	362	3,211
De Soto	37,807	11,298	34	9	3,337	31,080	158,665	733	54,528	.....	.....	616	5,200
Caddo	46,238	20,963	1	.....	52	23,169	156,118	315	25,203	1	600	446	4,100
Bossier	37,133	25,078	7	.....	444	20,153	176,630	175	12,458	.....	.....	1,041	12,725
Webster	16,401	6,255	120	10	10,409	14,824	126,270	385	38,345	.....	.....	2,556	22,617
Red River	19,200	11,512	9	.....	1,048	10,566	82,250	88	9,003	.....	.....	88	1,005
Bienville	18,242	7,208	108	.....	11,087	19,255	117,523	305	24,019	.....	.....	2,004	13,913
Jackson	10,138	3,753	52	.....	5,155	9,572	63,049	266	20,465	.....	.....	1,648	10,615
Lincoln	22,990	9,723	232	.....	25,303	21,602	150,165	265	20,843	.....	.....	2,634	17,071
Claiborne	46,567	19,568	99	.....	10,115	42,920	332,158	471	44,784	.....	.....	4,394	28,175
Union	28,308	11,692	60	.....	5,261	25,551	197,302	229	18,034	.....	.....	1,097	7,661
Total	315,760	144,683	835	19	83,625	244,534	1,772,572	3,620	307,044	6	4,000	17,423	130,708
Total for the State	864,787	508,569	181,592	171,706	11,696,248	742,728	9,889,680	17,923	1,318,110	42,000	23,188,311	26,861	220,840

PART I.

PHYSICO-GEOGRAPHICAL AND AGRICULTURAL FEATURES

OF THE

STATE OF LOUISIANA.



Julius Bien & Co. lith.

OUTLINE OF THE PHYSICAL GEOGRAPHY

OF THE

STATE OF LOUISIANA.

Louisiana is situated between the meridians of 89° and 94° W. longitude, and between the parallels of 28° 56′ and 33° N. latitude. By far its greater portion (about 37,030 square miles) lies west of the Mississippi river. There is a not inconsiderable uncertainty in respect to its total area, which is commonly given at 41,346 square miles; but according to map measurements lately made, is greater by several thousand square miles, viz, about 45,420 square miles, exclusive of fresh-water lakes, land-locked bays, and of lake Pontchartrain; of this area about 20,100 square miles is lowland belonging to the alluvium of the Mississippi and Red rivers, and to the marsh region of the coast; the rest, or over one-half of the state, being uplands of varying character.

CLIMATE.—Owing to its nearness to the Gulf of Mexico and the prevalence of winds from that direction, the climate of Louisiana is much less extreme than that of the states lying farther north; the summer heat being less oppressive, though more prolonged, and the winter's average temperature (52.8° at New Orleans, 45.4° at Shreveport) very mild, though liable at times to sudden and severe "cold snaps" brought on by northwesterly storms, which restrict the culture of tropical fruits on a large scale to the immediate neighborhood of the Gulf coast. On such occasions the temperature may fall to 17° even at New Orleans, and to 15° in northern Louisiana. November, December, and January are the coldest months—June, July, and August the hottest; the temperature ranging from 74° to 98°, with a mean of 81.6° at New Orleans, while at Shreveport the range of temperature within the same months is from 64° to 95°, with a mean of about 81°.

The rain-fall at New Orleans amounts to nearly 73 inches annually; at Shreveport about 47 only, but increases slightly toward the Mississippi valley. At New Orleans the rain-fall is most copious during the three hottest months, and somewhat less during the three coldest; during both, about 40 inches of rain-fall is received, the rest of the annual precipitation being more or less evenly distributed over the spring and autumn. The summer rains frequently come accompanied by violent thunder-storms from the northwest; but the southwest is the regular rain wind. The same holds true, more or less, all over the state, the regular summer showers being considered as highly conducive to the welfare of the cotton crop, providing they are not too much prolonged at any one time.

GEOLOGICAL FEATURES.—The figures given above show sufficiently the incorrectness of the impression, very generally prevailing, that Louisiana is "wholly alluvial". Even as regards population, a comparison of that of the alluvial region with that of the upland portion of the state, exhibits the fact that nearly forty-seven per cent. of the entire population, outside of the city of New Orleans, belongs to the uplands, and that among this portion is found not less than six-tenths of the rural white population of the state.

Strictly speaking, even a large portion of the flood plains of the Mississippi and Red rivers is not properly alluvial, the soils being directly derived from deposits formed at a time considerably anterior to the existence of the present river channels. Such is the case with the greater part of the heavy "buckshot" soils which occupy the portions of the bottom where certain strata of dark-colored clay come to the surface. These clays underlie the entire plain, from the Gulf coast as high as Memphis and Shreveport, at depths varying from one to forty feet; and appear to be absent only where the river or its branches have cut them away. They appear to have been deposited at a time when the whole of the valleys was one continuous swamp, without any very definite channels. (*a*)

These "buckshot" clays are but the older portion of the "Champlain" formation (most definitely exhibited at the Port Hudson bluff), whose higher strata form the "bluff-lands" and "cane-hills" on the eastern border of the Mississippi trough, and the Attakapas prairies, as well as the "Five Islands" in southwestern Louisiana.

a See on this subject the writer's "Memoir on the Geology of Lower Louisiana and the Rock-Salt Deposit of Petite Anse", in Smithsonian Contr. Sci., No. 248; also papers in the Amer. Jour. Sci.

North of these prairies, and participating in the general southward dip of the formations of the state, there appear at or near the surface the beds of sand and gravel belonging to the "Stratified Drift"; and these are found capping especially the higher ridges which occur more or less abundantly all over the upland portion of the state. They are seen in the bed of the Mississippi river just above the Port Hudson bluff, but rise northward and form part, or sometimes almost the whole, of the high "bluffs" on either side of the valley. The brown and black sandstone fragments, so common on the crests of sandy ridges in northwestern Louisiana, belong to this drift formation, whose most southern exposure of gravel is found overlying the salt deposit of Petite Anse.

North of the sand and gravel belt bordering the prairies and pine flats, we reach the territory of the Tertiary formations. The most southerly (and therefore newest) of these is the "Grand Gulf" group of blue, green, and white clays and claystones, and clay-sandstones. These rise into high ridges as we advance northward in the parishes of Vernon, Sabine, Natchitoches, Grant, and Catahoula, forming a prominent hilly belt across the state, and terminating in the remarkable hills of Sicily island (see below).

Northward again of this transverse ridge we find, in Sabine, Grant, and Catahoula parishes, a narrow belt, within which the calcareous marls and limestones of the marine Tertiary ("Vicksburg and Jackson") groups approach the surface, and form a country more or less spotted with small prairies ("Central prairie region"). This belt abuts in high ridges on the valley of the Washita in Caldwell parish (see below), and here chiefly the huge fossil bones of the zeuglodon are found.

So far, the geological strata show a definite dip southward to the Gulf; but northward of the prairie belt the dip seems to relate more or less to a (mostly subterranean) ridge or "backbone" of older rocks—Cretaceous limestone—which appears to extend from the prairie region of southwestern Arkansas, in a southeast direction, diagonally across western Louisiana, marking approximately the "divide" between the Washita and Red rivers, and reaching the Gulf shore at the rock-salt deposit of Petite Anse, which undoubtedly is a part of the same formation as that from which, in northern Louisiana, numerous salt springs flow. These springs or "licks" occur in flats in Webster, Bienville, and Winn parishes; some of them have been utilized for the manufacture of salt, and in all of them the Cretaceous limestone is found within a short distance from the surface, and of great thickness. Near Winfield this limestone rises into a ridge 75 feet above the surrounding country. A similar ridge, but much lower, exists near Chicotville, in St. Landry parish. It is again found overlying the great sulphur bed in the artesian wells of Calcasieu, but at a depth of 300 feet; and it will doubtless be struck below the rock-salt bed of Petite Anse.

Around these outcropping summits of the Cretaceous ridge are found (in northwestern Louisiana) fossiliferous rocks, mostly ferruginous and red, or sometimes calcareous, of Tertiary age (Upper Claiborne or Lower Jackson group). Between the more or less isolated knolls or ridges of this character (forming what is known as the "Red Lands"), the country is generally more level, and underlaid by strata of dark-colored clays and sands, frequently associated with beds of lignite, and more rarely with limited seams of fresh-water limestone. Such is, more or less, the geological character of all the uplands of eastern Louisiana, northward of the central belt of calcareous prairies above alluded to; the upper portions of the ridges being here, as elsewhere, composed of, or capped by, the irregularly-bedded sands of the Stratified Drift. On the ridge lands lying between the Mississippi and the Washita, in northeastern Louisiana, the sandy materials of the Port Hudson bluff seem to cover the Tertiary strata.

The well-waters obtained within the latter are apt to be somewhat hard from lime and magnesian salts, and sometimes fetid, where dark-colored clays or lignites underlie.

RIVERS AND DRAINAGE.—The prominent feature of the state is that it embraces the widest part of the alluvial plain, as well as the delta, of the great Mississippi river. The area of the alluvial and marsh lands properly derivable from that river is about 13,635 square miles; that of the bottoms of the other larger streams, before their entrance into the valley, about 1,725 square miles; that of marsh lands west of the delta, 4,225 square miles; other minor swamp and alluvial and marsh areas, about 625 square miles; forming an aggregate of 19,200 square miles, or not quite one-half of the area of the state.

Almost all the larger streams of this alluvial region diverge from the main Mississippi, or from Red river, and hence receive the name of "bayous". They constitute so many additional outlets for the water of the main rivers in time of flood, and form an intricate network, whose cross-connections, and even the direction of current under different circumstances, are not easily realized or remembered. Some one of the larger bayous is found flowing, as a rule, along the edge of the bottom plain, at the foot of the uplands (Washita river north, and bayous Bœuf, Cocodrie, and Tèche south, of Red river).

The delta proper forms an approximately semi-circular projection about 70 miles beyond the general coast line (drawn from about the mouth of Pearl river to Côte Blanche bay); and beyond this still, the present mouths or "passes" of the main river stretch about 35 miles to seaward, forming the curious "Goose Foot", a form of mouth, of which, with its attendant "mudlumps", the Mississippi river furnishes the only example thus far known. A belt of marsh 20 to 30 miles wide forms the outer and much-broken edge of the delta, and a few low, outlying islands are off-shore. A similar marsh-belt borders the mainland from Vermillion bay to the Sabine, with an unbroken shore line, and altogether without islands.

Next to the Mississippi river and its alluvial plain, Red river and its valley, extending from the northwest corner to the middle (north and south) of the state, forms the most prominent feature of the topography of Louisiana. Its entrance into the main valley is popularly considered the point of division between "north" and "south" Louisiana, since, on the river at least, it marks the beginning of sugar-cane culture, and a gradual decrease of cotton production to the southward.

The valley of the Washita river, though in reality extensive, is so soon merged into those of the bayous branching out from the Mississippi river in southeastern Arkansas, that its individuality is, in a measure, lost. That of the Sabine is too little known and settled to attract attention.

The upland portion of the state is naturally divided into three main bodies, to wit: 1. The portion lying between the Mississippi valley and Red river, north of the latter stream. 2. The area south of Red river, between it, the Sabine, and the coast marshes. 3. The uplands of eastern Louisiana, lying between the Mississippi and Pearl rivers.

The rivers of the northern section flow either southeastward into the Washita (D'Arbonne, Castor, Dugdemona, and their branches); or southward into Red river (Bodeau, Dorchite, Black lake, Saline). Those of the southern section (apart from small tributaries of the Sabine river), into the Gulf of Mexico; the Mentau and Calcasieu being the chief ones.

The streams of eastern Louisiana have a southeast trend, and empty either into lakes Maurepas and Pontchartrain (Amite, Tickfaw, Tangipahoa, Tchefunctee), or into Pearl river (Bogue Chitto).

ELEVATION ABOVE THE SEA.—From the coast marshes, lying at high-water level, the surface of the Mississippi delta rises to about 15 feet above mean Gulf level in the latitude of New Orleans. Near Baton Rouge, at the head of the delta proper, the maximum elevation is about 34 feet; at the mouth of Red river, nearly 50 feet; near Natchez, 66 feet; on the Arkansas line, about 130 feet; the average fall of the river between the two last-named points being not quite four inches per mile. The above figures are those given for high-water level at the respective points, when usually a few high points on the immediate river banks remain above water. From these banks there is a more or less rapid downward slope to the landward edge of the bottom plain, as stated more in detail farther on.

South of the parallel of 30° 45′ (about the latitude of Port Hudson) the surface of the uplands is, almost throughout, apparently level, but in reality ascends gradually to an elevation of 100 to 150 feet above tide-level at its northern limit. This level country is partly treeless (Attakapas prairies), partly timbered more or less densely, chiefly with the long-leaf pine (pine flats of Calcasieu, and of eastern Louisiana).

North of the line above given, the uplands become more rolling, in places hilly and broken (southern Rapides, Vernon, southern Natchitoches), and are timbered almost throughout. The timber tree prevailing almost altogether in the middle and southern portion of western Louisiana, as well as in eastern Louisiana, is the long-leaf pine; while the northwestern parishes (north of a line laid through Manny, Sabine parish, and Bastrop, Morehouse parish), form a region of rolling oak-uplands, whose varying fertility is indicated by a greater or less admixture of the short-leaf pine on the one hand, and of hickory on the other.

As regards the general elevation of the uplands of northern Louisiana, the highest ridges in Claiborne and Union parishes probably rise as much as 500 feet above the sea. The highest point traversed by the line of the North Louisiana and Texas railroad (Arcadia) lies about 390 feet above the Gulf of Mexico.

AGRICULTURAL SUBDIVISIONS OR REGIONS.—In accordance with the prominent and easily recognized characteristics given above, the agricultural features of the state may conveniently be considered under the following general subdivisions:

1. *The Alluvial Region*, subdivided into—
   - *a.* The alluvial region north of Red river.
   - *b.* The alluvial region of Red river.
   - *c.* The alluvial region south of Red river.
   - *d.* The marsh region of the coast and lakes.
2. *The Bluff Region* of eastern Louisiana.
3. *The Attakapas Prairie Region*, embracing the three features of—
   - *a.* The black calcareous prairie.
   - *b.* The brown loam prairie.
   - *c.* The gray silt, or pine prairie.
4. *The Long-leaf Pine Region*, subdivided into—
   - *a.* The pine flats.
   - *b.* The pine hills.
5. *The Central Prairie Region.*
6. *The Oak Uplands Region*, with four chief soil-varieties, viz—
   - *a.* The red lands.
   - *b.* The brown loam or table lands.
   - *c.* The pale yellow loam lands.
   - *d.* The gray pine flats.

Of these four soil varieties, only the red land areas are sufficiently well defined to admit of being mapped even approximately; the rest being intricately interspersed, with all degrees of transition from each to the others.

THE ALLUVIAL REGION.

The alluvial portion of Louisiana, including therein both the marine and the river alluvium, embraces about 19,200 square miles, or nearly one-half of the area of the state, and by far its most fertile agricultural lands; equaled by few, and surpassed by none in the world in productive capacity, whenever the waters of the rivers that traverse them shall have been put under such control that their annual rise, instead of being, as now, a dreaded scourge, shall be the means of assuring the success of crops beyond peradventure, and of maintaining permanently the fertility of the soils, as those of the Nile have done in Egypt from time immemorial.

For the purpose of description, the alluvial territory of Louisiana may be conveniently classified into these four divisions:

1. Region north of the mouth of Red river.
2. Alluvial region of Red river.
3. Alluvial region south of Red river.
4. Tide-water region of the coast and lakes.

I.—The Alluvial Region North of Red River.

Of the parishes comprehended within these limits, only East Carroll, Madison, Tensas, and Concordia are wholly alluvial; the rest—Morehouse, West Carroll, Richland, Franklin—consist in part of upland ridges, isolated from the main body of the uplands of northern Louisiana by the broad and fertile alluvial tracts bordering the Washita river and bayous Bartholomew and Boeuf. The latter lands are claimed by their inhabitants to be at least equal in fertility to any in the state; while the ridges alluded to are on the whole, even as uplands, of inferior quality, being largely timbered with scrubby black-jack and post oaks, mingled with black gum and more or less of the short-leaf pine: the latter sometimes predominating altogether on the poorer portions.

Thus, in traveling westward from the Mississippi on the Arkansas line, the level alluvium continues for about 8 miles; when, after crossing the bayou Maçon and Tiger bayou, there is a sudden rise into pine uplands with a sandy loam soil. This is the upper end of the *Bayou Maçon hills*, here 8 miles wide, which hence extend 80 miles to the southward, widening to 20 miles near Winnsboro, Franklin parish. Crossing this ridge we descend into the alluvial plain of the bayou Boeuf, also about 8 miles in width, and profusely fertile. Traversing this bottom we reach uplands once more, viz, the northern portion of the ridgy tract occupying a large part of Morehouse parish and known as the *Bastrop hills*, whose width on the state line is but a little over 4 miles, but increases to nearly double during a southwest course of 34 miles. Westward of this upland ridge lies the alluvial plain of the bayou Bartholomew, about 4 miles wide, which again is separated from the bottom of Washita river by a tongue of ridgy land reaching in from Ashley county, Arkansas, to near the junction of the two streams.

The Washita river borders, on the east, the main body of the uplands of northern Louisiana, and its alluvium forms part of the (largely upland) parishes of Union, Ouachita, Caldwell, and Catahoula.

The soil of these ridges, as may be inferred from the timber growth they bear, is prevalently of the character of the "pale sandy loam" soil described as prevailing extensively in northern Louisiana. The sandy or silty pine-flat soil is also represented quite extensively.

Of these three upland peninsulas, the most westerly one, between the Washita and bayou Bartholomew (90 square miles), is the smallest and, on the whole, the least fertile; much of the soil being quite sandy, with an indifferent growth of scrub oaks and short-leaf pine. There are some "prairies" on it, partly with a sandy soil, partly a whitish clayey silt, with ferruginous dots or concretions. The former are very poor, while the latter will probably here, as on the same tract in Ashley county, Arkansas, be found capable of profitable cultivation when properly drained. Seymour's and Dubute prairies are the principal ones, the latter being liable to the Washita overflow.

The middle one of the three upland tracts, the Bastrop hills, rising as much as 50 and 60 feet above the bottom plain, and embracing an area of about 200 square miles, is, on the whole, perhaps, the most fertile; being mostly gently rolling uplands, with a yellow loam soil, timbered with black-jack and post oaks, black gum, hickory, and some short-leaf pine on the uplands, and wide bottoms densely wooded with sweet gum and cypress. The cotton product of these uplands, when fresh, is from 450 to 500 pounds of seed-cotton per acre. The western slope, toward bayou Bartholomew, is gentle, but there is a bluff descent toward the bayou Boeuf; along the foot of this eastern slope lie prairies Mer Rouge and Jefferson. These are fine, fertile tracts, of a few sections each, largely with a black loam soil underlaid by red or yellow loam subsoil, and entirely above overflow; hence, they are nearly all under cultivation. They have little tree growth, save a few clumps of hawthorn, and there was a great deal of sumac (*Rhus copallina*), from the autumnal tints of which the name of "Mer Rouge" was derived.

The most easterly and most extensive of the three ridges, embracing nearly 24 townships, or 842 square miles, is likewise highest and most abrupt on its eastern border, in the "Bayou Maçon hills", which rise 15 to 25 feet above the alluvial plain. In the northern half of its course, the eastern flank of this belt bears a strip of pine (short-leaf in the northern, long-leaf in the southern portion), which then trends farther west and surrounds the town of Winnsboro, where it is 5 miles wide. The rolling country lying to the westward of this pine belt, in Richland and Franklin parishes, resembles the Bastrop hills in its soil, timber growth, and agricultural qualities. But the southern portion of the Bayou Maçon hills proper, lying to eastward of the pine belt, has a rich brown loam subsoil, and resembles in its timber growth and agricultural value the "bluff" part of Sicily island, presently to be noticed.

The uplands belt extends close to the fork of Boeuf river and Deer creek, whose alluvium here is quite narrow. Across the Boeuf, in the fork between it and the Washita, there is a narrow loam upland ridge, about 18 miles in length, extending into the fork of the two rivers.

Sicily island, surrounded by the waters of Washita, Deer creek, and bayous Maçon and Tensas, is about 25 miles long and about 12 in average width. About two-thirds of this is low, overflowed bottom lands, while the rest, adjoining the Washita river, is partly abrupt and rocky long-leaf pine hills (the only tract of this kind east of the Washita), partly (on the eastern foot of the hill lands) a level bluff plateau, 20 to 25 feet above overflow, and quite similar in its soil, timber, and agricultural features to the "bluff" lands of West Feliciana and East Baton Rouge. Its southern portion especially is esteemed to be one of the most fertile upland tracts of Louisiana, and is covered with large cotton plantations, whose usual product is nearly one bale of lint per acre. The natural timber growth is exceptionally vigorous and dense, consisting of a great variety of oaks, beech, tulip tree ("poplar"), magnolias, sweet gum, ash, &c., with a great abundance of grapevines. In the northern portion the bluff lands are not so fertile, resembling altogether the Bayou Maçon hills.

On the mainland opposite, at the foot of the pine hills of Catahoula and Rapides, we find in Catahoula prairie (at the north end of Catahoula lake) and Hollowell's prairie (between Saline bayou and Red river) isolated tracts of lands somewhat similar to prairie Mer Rouge, on the edge of the Bastrop hills (see above), but not quite so productive, the soil being partly a whitish silt, with ferruginous "black gravel". Hollowell's prairie passes to the westward into a level oak plateau, from which a gradual admixture of pine forms a transition to the pine hills.

In this connection should be mentioned the Avoyelles prairie, the only outlier of upland in the alluvial region south of Red river, and forming on the banks of that river the last bluff bank seen in descending it. It lies directly opposite the Hollowell's prairie region, and the two are not unlike in their soil and general character. The Avoyelles prairie, while on the one hand resembling the bluff lands at Port Hudson, is on the other also closely related to the "brown loam prairie" of the Opelousas region.

The character of the parishes fronting on the Mississippi river, north of the parish of Avoyelles, has been sufficiently described above (see "Features of the alluvial plain of the Mississippi below the mouth of the Ohio", *et seq.*), and differs from that of the parishes south of the mouth of Red river in having, on the whole, a smaller proportion of swamp areas, and hence a larger one of land reclaimable by simple exclusion of the annual overflows.

The lands of the Tensas river are especially noted as yielding large crops of high-grade cotton; and being largely of the heavy black "buckshot" clay character, they may well be deemed almost inexhaustible. Most of this land is originally heavily timbered; but at some points, where it becomes very calcareous, it forms limited prairies, with clumps of locust, crab, and plum, which are also highly productive, and, notwithstanding the clayey-ness of their soil, quite easily tilled. Details regarding these parishes will be found in Part II, under the proper heads.

Soils of the alluvial region above the mouth of Red river.

No detailed examinations or analyses of the soils forming the main body of the alluvial plain of the Mississippi in Louisiana have as yet been made. There can be little doubt, however, that they are substantially similar to those of the Yazoo bottom, lying opposite; and a table of analyses made of the latter is therefore here subjoined.

Analyses of soils from the Yazoo bottom, Mississippi.

No. 395. *Soil of the "Dogwood ridge"*, a belt of land above overflow, running from Moon lake near Delta, Coahoma county, to Honey island, Holmes county. The specimen was taken on the plantation of Gov. J. L. Alcorn, between Swan lake and Cypress brake, Coahoma county. The vegetation is dogwood, sweet gum, holly, ash, sassafras, and what is called "prickly pear" by the inhabitants. The soil is a light sandy loam, pale yellow in color, and shows no change to the depth of two feet; represented by the sample analyzed. It is easily tilled, and quite as productive as the darker bottom soils. When turned up and exposed to the sun, it turns dark like the other soils.

No. 396. *A light "buckshot" clay*, taken from the edge of a depression or pond, near where the preceding specimen was obtained. It is light yellow in color, and similar to the clay in the bank of Sunflower river.

Nos. 376 and 377. *Soil and subsoil of front-land of Indian bayou*, taken near C. Gillespie's, range 5 west, township 19, section 33, Sunflower county. The soil is grayish and rather sandy, and was taken to the depth of 5 inches. The subsoil is close, whitish clay with reddish flecks, and less "jointy" than the same clay from Sunflower river and Silver creek. The specimen was taken to the depth of 5 to 18 inches. The timber-growth is hickory, holly, sweet gum, water, willow, red, and swamp-chestnut oaks, dogwood, ash, maple, and an undergrowth of cane. This "white" land is not much esteemed by farmers.

No. 354. *Bottom soil of the Tallahatchie river*, range 1 east, township 24, Tallahatchie county, taken to the depth of 12 inches. A dark-colored and rather light loam, a good representative of the front-lands of the upper Yazoo, Tallahatchie, and Cold-Water bottoms.

No. 394. *Soil of Sunflower river front-land ridge*, taken on the bank at Buck's ferry, Issaquena county. It is a stiff, pale gray loam, with yellowish or orange flecks, so that when worked up the soil is somewhat yellow. Specimen taken to the depth of 10 inches; it is underlaid at 4 to 6 feet by "buckshot" clay. The prominent trees are sweet gum, maple, willow oak, elm, ash, and hackberry.

No. 390. *"Buckshot" soil of Deer creek back-land*, from the plantation of J. D. Hill, near Steel's bayou, Issaquena county. It is a stiff, dark-colored clay soil, traversed by numerous cracks, and mottled with spots of ferruginous matter. Upon drying it breaks up into little angular fragments. It is exceedingly fertile and there is no change in its character for 10 feet. The timber growth is sweet gum, pecan, water and willow oak, hackberry, and honey locust; an undergrowth of cane covers most of the land. The specimen was taken to the depth of 12 inches.

Yazoo bottom soils.

	Coahoma County.		Tallahatchie County.	Sunflower County.		Issaquena County.	
	Dogwood ridge soil.	Light colored "buckshot" clay.	Tallahatchie bottom soil.	Indian bayou front-land soil.	Indian bayou front-land sub-soil.	Sunflower river front-land soil.	Deer creek "buckshot" soil.
	No. 395.	No. 396.	No. 354.	No. 376.	No. 377.	No. 394.	No. 390.
Insoluble matter	83.886	75.513	87.146	87.898	87.898	71.164	51.063
Soluble silica	7.022 } 90.908	10.895 } 86.408	4.798 } 91.944	4.036 } 91.934	3.816 } 91.714	13.506 } 84.670	20.704 } 71.767
Potash	0.392	0.666	0.301	0.226	0.305	0.401	1.104
Soda	0.086	0.146	0.084	0.116	0.079	0.191	0.325
Lime	0.259	0.386	0.301	0.153	0.147	0.406	1.340
Magnesia	0.596	0.972	0.385	0.256	0.392	0.696	1.665
Brown oxide of manganese	0.086	0.133	0.158	0.048	0.050	0.011	0.119
Peroxide of iron	2.091	2.804	2.120	1.848	2.312	3.845	5.818
Alumina	3.593	4.457	2.151	2.565	2.998	6.889	10.539
Phosphoric acid	0.142	0.278	0.112	0.102	0.283	0.165	0.304
Sulphuric acid	0.010	0.007	0.005	0.042	.....	0.016	0.024
Water and organic matter	2.007	4.401	2.644	3.013	1.499	2.748	7.369
Total	100.770	100.598	100.205	100.363	99.779	100.038	100.383
Hygroscopic moisture	3.945	6.043	4.786	4.067	5.684	7.385	14.305
absorbed at	10 C.°	12 C.°	22 C.°	14 C.°	15.5 C.°	15 C.°	15 C.°

Of these soils, the first (No. 395) is probably unrepresented in Louisiana, though probably frequent in the "St. Francis bottom" in Arkansas. The rest are types of the prominent soil-varieties occurring equally on both sides of the Mississippi north of the mouth of Red river. The Tallahatchie bottom soil (No. 354) is from near the edge of the bottom on the Tallahatchie river in Tallahatchie county. It is noteworthy that its phosphates are lowest of all the soils here shown; while the phosphoric-acid percentages in the older deposits, represented by Nos. 390, 396, and 377, are extraordinarily high.

Without entering into a detailed discussion of these soils in this place, it is important to call attention to the fact that in its store of plant-food of all kinds, the "buckshot" soil stands pre-eminent above all the rest, and well justifies its reputation of being the most productive and durable soil of the great bottom. Unlike most other clay soils it may be tilled at almost any time when the plow can be propelled through it, because, on drying, it crumbles spontaneously into a loose mass of better tilth than many an elaborately tilled upland soil. It is of such depth that

the deepest tillage, even by the steam plow, would not reach beyond the true soil material; and its high absorptive power secures crops against injury from drought. At the same time (owing doubtless to its being traversed by innumerable fine cracks, and underlaid by gravel or sand) it drains quite readily. In good seasons, a large part of the cotton crop grown on this soil has often been left unpicked for want of labor after taking off 1,500 to 1,800 pounds of seed-cotton to the acre. Two bales of lint per acre can undoubtedly be produced on such soils, with fair culture and good seasons.

The following analyses show the character of some of the soils of the alluvial plain of the bayou Boeuf, which separates the Bastrop hills from the Bayou Maçon peninsula:

No. 237. *Front-land soil*, from bottom of bayou Boeuf, ½ mile north of Girard, Richland parish, taken to a depth of 10 inches; light and sandy; color: gray; vegetation: willow and chestnut white oaks, maple, ash, sweet gum.

No. 238. *Subsoil* of the above; a sandy clay; color: red; taken to a depth of 10 to 20 inches.

No. 236. *Stiff back-land soil* from 4 miles north of Girard; taken to a depth of 12 inches; a stiff, ash-colored clay; vegetation: chestnut white oak and sweet gum, with dwarf palmetto.

Bayou Boeuf bottom soils.

	Front land soil.	Front-land subsoil.	Back-land soil.
	No. 237.	No. 238.	No. 236.
Insoluble matter	90.120	78.370	81.800
Soluble silica	2.626 } 92.746	6.686 } 85.056	4.703 } 86.503
Potash	0.148	0.234	0.320
Soda	0.078	0.092	0.135
Lime	0.154	0.185	0.245
Magnesia	0.017	0.295	0.610
Brown oxide of manganese	0.083	0.155	0.170
Peroxide of iron	1.980	4.104	4.022
Alumina	3.265	6.369	3.946
Phosphoric acid	0.215	0.147	0.144
Sulphuric acid	0.034	0.234	0.160
Water and organic matter	1.597	2.978	4.160
Total	100.257	99.849	100.415
Hygroscopic moisture absorbed at	3.010 26.6 C.°	5.731 26.6 C.°	8.796 28 C.°

Except as to its lower potash-percentage, this front-land soil is very similar in composition to the front-land soil from Indian bayou, Sunflower county, Mississippi, the analysis of which is given above. The latter is considered a second-class soil in its locality of occurrence, but it must be remembered that it is there compared with such soils as the black "buckshot", probably one of the most fertile soils in the world. The great depth and good drainage of these front-land soils compensate in a large measure for their comparatively lower percentage of plant-food.

The "back-land" of the bayou Boeuf does not agree in composition and general character with any of the "buckshot" proper of the Yazoo bottom, but resembles more nearly the "middle-land" of the higher portions of the plain between the Sunflower and Yazoo. Its large lime-percentage should render it thrifty, although its phosphates are rather deficient. Its present cotton product is about 1,800 pounds of seed-cotton per acre.

Soils of the bottom ridges.

The following analyses exemplify the character and composition of the soil of the Bastrop hills and of the southern portion of prairie Mer Rouge, the latter probably representing the better class of the "black gravel" (sometimes called also "buckshot") prairies of this entire region:

No. 232. *Sandy loam soil*, from undulating upland 2 miles east of Bastrop, taken to the depth of 12 inches; color: pale yellow; vegetation: oak, hickory, and short-leaf pine.

No. 233. *Subsoil* of the above, taken to a depth of 12 to 18 inches; color: yellow; heavier than the surface soil.

No. 234. *Light prairie soil*, from the southern portion of prairie Mer Rouge; a gray, powdery silt, easily tilled; produces 675 pounds of seed-cotton per acre.

No. 235. *Subsoil* of the above, taken 8 to 18 inches deep; color, grayish yellow; scarcely heavier than the soil.

Upland soils of the Bastrop region, Morehouse parish.

	Bastrop hills soil.	Bastrop hills subsoil.	Prairie Mer Rouge soil.	Prairie Mer Rouge subsoil.
	No. 232.	No. 233.	No. 234.	No. 235.
Insoluble matter	81.700	68.690	89.840	90.650
Soluble silica	5.750 } 87.450	12.850 } 81.540	3.356 } 93.196	3.436 } 94.086
Potash	0.442	0.344	0.131	0.155
Soda	0.286	0.070	0.066	0.085
Lime	0.101	0.120	0.155	0.127
Magnesia	0.239	0.440	0.070	0.238
Brown oxide of manganese	0.386	0.223	0.066	0.135
Peroxide of iron	3.546	4.733	1.370	1.731
Alumina	4.868	9.231	1.080	1.798
Phosphoric acid	0.099	0.111	0.178	0.093
Sulphuric acid	0.079	0.093	0.061	0.210
Water and organic matter	2.544	3.376	3.297	1.606
Total	100.040	100.281	99.670	100.264
Hygroscopic moisture absorbed at	5.471 29 C.°	9.441 29 C.°	3.278 28 C.°	2.648 26.5 C.°

The loam soil of the Bastrop hills is almost identical in composition with that of the second-class oak uplands of Mississippi, in which the short-leaf pine forms an ingredient of the timber. While having a fair potash-percentage, it is but scantily provided with phosphates, which will soon require to be added; moreover, its lime-percentage is too low for thriftiness, and should be increased by liming. Its physical properties, so far as these can be judged by the absorption of moisture, are satisfactory, but would be improved by deep culture.

The gray silt soil of the southern portion of prairie Mer Rouge, which seems to be similar to that of Hollowell's, Dubute, and North Avoyelles prairies, is evidently not of much durability, but is kept productive for the time being by its comparatively large lime-percentage and the accumulation of vegetable mold on the surface soil. Its low moisture-coefficient and the formation of bog ore (black pebble) in the subsoil seem to indicate that it is inclined to be leachy, and is not well drained. It is said to have originally produced 1,400 pounds of seed-cotton per acre; at present the product is about 1,100 pounds.

The soil of the northern part of prairie Mer Rouge and that of prairie Jefferson is quite different, being black (or sometimes red) and much heavier, and several feet in depth; below the black subsoil a stratum of yellowish sand is found. The cotton product of this soil is 1,500 to 1,800 pounds of seed-cotton per acre.

II.—The Red River Bottom Region.

The usual width of the alluvial plain of Red river, in Louisiana, is from 8 to 10 miles (narrowing to 3 at Colfax, Grant parish), while that of the Mississippi bottom between Vicksburg and the mouth of Red river is from 30 to 35. Below the junction of the two valleys, the aggregate width is about the sum of the above figures.

The area of the bottom lands of Red river, within the state of Louisiana, is about 1,425 square miles.

The general topographical features of Red river bottom nearly resemble those of the Mississippi bottom already described, modified materially at only two points, viz, the rapids below Alexandria, caused by the traversal of the river by a Tertiary sandstone formation; and in the extreme northwest portion of the state, by the existence of the great raft. In the rest of its course, Red river is a fine, swiftly-flowing stream, which has cut a well-defined channel, 700 to 800 feet wide, with steep and mostly very solid banks, into strata of red, and, lower down, blue or green clay, which evidently antedate the present river; precisely as is the case with the "buckshot" clays of the Mississippi itself. And just as the soils formed from the latter are scarcely distinguishable from those now forming in the cypress swamps, so the "back-lands" of Red river bottom are formed in part directly from the older red clays, partly from the more modern deposits of the slack-water and low swamp lying back from, or between, the bayous. The soils deposited directly by the river, or by the larger bayous diverging from it, are light and loamy, but rarely sandy; and, where cultivation is established, it usually extends to the very brink of the river bank, unless levees should intervene. The latter, however, are scarcely used on that part of the river lying above the rapids, while those on the portion lying below form a necessary link in the chain of those erected against the floods of the Mississippi. When the latter occur, Red river is transformed into a still back-water as high up as Alexandria.

Its own freshets occur at irregular times, being due to rains occurring below the raft, which are rapidly poured into it by numerous short streams, and cause it to rise at Alexandria as much as 47 feet above low-water mark. They are, of course, of correspondingly short duration, and a moderate rise does little damage, from the fact that

the banks are mostly from 25 to 40 feet above low-water. The effects of the rains occurring above the raft region is so moderated by the numerous lake reservoirs existing there, that in general they merely serve to maintain the river in fair boating condition through the season.

The great raft is the result of what would be called a "jam" by the loggers of the North, formed of a matted mass of fallen trees, partly still afloat, partly water-logged and sunken, which extends across the river channel for between 20 and 30 miles, in the region above Shreveport. It is advancing up the river, by the addition of drift-wood at its upper end, at the rate of about a mile per annum, while at the lower it is gradually receding as the logs decay; and the solid masses, here frequently overgrown with willow and cottonwood trees, are separated by spaces of clear water. The damming-up of the river caused by this obstruction compels its water to seek lateral outlets in numerous and frequently shifting bayous and lakes that, to a great extent, exist only on the maps, except in time of high-water. All the bottom lands in the raft region are thus subject to frequent overflows, and not capable of cultivation or permanent reclamation so long as the raft exists. Dead forests still standing in the lake beds, prove that this state of things is of comparatively recent date.

The soils of the Red river bottom, below the raft, are substantially of four kinds, viz:

1. *Front-land soil.*—Near the river and the main bayous there is a yellowish-red or reddish loam soil, light and easily tilled; deep and very productive. In the "back bottom," farther from the channels, this soil becomes gradually heavier and more difficult to till, and forms—

2. *Back-bottom soil.*—Also very productive, and, doubtless, more lasting than No. 1. Both obviously alluvial.

3. *Bottom-prairie soil.*—A black, calcareous soil, fully 12 inches in depth; timber—large ash, water oak, cottonwood, hackberry, and honey locust—occurs in patches; very productive; "a capital soil."

4. *Waxy soil.*—Also in patches; an exceedingly heavy, close, intractable clay, mostly in low ground. It bears a curiously stunted, or rather stationary, growth of hackberry, ash, and elm; trees thirty years old being no larger than we usually see them after three or four; besides these it bears large overcup oaks. It seems to be practically worthless, at least for the present.

The last two soils are doubtless derived from the older clay strata seen in the river banks—No. 4 from the stiff red and brown non-calcareous clays, while No. 3 is similar to the "buckshot" prairie soil of the Tensas bottom, and derives from the lighter calcareous clays of the ancient swamp formation.

The following analyses throw some light on the peculiarities of these soils, and of the materials concerned in their formation.

No. 39. *Front-land subsoil*, from the banks of Red river, 6 miles above Coushatta Chute, Red River parish. Specimen taken from the face of the bluff bank of the river, about 12 inches below the surface, from a stratum of alluvial loam 5 feet thick, and seemingly the same throughout.

No. 40. *Stiff red clay, with calcareous concretions*, from the same locality as No. 39, but lying beneath it 7 to 8 feet deep, and doubtless the material from which the older "back-land" soils are formed; or, where it is calcareous, the black-bottom prairie, No. 55.

No. 55. *Black-bottom prairie soil*, taken not far from same locality as the above, to the depth of 12 inches.

Red River bottom soils.

[Red River parish, south side, above Coushatta Chute.]

	Reddish alluvial loam.	Red calcareous clay.	Dark bottom-prairie.
	No. 39.	No. 40.	No. 55.
Insoluble matter	90.480	55.750	78.180
Soluble silica	4.000	7.470	6.530
	94.480	63.220	84.710
Potash	0.215	0.462	0.614
Soda	0.003	0.358	0.064
Lime	0.217	8.071	0.485
Magnesia	0.585	5.655	1.041
Brown oxide of manganese	0.384	0.075	0.249
Peroxide of iron	1.686	5.975	3.303
Alumina	1.413	6.682	4.229
Phosphoric acid	0.221	0.260	0.151
Sulphuric acid	0.036	0.001	0.010
Carbonic acid		3.013	
Water and organic matter	1.292	5.819	4.920
Total	100.532	100.491	99.776
Hygroscopic moisture absorbed at	3.050 21 C.°		8.320 20.5 C.°

On the whole, the most prevalent, and, in an agricultural point of view, the most important of these soils, is the one formed by the reddish alluvial loam, so characteristic of the present deposits of Red river. Its thickness near the river is seen to vary from 5 to 7 feet (the usual depth) to as much as 17 feet, without any material change. It is very productive, readily yielding in ordinary seasons 2,000 to 2,500 pounds of seed-cotton per acre, and rarely failing, even in extreme seasons, except by actual overflow. The staple rates as good and fair middling.

In comparing this soil with the front-land soils of the Yazoo bottom, and especially with that of Indian bayou (Nos. 376, 377), and the "Dogwood ridge soil" from Coahoma (No. 395), we find, on the whole, a great similarity in composition, however different their aspect. The Red river soil contains less clay and humus, and correspondingly more fine silex, and its hygroscopic power is quite low. But it is richer in phosphates, and, for a soil containing 94.5 per cent. of inert matter, very rich in lime. Its red tint, as the analysis shows, is not due to any large amount of iron oxide, but simply to its fine diffusion; while in the corresponding soils of the Mississippi bottom, it is largely in the form of granules and bog-ore concretions, and can therefore exert but little beneficial influence upon the physical character of the soils. The most unexpected feature exhibited by this analysis, is the fact that in none of these soils the sulphates are present to any unusual extent. It has been usual to ascribe the extraordinary thriftiness of the Red river soils to the gypsum supposed to be brought down from the great gypsum formation of the Llano Estacado, traversed by the river; but it is evident that whatever effect the presence of that substance may originally have exerted upon the decomposition of the soil minerals, it has been so altered *in transitu* that only the lime has remained in shape of carbonate, while the sulphuric acid has been carried into the Gulf. The lime carbonate is so abundant in the older deposits forming the river banks, as to be frequently accumulated in the form of nodules. Moreover, it manifests itself in the black-bottom prairie soil (No. 55) with 0.5 per cent. of lime, and in the red clay (No. 40) from which the dark prairie soil is originally derived.

It will be seen that there is a considerable difference between the composition of the latter and the "buckshot" soil of the Yazoo bottom, the latter being by far the richer in plant-food, and less extreme in its physical qualities. It probably approaches much more nearly, in most respects, the bottom prairies of the Tensas region.

The region bordering upon the Atchafalaya, and especially the bayous Boeuf, Cocodrie, and Courtableau, in Rapides, St. Landry, and even as far as the Tèche, are partly of the same character as those of Red river bottom proper, partly of a mixed type. The peculiar red tints of the Red river deposits appear in the banks of the Atchafalaya, at low stages of water, alternating with the darker or grayish sediments derived from floods of the Mississippi, and impart their character to a large portion of the bordering lands.

Outside of the Red river and Atchafalaya alluvial plains, the peculiar red tints appear in the older alluvium of some of the western tributaries, and also on the bayou Vermillion, which doubtless owes its name to this circumstance.

Along the Tèche, nearly to its junction with the Atchafalaya, the red clay soil appears for a few hundred yards on each side of the stream, where it abuts against the black prairie. It is very fertile, though in places somewhat heavy. The red clay soil of the bayou Vermillion bottom lands contrasts strikingly with that of the brown loam prairie, into which its valley is cut.

The following analysis of this soil shows its character, and its relations with the Red river soils:

No. 210. *Bottom subsoil*, from the flood plain of bayou Vermillion, near Vermillionville, Lafayette parish. Surface soil only a few inches in thickness, a little lighter than the subsoil, mahogany tint. Subsoil: orange-red, quite heavy, taken from 8 to 15 inches depth. Timber: water oak, tulip tree (poplar), magnolia, ash, hackberry, elm, of rather inferior size as compared with trees on the hummock above.

Bayou Vermillion bottom subsoil.

	No. 210.	
Insoluble matter	64.230	79.640
Soluble silica	15.410	
Potash		0.743
Soda		0.138
Lime		0.226
Magnesia		1.192
Brown oxide of manganese		0.160
Peroxide of iron		4.938
Alumina		10.304
Phosphoric acid		0.066
Sulphuric acid		0.226
Water and organic matter		2.627
Total		100.260
Hygroscopic moisture		8.763
absorbed at		26.6 C.°

This soil is here subject to annual overflow, and somewhat difficult to till when wet. Farther below, where the bottom widens, it is lighter, from admixture of upland washings, bears much live oak, and is very fertile. It will be

noted that its potash-percentage is very high, while that of phosphoric acid is quite low, and would soon need replenishing by the use of phosphate manures. Its lime-percentage is sufficiently large for thriftiness, but could doubtless be advantageously increased by liming, both for improving tilth and rendering other plant-food available. Green-manuring is indicated as one of the most beneficial improvements needed.

III.—The Alluvial Region South of Red River.

Almost throughout the parishes embraced in this division (southern Avoyelles, western St. Landry, Pointe Coupée, West Baton Rouge, Iberville, St. Martin, Ascension), as well as in the "marsh parishes" farther to seaward, sugar-cane is the preferred crop, being considered more profitable than cotton. The latter, however, succeeds admirably, the question of its production being mainly a commercial one, though also somewhat influenced by the frequent occurrence of heavy rain storms during the picking season, which interfere with the gathering of the crop.

The surface features of the region may be briefly expressed thus: "Excellent alluvial lands, intersected by an intricate network of bayous, along which the cultivated lands chiefly lie; between, tangled swamps mainly occupied by the cypress, and often extensive canebrakes; cane forming the undergrowth in a large portion of the 'back lands', but becoming less prominent, on the whole, as we approach the marsh regions." (*a*)

The width of the cultivated, or at least cleared, "coast" belt along the main river, varies usually from one and a half to two and a half sections or miles; and is commonly occupied by extensive and well-improved sugar plantations, whose large sugar-houses, fine residences, and regularly arranged laborers' quarters give them the appearance of villages. The immense fields are bounded in the distance by the dark line of the swamp or forest. The latter, in its higher portions, consists largely of lowland oaks (water, white, chestnut, willow, and overcup), sweet and black gums, sycamore, cottonwood, honey locust, sassafras, pecan, &c., with cypress, sweet and tupelo gums, and willow in the swamps proper.

Along the bayous inland, the higher and therefore cultivated lands also form belts, of greater or less width, sensibly in proportion to the size of the stream, from a quarter to two miles wide. These belts are not always continuous, but interrupted by stretches of low swamp, through which the bayou has not formed a definite bank, as is the case on bayou Courtableau, in St. Landry. Or, the high land may be all on one side, while the other is low, as is frequently the case on the Atchafalaya river. Again, detached bodies of high land, not obviously related to any larger water-course at present in existence, are sometimes found at distances of from 4 to 10 miles from the bayous, and when cleared are known as "*brulées*", from the burning of the timber required to make them available for cultivation. The shifting of the bayou channels and washing-away of barriers in time of high-water, as well as the even now frequent formation of new bends and cut-offs, explains this state of things.

The high and more or less sandy banks of the numerous crescent-shaped lakes left as the remnants of the formation of cut-offs, whether by the main river or the larger bayous, form the best residence-sites; their stable grassy slopes and still, clear water contrasting favorably with the shifting shores and the ever-threatening and surging muddy current of the river. Especially in the more southerly portion of the region the magnolia, live oak, and pecan form most attractive groves wherein to locate a home, whose only natural drawback is the endless struggle against the implacable mosquito. Many handsome residences, surrounded by these beautiful trees, well-kept lawns and shrubbery such as belongs only to plant-houses farther north, are seen especially on the "coast" of Pointe Coupée, West Baton Rouge, and Iberville.

The soils of this region have not as yet been examined in detail, or analyzed. They appear, on the whole, to be less varied or extreme in their character than those higher up the stream, the front-lands being less sandy, but more of the character of a light loam, made up of fine materials; while the transition to the back-lands is more gradual, and these themselves do not appear to be quite as clayey as the "buckshot" soils of the Yazoo bottom. It is probable that in most cases the latter is deeper underground than is the case above, and instead, the modern cypress-swamp soils form the back-land. The high fertility and durability of the alluvial lands, however, remain the same, or if different in any general point, it may be that the front-lands are even more productive than is the case northward. This is claimed by the inhabitants, and the statement is in a measure sustained by the analyses made of the lands of bayou Black, in the Houma region, as given below. The high percentages of lime, potash, and humus there shown indicate a gradual increase of these ingredients toward the south, which would of course be partially attained already at intermediate points. More definite information on these points is, however, very much to be desired.

From the descriptions of the parishes belonging to this division, as given in Part II, a fuller understanding of their peculiarities may be gained.

IV.—The Tide-water Region.

Within this division may be embraced the parishes of St. James, St. John Baptist, St. Charles, Jefferson, Orleans, St. Bernard, Plaquemines, Lafourche, Terrebonne, St. Mary, southern Iberia, southern Vermillion, and Cameron.

Throughout this region the influence of the tides makes itself felt in the bayous, except at times of high water. The country is a dead level, except in so far as alluvial ridges, elevated as much as 7 feet above the marsh prairies,

a Lockett, 2d. Rep. of the Topogr. Survey of Louisiana, p. 3, &c.

and of varying width, accompany the river, as well as the larger bayous, to within a distance of 8 to 20 miles from the sea-shore; where they gradually become lost in the grassy prairie or rush-grown marsh, which skirt either the sea-shore or that of some of the numerous lakes with which the region is dotted, and whose intricate channels and cross-connections, frequently changing from year to year, it is not easy to trace.

On the main river this region is entered soon after passing Donaldsonville, when, on approaching St. James village, the marshes forming the head of the lake and bayou Des Allemands may be seen within a few miles south of the river bank. Opposite St. Charles village, the bordering belt has widened to about 9 miles, but now the marshes bordering lake Pontchartrain appear in sight on the north. The rear of the city of New Orleans touches the marsh, which thenceforward accompanies the river on its course to the Gulf, at a distance varying from 2 to 6 miles; until, a little above the forts (Jackson and St. Philip), it closes in upon the banks, and so continues to the mouths of the passes.

On the whole of this "lower coast" the culture of sugar-cane, rice, and tropical fruits prevails, and cotton is scarcely seen. The soils are light, but very deep and fertile. Immediately along the river banks is the sandy soil of the "willow batture"; a few hundred yards inland the live oak occupies the ground and marks the best soil. In the upper and wider portions of the "coast" the dark cypress-swamp forest forms the back-ground of the plantations, and this in its turn is bordered to seaward by the marsh. But in the narrower portions the cypress swamp is wanting, and the live-oak ridge slopes off gently into the grassy prairie or "round-rush" marsh.

On the bayous the state of things is very much the same. The live-oak ridges are sometimes interrupted for some distance, and then reappear in the marsh as long, conspicuous islands, marking the course sometimes of the present bayou channel, sometimes one that has long been deserted by the current. Such, also, has probably been the origin of the fertile islands or "ridges" in the sea-marsh of southwestern Louisiana, such as Pecan island, and similar strips of live-oak land fringing the lakes and shore in Cameron and Vermillion parishes.

The largest body of cultivatable land in this region is that which is traversed by bayous Lafourche and Terrebonne, and, forming the most fertile portions of the parishes of the same names, is known as the Houma and Thibodeauxville country. Here, also, the sugar-cane, rice, and tropical fruits are the staple production, and no cotton is cultivated. The front-land soil is light, many feet in depth, and supposed to be inexhaustible. That of the back-lands is more stiff, and very dark colored from vegetable matter, as is usually the case in the cypress-swamp soils.

The only soils from this region thus far analyzed are the two following, taken at the request of Hon. William H. Harris, commissioner of agriculture and immigration for Louisiana, by Mr. Jos. A. Gagne, of Houma, in the vicinity of that place.

No. 239. *Bayou Terrebonne front-land soil.*—Timber, originally: live oak, sweet gum, and magnolia. A fine, silty soil, with no visible sand grains; pulverulent, of a pale dun tint when wet, and barely plastic; unchanged to the depth of several feet, varying according to locality; specimen taken to the depth of 12 inches.

No. 240. *Back-land soil,* from same locality. Lies about 5 feet lower than No. 239; growth: cypress; taken to the depth of 12 inches; black, much more stiff than the front-land soil; not in cultivation, being undrained.

Soils from Houma, Terrebonne parish.

	Bayou Terrebonne front-land soil.	Bayou Terrebonne back-land soil.
	No. 239.	No. 240.
Insoluble matter	75.136 } 81.505	35.480 } 56.242
Soluble silica	6.369 }	20.762 }
Potash	0.767	1.031
Soda	0.089	0.131
Lime	0.691	0.720
Magnesia	0.552	0.884
Brown oxide of manganese	0.018	0.014
Peroxide of iron	3.822	7.101
Alumina	7.274	15.446
Phosphoric acid	0.105	0.146
Sulphuric acid	0.365	0.246
Water and organic matter	4.400	18.520
Total	99.528	100.481
Humus	0.863	5.067
Available inorganic matter	0.372	0.906
Available phosphoric acid:		
Referred to whole soil	0.054	0.083
Referred to ash of humus	13.316	9.223
Hygroscopic moisture	8.507	18.822
absorbed at	12 C.°	13 C.°

A comparison of the composition of these soils with that of the Yazoo bottom, given above, shows some interesting facts. The Terrebonne front-land soil, as compared with Nos. 376 and 394, respectively, from Sunflower and Issaquena counties, and there occupying a similar position with regard to the bayous, shows nearly double the percentages of potash and lime, while on the other hand the percentage of phosphoric acid is not only not increased, but even materially less; not higher than is usually found in second-class upland soils. There is a remarkably high percentage of sulphuric acid; in other respects, though slightly more clayey than the Yazoo soils (as shown by the alumina-percentage and the higher moisture-coefficient), there is not much difference.

Comparing the "back-land" from Houma with the "buckshot" soil from Issaquena county, we find a general agreement in the extraordinarily high percentage of potash (over 1 per cent.), also a large amount of lime and very large ones of soluble alumina and silica, implying that the clayey portion is in the finest state of division. Concurrently the moisture-absorption is very unusually high in both cases, and in both, probably, the amount of humus is very large. The two have evidently been formed under analogous circumstances and from similar materials, as is *a priori* probable from their similar geological position. The only material difference is in the percentage of phosphoric acid which, in the Houma soil, is only half of that in the Issaquena "buckshot". Whether this difference is a constant one or not, is an open question, to be determined by farther analysis; but, constituted as is the Houma soil in other respects, a scarcity of that ingredient is likely to be felt in its cultivation for many years to come.

The marsh lands.

On the passes of the Mississippi, and on that portion above, called the "Neck", the formation of solid land has occurred by the aid of quite a different process, peculiar to the Mississippi river mouths so far as known. This process is the upheaving of the bottom near the mouths, and the formation of mudsprings on the islands so produced, which are known by the name of "mudlumps", and form serious impediments to navigation. They are sometimes built up to the height of 12 or 15 feet, and their material being mostly quite clayey, they are not much subject to washing, but are gradually degraded by rains and storms to the tide-level. Being thus enlarged, the successive "lumps" are gradually connected by the deposition of sediment in the channels separating them, and thus are formed the narrow, continuous shores along each of the passes, which form so exceptional a feature of the Mississippi mouths. The soil of these lumps is mostly quite firm, not easily washed away, and becomes quite productive in the course of time, producing fair vegetables as well as rice. Thus far, however, the last-named crop is the only one whose cultivation has been attempted on any large scale in the marshes of the Louisiana coast, and there can be little doubt that a very large portion of the marsh area will be found susceptible of this use.

As regards the reclamation of the sea-marsh proper for purposes of cultivation, it should be noted that it is progressing slowly along the main river and the larger bayous by a gradual filling-in with sediment, close upon which follows the occupancy of the more solid ground by the willow, the bayberry (*Myrica Carolinensis*), bay galls (*Persea Carolinensis*), the *Baccharis halimifolia*, and in the smaller and more land-locked marshes stunted maple, cypress, and black gum aid in the process. The marsh occupied by the round-rush (*Scirpus lacustris*, (*a*) tule of California) is comparatively firm, and when protected from the tides can often be made to produce after some years; while that occupied by sedges (cutting-rush, jonc coupant, *Cyperus*) is a practically bottomless, semi-fluid mass of decaying vegetation. The immediate sea-beach is in most cases sandy.

THE BLUFF REGION.

This division embraces only a narrow belt of country, lying adjacent to the Mississippi river, between Baton Rouge and the Mississippi state line. Its average width, east and west, is about 13 miles, and its length about 50; total area, about 650 square miles. It comprehends nearly the whole of East Baton Rouge, the western part of East Feliciana, and nearly all of West Feliciana.

In the northern part of the latter parish the surface of this belt is still rather hilly and broken, as is the case in the adjoining portion of Mississippi, and the summits of the ridges rise several hundred feet in sight of the river. To the southward, however, they soon flatten out, the elevation becomes rapidly less, and is reduced to about 70 to 80 feet above high-water at Port Hudson, and to from 40 to 45 at Baton Rouge. South of the latter point the highlands line swerves to the eastward, and the country along the river is at the level of the general flood-plain.

The soil of this gently rolling "bluff plateau" is usually a rich, brown loam, greatly resembling that of the southern part of Sicily island (see above), which it also resembles in its timber growth—water, willow, swamp-chestnut, and post oaks, hickory, beech, magnolia, locust, tulip tree, and some linden, with, originally, a heavy undergrowth of cane, now destroyed. The brown loam is from 4 to 7 feet in depth, being then underlaid by more or less calcareous silts belonging to the Loess formation, which is so strongly developed in Mississippi, and will be found fully described in that connection. At the foot of the river bluff we sometimes (as at Port Hudson) find the dark-colored clays with calcareous and ferruginous concretions, fossil wood, stumps, &c., which also underlie the Yazoo bottom, and from which the "buckshot" soil is there derived. This clay is at times exhibited in the deep ravines with steep sides that have been scored into the bluff plateau wherever the land has been denuded of timber or thrown out of cultivation. A great deal of damage has already resulted from the neglect of this source of injury.

a Lockett, Rep. Topogr. Surv. La., 1870, p. 35.

The brown loam soil of this region may be considered as first-class upland, and when fresh has readily yielded a 400-pound bale, or 1,300 to 1,400 pounds, of seed-cotton per acre. Most of it, however, has been in cultivation for a long time (this having been one of the earliest-settled regions on the Mississippi), and has been greatly exhausted by improvident cultivation. The soil is, however, so strong naturally and so readily susceptible of improvement of any kind, that its restoration to full productiveness is a mere question of time, at least where the encroachment of ravines has not rendered the process too difficult and costly.

There are some local exceptions to the productiveness of the region, in limited tracts of a white and almost barren soil, with an irregular growth of crab-apple and hawthorn. One of these tracts ("Bullard's plains") is 7 miles from Baton Rouge, on the Bayou Sara road; the other, 5 miles east of Port Hudson. They probably represent outcrops of a white, sandy silt which appears at certain levels in the Port Hudson bluff.

Almost the entire bluff country is occupied by the Bermuda grass, which affords pasture throughout the summer. Besides cotton, corn and sweet-potatoes are the common crops. But the soil and climate are well adapted to the growth of a great variety of fruits, among which the grape would seem likely to be very successful.

THE ATTAKAPAS PRAIRIE REGION.

This division, indicated on the map by the various shades of yellow and brown, embraces the following parishes and parts of parishes: the middle portion of Iberia, all of Lafayette, northern Vermillion, all the upland portion of St. Landry lying south of the heads of bayou Nezpiqué, all of Calcasieu parish lying east of the Calcasieu river, save the extreme northeast corner, and most of the region south of the west fork of Calcasieu and west of the main river.

Except in its most easterly portion, the prairie region is as yet but very thinly settled, and is occupied chiefly by roaming herds of cattle and horses. Yet, its balmy climate, tempered by the sea-breeze, and the fertility of its soils, cannot fail to make it in the future what is now true of a small portion: the "garden of Louisiana".

This region, which is level or only slightly rolling, and mostly treeless, save in narrow strips along the main water-courses, presents three distinct types of soil, between which there are, of course, all degrees of transition, viz: the *black* (calcareous) *prairie*, the *brown loam prairie*, and the *gray silt* or *pine prairie*.

I.—The Black Prairie.

The black calcareous prairie forms an irregular belt, from 7 to 20 and more miles in width, and embraces an area of about 1,280 square miles, along the northern border of the sea-marsh. The land is so nearly level that its drainage is very slow, and collects into numerous shallow basins and ponds (*marais*), which serve as watering-places for stock. From these, shallow, reedy channels (*coulées*), showing scarcely any movement of the water, lead toward the larger water-courses, or to the sea-marsh. There is no natural timber save an occasional honey-locust or plum thicket, but sycamores and China trees (*Melia*) are planted around the scattered homesteads. The open prairie is little settled as yet, though very fertile; the lands bordering the marsh and the streams being preferred for the culture of the sugar-cane, which forms the chief crop. Corn and cotton, however, succeed finely wherever planted in the black prairie, from Iberia to lake Charles.

The black-prairie soil is moderately heavy in tillage, strongly calcareous, 12 to 18 inches in depth, and underlaid by a pale yellow subsoil clay filled with white calcareous concretions (known as "white pebble").

No. 230. *Black-prairie soil*, taken about midway between Petite Anse island and New Iberia; depth, 10 inches without change of color; below this depth it becomes more grayish, with an increasing amount of rounded, partly calcareous, partly ferruginous, concretions (or black pebble); gray loam at 2 to 3 feet; vegetation: grasses, mainly *Panicum* sp., and *Andropogon* (broom-sedge), with *Vernonia* (iron-weed). Color: deep black; soil quite heavy, not as much so as the prairie soils of Mississippi and Alabama, but does not crumble on drying like the latter.

Iberia black-prairie soil.

	No. 230.	
Insoluble matter	67.210	77.170
Soluble silica	9.960	
Potash		0.207
Soda		0.172
Lime		1.737
Magnesia		1.484
Brown oxide of manganese		0.265
Peroxide of iron		2.779
Alumina		4.829
Phosphoric acid		0.208
Sulphuric acid		0.114
Carbonic acid		2.060
Water and organic matter		8.596
Total		99.621
Hygroscopic moisture		10.630
absorbed at		12.7 C.°

This soil differs materially in several respects from most of the prairie soils of Mississippi and Alabama. It contains but little clay, and a large amount of fine siliceous silt. Its percentage of phosphoric acid is quite high, but that of potash comparatively quite low. Hence the extensive withdrawal of the latter ingredient, consequent upon the practice of burning the bagasse, is likely to lead to rapid exhaustion in this respect. The large amount of lime and humus accounts for its present thriftiness.

II.—The Brown Loam Prairie.

This soil occupies the higher and more northerly portions of the prairies east of bayou Cannes, and northward of the black-prairie belt, with which, however, it interlaces so intimately and extensively that it is difficult to draw a definite line of demarkation between them. I estimate the total area occupied by this class of soils at about 1,100 square miles.

The brown loam subsoil of this kind of prairie comes to the surface, more or less, on the whole of the ridge which, rising near Peigneur lake, skirts on the west the great valley, attaining near Washington an elevation of 40 to 50 feet above the latter. Immediately along the bayou Tèche there is a wooded strip of land with live and other lowland oaks, with hackberry, sycamore, honey-locust, &c., also seen along some of the "coulées". The ridge proper, however, about 4 miles wide, is treeless, and takes successively the names of Côte Gelée, Grand Côteau, and Opelousas hills. To the westward it slopes off gradually and insensibly into the level prairie, where the brown loam is covered by a dark surface soil, which, on the whole, decreases in depth to the northward and westward, becoming at the same time lighter colored and less thrifty, until it passes into the gray silty soils of the pine prairies. To the southward, this ridge was doubtless originally continuous to the western headland of Berwick's bay, where the "island" of Belle Isle formed its southern extremity. Of the intermediate portion, there now remain the four elevations (or islands in the sea-marsh) of Côte Blanche, Grande Côte, Petite Anse (noted for its rock-salt mine), and Orange island on the shore of lake Peigneur. The general character of the soils of these islands and of the Côte Gelée ridge is almost identical, as will be seen from the analyses given below. The islands were originally, however, clothed with forest and a heavy undergrowth of cane, and their soil is highly productive.

The vegetation of the brown loam prairies is remarkably little varied. Grasses, embracing two or three species of *Paspalum*, with a sprinkling of *Andropogon* or broom-sedge, dispute the ground with white clover. The iron-weed and wild indigo (*Baptisia*) are the chief representatives of herbaceous growth, added to which is, in most regions, the *Helenium tenuifolium* or bitter-weed, whose bright green grass-like leaves often grievously disappoint the hungry beast of burden, and impart an intensely bitter taste to the milk of cows feeding on it for want of something better. But few bright-tinted flowers relieve the monotony of the green surface. In summer there is excellent pasturage, but it is only in the southern portion that it is sufficiently abundant for the winter sustenance of stock.

The prairie extending southwestward from Grand Côteau toward Mentau river, and watered by bayous Plaquemine Brulée, Queue de Tortue, and their branches, receives the general name of Mentau prairie. Here, as farther east, the surface is variegated with ponds, "marais", and "coulées", and by occasional timbered islands or oases called "coves". The soil is light, and on that account is said to be improved by the trampling of cattle. Even with the poor culture now given it by the few who engage in farming, from 35 to 40 bushels of corn per acre is produced, while cotton has scarcely been tried in the western portion of the region. The lowlands along the streams produce cotton, corn, cane, and rice.

Prairie Faquetique, lying between bayous Mallet and Cannes, and prairie Marmou, between the latter and the Nezpiqué, are also occupied chiefly for grazing purposes. The soil of prairie Marmou is said to resemble greatly that of the corresponding portion of the Calcasieu prairie, though somewhat more fertile.

The Côte Gelée, Vermillion, Grand Côteau, and Opelousas prairies, when reasonably well cultivated, produce from 1,000 to 1,200 pounds of seed-cotton per acre, the staple rating as fair middling. Cotton is by far the most prominent culture. Corn is produced for home consumption only, yielding 30 to 40 bushels per acre. Cultivation is generally very shallow, and doubtless for that reason the actual cotton product per acre has greatly decreased in the older districts.

The following analyses of subsoils from different portions of this region convey a fair idea of their composition:

No. 197. *The surface soil of the Opelousas prairie*, taken about half-way between Opelousas and Ville Plate, on the prairie plateau dividing the waters of bayou Cocodrie from those of the Mentau, was about 10 inches deep, of a grayish black tint, not very clayey. The vegetation, same as above stated in general.

No. 226. *Subsoil of Opelousas prairie*, taken at the point mentioned, was taken at 10 to 18 inches depth; color, a tawny brown.

No. 227. *Subsoil of the Côte Gelée*, taken near its southern extremity, on a hillside, of the same tint, at 6 to 12 inches depth.

No. 229. *Subsoil of Grande Côte or Weeks' island*, taken at from 10 to 20 inches depth.

Brown-loam prairie soils.

	ST. LANDRY PARISH.		LAFAYETTE PARISH.	IBERIA PARISH.
	Opelousas prairie soil.	Opelousas prairie subsoil.	Côte Gelée subsoil.	Grande Côte subsoil.
	No. 197.	No. 226.	No. 227.	No. 229.
Insoluble matter	86.810	74.740	75.390	73.200
Soluble silica	3.340 } 90.150	6.960 } 81.700	8.310 } 83.700	9.120 } 82.320
Potash	0.189	0.315	0.333	0.403
Soda	0.138	0.013	0.019	0.058
Lime	0.148	0.251	0.133	0.202
Magnesia	0.234	0.604	0.691	0.823
Brown oxide of manganese	0.086	0.081	0.145	0.126
Peroxide of iron	1.941	4.788	4.286	4.758
Alumina	2.088	7.723	6.479	7.704
Phosphoric acid	0.226	0.152	0.157	0.103
Sulphuric acid	0.037	0.011	0.052	0.033
Water and organic matter	4.816	4.360	4.536	4.024
Total	100.053	99.998	100.531	100.559
Hygroscopic moisture absorbed at	5.420 24 C.°	8.740 21 C.°	7.780 19 C.°	8.960 20.5 C.°

The most obvious difference between these materials and the black-prairie soil from Iberia is the smaller amount of lime, being over six times less than in the latter. Hence the comparative unthriftiness. The analysis of the surface soil also shows a slightly smaller amount of potash, and very much less of vegetable mold. Doubtless the application of lime or plaster would result in a very great improvement. The phosphates, likewise, are in smaller quantity, yet not deficient. As in the case of the Iberia soil, there is here a very great predominance of fine siliceous material over the clay. In this, as in other respects, deep culture, enabling the roots to draw upon the store of plant-food in the subsoil, is sure to be of excellent effect.

III.—The Gray Silt, or Pine Prairies.

This kind of prairie, whose soil is a grayish silt with too little clay to render it retentive, is most extensively developed in Calcasieu, east of the river of that name; but tracts of it are found east of the Nezpiqué and Mentau, such as Pine prairie, near Chicotville; Marmou prairie, also, is stated to be partly of this character. It occupies an area of about 1,075 square miles.

In the northern and poorer portion, the soil is grayish, often ashy, full of bog ore spots; subsoil at 6 to 8 inches is sometimes a mass of black gravel, and underlaid at the depth of a few feet by a putty-like, very siliceous clay, almost impervious to water. The soil is very poor, the growth of grasses coarse, such as *Luzula*, *Carex*, *Juncus*, *Andropogon*, some *Paspalum*; while the *Aletris aurea*, *Allium mutabile*, *Linum Virginicum*, *Baptisia leucophæa* and *leucantha*, *Psoralea melilotoides*, and a variety of *Polygalæ*, impart to this barren prairie a much more cheerful aspect than is that of the green and fertile, but flowerless, prairies of Opelousas. Clumps and groves of the long-leaf pine, mostly occupying the singular mounds or hillocks characterizing this part of Louisiana, dot the prairie and lend variety to the landscape, the view being limited by the timbered belts bordering the water-courses on either side; but there is no sign of settlements, save herds of cattle and an occasional "corral".

To the southward the quality of the soil gradually improves, the long-leaf pine being partially replaced by black-jack and post oaks, and the sweeter grasses prevailing more generally. Among the fertile timbered "coves", that of Hickory Flat is the largest, and well settled. Around the heads of water-courses (such as Serpent bayou) there are extensive marshy flats tenanted by water-fowl and (farther south) by alligators. In some of these, excellent crops of rice are grown by the "Acadian" inhabitants; that grain, with eggs and milk, forming almost their sole sustenance. Sandy pine ridges occasionally diversify the southern portion of these prairies, and small crops of corn have been grown there; yet there is little change in the general features until, near the latitude of lake Charles, we reach the edge of the calcareous coast prairie.

For examination, a specimen of soil was taken in the open prairie, about 3 miles south of Serpent bayou (about section 11, township 8 south, range 6 west).

No. 195. *Soil of Pine prairie*, from range 6 east, township 8, 3 miles south of the crossing of Serpent bayou, Calcasieu parish. Vegetation: clumps of black-jack and post oaks, and long-leaved pine, scattered over the prairie. On the grassy surface, the prevalent plants are the two or three oft-mentioned species of *Paspalum*, some *Luzula*, *Juncus*, *Andropogon*; *Leptopoda fimbriata*, *Obeliscaria laciniata*, *Rudbeckia hirta*, *Echinacea purpurea*, *Silphium squarrosum*; *Baptisia leucophæa*, *Psoralea melilotoides*, *Mimosa strigillosa*. *Polygala*, two species; *Styrax pulverulenta*. Depth taken, 10 inches. Soil gray, somewhat ashy, with brown, ferruginous spots, and small particles of bog ore, which, sifted out, amounts to 0.15 per cent.

Pine prairie soil.

	No. 195.	
Insoluble matter	92.630	94.660
Soluble silica	2.030	
Potash		0.148
Soda		0.041
Lime		0.262
Magnesia		0.140
Brown oxide of manganese		0.035
Peroxide of iron		1.110
Alumina		1.709
Phosphoric acid		0.038
Sulphuric acid		0.061
Water and organic matter		2.614
Total		100.818
Hygroscopic moisture		3.160
absorbed at		13 C.°

According to this analysis, this soil is not as poor, on the whole, as might have been expected; save as regards phosphates and magnesia, in which it is very deficient. It is sadly in need of something to render it more retentive, *i. e.*, clay or vegetable mold; but if properly drained, might be susceptible of profitable improvement and cultivation by some green-manuring and use of bone-meal. Like similar soils in southern Mississippi, it now bears only small-seeded plants; there being a want of the seed-forming ingredients.

The larger streams traversing the prairie region are bordered by timber belts of varying width and character. On the waters of Vermillion river, these "hummock" lands are very fine, better than the prairie adjoining, and timbered with water, basket, scarlet, and live oaks, magnolia, tulip tree, sweet gum, and hackberry. On the heads of bayous Cannes and Plaquemine the timber indicates a somewhat less generous soil, not so well drained, and often full of bog-ore gravel; such tracts being usually marked by thickets of red haw and crab. The level lands timbered with oak, hickory, and elm, on the eastern heads of the Nezpiqué, are in spring often covered with standing water. The same is true of the country on the western heads of the same stream, which is timbered exclusively with the long-leaf pine, and is almost a dead level, full of boggy patches with crawfish holes and aquatic plants, among the latter the *Asclepias paupercula*, the vermilion-colored milkweed of the seacoast marshes. The soil is whitish and very poor, fit only for pasture, and, perhaps, rice culture. Frequently there is a dense growth of candleberry (*Myrica cerifera* and *Carolinensis*), bay galls (*Laurus Carolinensis*), and a variety of whortleberries (*Vaccinium*); and where these prevail exclusively, we have impenetrable thickets, popularly designated as "bay galls", the undisputed resort of the bear, panther, and wild cat. Along the main stream, however, there extends a belt of rolling land several miles wide, with a fine growth of the long-leaved pine, and some good agricultural tracts.

The Calcasieu river itself is bordered by a timber belt of pine, on the level of the prairie; and in the bottom (subject to overflow, but very fertile, and from one to two miles wide) there is a fine growth of beech, magnolia, bay, sweet gum, lowland oaks, &c.

As in the brown loam prairies east of the Nezpiqué, there are in the gray silt prairie occasional "coves" or islands of fertile, timbered upland. One such is the "Hickory Flat" tract in northeastern Calcasieu, which bears a good growth of oaks and hickories; and the "Big Woods" cove in southwestern Calcasieu, which bears the character of the live-oak ridges of the coast.

THE LONG-LEAF PINE REGION.

This division embraces, in western Louisiana, the following parishes and parts of parishes: all that part of Calcasieu lying north of the West fork and west of the main Calcasieu river; all of Vernon, except the Anacoco prairie region; all of Rapides outside of Red river bottom; the southern portion of Natchitoches, and adjoining southeast corner of Sabine; nearly the whole of the parishes of Grant and Winn; a portion of southern Bienville, and nearly all of southern Jackson; and a considerable part of the upland portion of Ouachita, Caldwell, and Catahoula, as indicated in the map by the green tints, covering altogether about 7,260 square miles.

East of the Mississippi river, the long-leaf pine covers most of the country lying northward of lakes Pontchartrain and Maurepas, excepting only the belt of "bluff" lands bordering the Mississippi river, and the belts of marsh bordering the lakes named. It therefore embraces nearly all of the parishes of St. Tammany, Washington, Tangipahoa, Livingston, and St. Helena, and the greater part of East Feliciana, about 3,280 square miles.

Over all this area the long-leaf pine (*Pinus australis*) either forms the exclusive timber tree outside of the bottoms of the streams, or is only occasionally intermingled to any material extent with oaks (black-jack and post).

and at times entirely replaced by the short-leaf species (*P. mitis*). The extent to which this replacement occurs is usually a fair measure of the quality of the soil; that on which the long-leaf pine prevails exclusively being in most cases a very sandy loam of little native fertility or durability. Hence cultivation is, in the long-leaf pine region, commonly restricted to the bottoms and lower hillsides, and to such ridges, as by the admixture of the other trees mentioned, show a better class of soil. Such are, for example, the Anacoco prairie, the Sugartown country on Bundick's creek, in Calcasieu, and many other similar cases. The main adaptation of the region, however, is for grazing and lumbering purposes; and large quantities of ship timber, as well as sawn lumber, are shipped from the Calcasieu, as well as from other parts of the region rendered accessible by navigable streams or railroads.

Since the long-leaf pine, within the latitudes of its occurrence, follows measurably a certain quality of soil, it may naturally be expected that it will often be found beyond the limits of its main bodies, where sandy ridges run out into other soil regions. We thus frequently find it occupying the crests of dividing ridges in the oak uplands of northern Louisiana, and, not uncommonly, isolated tracts, or outliers, considerably beyond the limits indicated in the map.

Within the long-leaf pine region of Louisiana we find two different surface characters, accompanied also by more or less difference in the soils and minor vegetation. These are popularly designated as the *pine flats*, and the *pine hills* proper.

THE PINE FLATS.

The pine flats prevail in the southern part of the region (as indicated on the map by the ruled shade of green), both in eastern and western Louisiana. In Calcasieu, west of the river of that name, they are sharply defined on the south by the West fork, southward of which (aside from a narrow belt of pine woods immediately along the stream) lie marshy pine prairies. To the northward, the pine flats are limited by Bundick's creek, and by the pine hills which form the divide between the West fork waters and those of bayou Anacoco. East of the Calcasieu river, a tract of wet pine flats lies between that river and the Nezpiqué, as mentioned above. From this there is a gradual transition to the pine prairie lands by a thinning-out of the timber growth.

The soil of the pine flats proper in this region is not materially different from that of the pine prairies, with which its herbaceous growth has much in common. It is a whitish or gray, unretentive silt, with brown ferruginous or rusty spots, increasing downward, and indicating a lack of drainage. The cause is found, at the depth of 18 to 30 inches, in a compact, whitish or bluish subsoil, full of bog-ore gravel, and consisting generally of siliceous silt compacted by clay, or sometimes of true clay, almost impervious to water, and of the consistence of putty, where it is brought up by the crawfish that commonly inhabit the lower tracts. The roots of the pines themselves remain above this water-sodden substratum, and hence hurricanes uproot them with great ease.

In the better-drained portions, a very pale yellow, silty loam is found in the place of the white "crawfishy" subsoil. This is especially the case to the northward, as in Calcasieu. Beyond Dry bayou, about 20 miles on a direct line from the West fork, where the wet glades and their peculiar vegetation disappear, the country becomes gently rolling, and thus forms an insensible transition from the coast flats to the pine hills.

The pine-flat region of eastern Louisiana, embracing the greater part of Livingston and St. Tammany, and the southern half of Tangipahoa parish, differs in some respects from the flats of Calcasieu. A heavy, gray clay underlies most of the region, sometimes coming to the surface and forming an intractable, ill-drained soil, at others covered with a sandy or silty, and often very poor soil. The shores of lake Pontchartrain are partly fringed with wet glades, partly with a belt, sometimes several miles wide, of sweet gum and lowland oaks, having a fair though ill-drained soil. Inland of these the level pine-woods set in, consisting partly (in St. Tammany) of short-leaf pine, but generally of the long-leaved species. Along some of these streams (especially the Amite) there are fine belts of forest land, with oaks, beech, dogwood, gums, magnolia, and some short-leaf pine, with a good grayish-brown or chocolate-colored, easily tilled soil, with a foundation of sandy, red clay. The settlements therefore are located chiefly along these streams; the fertility of the soil decreasing as we recede from them. The pasturing of stock, lumbering, and, to some extent, the manufacture of turpentine and charcoal, are thus far the chief industries.

THE PINE HILLS.

A sandy, pale yellow subsoil, covered a few inches deep by a tawny or gray, sometimes ashy, but more generally light, sandy, surface soil, characterizes the long-leaf pine hills from Texas to Georgia. In accordance with this great uniformity of soil, their other features—surface conformation, undergrowth, and even herbaceous growth—are remarkably little varied in this long distance. The pervious soil and subsoil, often underlaid by loose, pervious sand at the depth of 1½ to 3 feet, prevents the formation of deep gullies or abrupt banks. Hence the dividing ridges are mostly broad and gently rolling plateaus, whose valleys are often without any definite water-channels in their upper portions; wells in such regions sometimes finding only sand for a hundred and fifty feet. Then strong springs of clear freestone-water will be found gushing out in the deeper valleys, where the water is shed by the clay or rock strata into which the channels of the streams are cut.

The long-leaf pine forest is mostly open, so that a wagon can frequently traverse it with little more difficulty

than the open prairie. The shade of the pine being very light, grasses and other plants requiring sunshine flourish underneath them, thus affording an excellent pasture, which fact has made stock-breeding the earliest industry of this region.

The uplands are usually exhausted by a few years' culture in corn or cotton; the crops being often fairly remunerative for the time, especially on tracts where a notable amount of oak and hickory mingles with the pine. In general, however, the bottoms of the larger streams are alone looked to for cotton production in the long-leaf pine hills. As in the prairies and flats, we find in them occasionally oases of fertile land; usually ridges timbered with oak, and some short-leaf pine.

Soils of the pine hills.

The following analysis of a subsoil sample from this region shows well the character of the pale yellow loam that underlies the shallow surface soil, and upon which the durability and quality of these long-leaf pine lands essentially depends.

No. 134. *Pine woods subsoil*, from section 9, township 2, range 9 west, on the heads of Bundick's creek, Vernon parish. Open, undulating pine woods, with some small hickory, black-jack, and black gum among the long-leaf pine. Surface soil gray, ashy, to the depth of 8 inches; subsoil a pale yellow moderately light loam, taken from 8 to 18 inches depth.

Pine hills subsoil.

	No. 134.	
Insoluble matter	77.870	82.265
Soluble silica	4.395	
Potash		0.247
Soda		0.083
Lime		0.097
Magnesia		0.339
Brown oxide of manganese		0.041
Peroxide of iron		3.214
Alumina		9.918
Phosphoric acid		0.072
Sulphuric acid		0.086
Water and organic matter		3.546
Total		99.008
Hygroscopic moisture		6.790
absorbed at		26.6 C.°

The composition of this subsoil is very similar to that of the long-leaf pine soils analyzed from Mississippi, given elsewhere, and not inferior to that of many soils profitably cultivated in cotton in Georgia and the Carolinas. Their prominent defect is, here as elsewhere, a scarcity of phosphates and of lime; hence unthriftiness. But the physical qualities of these soils are far from undesirable, and, while manure and deep tillage must be employed to render them productive, they are quite susceptible of permanent improvement.

THE ANACOCO PRAIRIE.

A very unusual occurrence of a fertile island in this region is the "Anacoco prairie", in Vernon parish. This is caused by the approach to the surface of a stratum of calcareous clay, which appears generally only on the hillsides in the form of bands of black-prairie and red clay soils, whose washings have imparted fertility to the valley soils. At some points (as on the Anacoco prairie proper) this limy clay has itself formed the surface, and more or less large and continuous tracts of very fertile black-prairie soil, producing excellent cotton. The district over which these prairie spots and general improvement of soil extend, lies between the extreme heads of the main Calcasieu river and the eastern branches of bayou Anacoco, a tributary of the Sabine river, and embraces about one and a half townships. The surface is quite rolling, and presents within a small compass an extraordinary variety of soils, from the poorest sandy pine hills to the richest upland prairie and prairie bottoms, all of which can sometimes be observed on a single hillside slope. Hence farms are mostly small, but in many cases exceedingly productive, though thus far suffering from want of communication with the outside world.

An analysis of the typical black soil of the main Anacoco prairie (forming on Prairie creek a strip about 3 miles long by three-fourths wide) gave the following result:

No. 171. *Anacoco prairie soil*, from John Smart's place, on Prairie creek, section 33, township 3 north, range 9 west. Here the black-prairie soil reaches to a depth of about 20 inches, is rather sandy above, quite heavy below, and underlaid by a heavy gray clay, passing into clay marl. Farther down the soil crumbles on drying, like the Mississippi "buckshot" and black-prairie soils, and is easily tilled when in good condition; washes badly on the hillsides. Produces 40 bushels of corn and a bale of cotton per acre, and has lasted remarkably well, though plowed but a few inches deep. Depth of sample taken, 12 inches.

Anacoco prairie soil.

	No. 171.	
Insoluble matter	53.190	74.290
Soluble silica	21.100	
Potash		0.332
Soda		0.064
Lime		1.398
Magnesia		0.735
Brown oxide of manganese		0.149
Peroxide of iron		4.520
Alumina		11.363
Phosphoric acid		0.047
Sulphuric acid		0.123
Water and organic matter		7.266
Total		100.287
Hygroscopic moisture		18.110
absorbed at		25.5 C.°

It will be noted that, in its chemical composition, this soil differs but little from the (Cretaceous) prairie soils of the northeastern prairie region of Mississippi, especially that from Monroe county (No. 172, Miss.). The Anacoco soil is poorer in phosphates, but it must be remembered that it has been in cultivation, without return, for about twenty years, while the Mississippi soil was a virgin one. As it is, however, it illustrates strikingly how, in presence of a large amount of lime in the soil, a very small phosphate-percentage will suffice for the needs of crops.

The red and yellow clay soils, mentioned above, seem to differ from the black-prairie soil, mainly in the absence of, or poverty in, lime. They are designated as "hog wallow", and deemed of "little account"; mainly, it seems, on account of the difficulty of tillage in wet seasons, and liability to injury from drought.

THE CENTRAL PRAIRIE REGION.

The central prairie region constitutes a narrow belt, rarely exceeding 10 miles in width, traversing the state in a northeasterly and southwesterly direction from the region between Harrisonburg and Columbia, on the Washita river, to the Sabine river below Sabinetown, on the western border of Texas. Its distinctive character is the occurrence of prairies, mostly small, partly of the black calcareous soil, partly of that stiff and intractable kind popularly known as "hog-wallow" from its rough, humpy surface—the result of the mud-cracks which form in it during the dry season, and, being partially filled up with dry earth, compel a bulging of the ground whenever wetted by rains.

Both kinds of soil are almost directly derived from underlying strata of the marine Tertiary (Jackson and Vicksburg groups), which frequently form outcrops in the washes and ravines. Where these strata are calcareous, they form black-prairie soil, which is more or less clayey or light, according to the nature of the strata from which it is derived. The "hog-wallow" soil is the result of the disintegration of clay beds poor in lime, and in consequence producing an unthrifty and heavy, intractable soil. The better quality of the latter soil bears a fair growth of post oak: the poorer, only a little grass and a few hawthorn bushes. The black prairie is naturally covered with a luxuriant growth of grass, interspersed with clumps of wild plum and crab, as well as hawthorn (of larger size than on the "hog-wallow"), and honey locust.

Both kinds of level "prairie" tracts are rarely more than a few miles in extent, being interrupted by ridges stretching in from the adjacent territory of the long-leaf pine, or oak-uplands region. These ridges may thus have black prairie or "hog-wallow" prairie at their bases, red or yellow loam with oak and hickory on their flanks, and on their crests the sandy soil bearing the long- or short-leaf pine. To designate or map out these prairies and intersecting ridges would require a very detailed survey. Hence the outline given on the map must be understood as simply circumscribing the limits within which the several kinds of prairie soils occur at all. The whole region is exceedingly similar to the central prairie region of the state of Mississippi, (*a*) and its soils are doubtless of similar composition, as they are alike in respect to their agricultural qualities and defects; the black prairies being mostly exceedingly fertile, and yielding large returns of a fine staple of cotton; while the "hog-wallow" tracts can only in very favorable seasons sustain a respectable position as cotton-producing soils. In the level portions of the "hog-wallow", especially, as well as in some portions of the black prairie where the stiff subsoil underlies near the surface, the cotton is liable to "rust" or, probably rather, *blight*, consequent upon an unhealthy condition of the tap-root, induced by the undrained and close subsoil.

a See the description and discussion of the region of the same name in that state.

One obstacle to the settlement of this region, is the difficulty of obtaining a water supply in wells, no water being found usually within 80 or 100 feet of the surface, and, when obtained, of poor quality, being impregnated with soluble salts of lime and magnesia. This difficulty could probably here, as in the corresponding part of Mississippi, be overcome by the boring of artesian wells; but nothing of the kind has thus far been attempted.

In the part of this region lying along the Washita river, in Catahoula and Caldwell parishes, the surface is hilly, and sometimes broken, but the soil is fertile, black-prairie spots appear on the hillsides, and the forest growth includes, besides oaks, a good deal of hickory, walnut, wild plum, hawthorn, and crab-apple.

In the portions lying adjacent to Red river, the general features above described are, on the whole, much less pronounced. In the region drained by the waters of lake Jatt, in Grant and Winn parishes, long-leaf pine hills are the predominant feature, varied only here and there by small prairie spots. Similarly, the hilly country drained by Casatche bayou, in Natchitoches parish, is mainly of a pine hills character; the Tertiary strata cropping out frequently near the base of the hills, and giving rise to small tracts or patches of black, or "hog-wallow", soil, as the case may be. Farther southwest, on the waters of the Toreau, the prairie feature is still more feebly developed, and the rolling oak-uplands of southern Sabine have a fine oak growth of black, Spanish, and white oaks, hickories, ash, elm, and some short-leaf pine. The surface soil is rather light, with a very red, and somewhat heavy subsoil at 8 to 9 inches. Within a few miles of the edge of the Sabine bottom, there is a strip of genuine "red land" soil, as indicated on the map. Here, as farther north, this soil is found to be especially lasting, and very productive of grain.

No. 165. A sample of the *red loam subsoil* of the rolling oak-uplands, just referred to, lying between the Toreau and Sabine rivers, in southern Sabine parish, was taken in a level tract, timbered as above noted. The surface soil and immediate subsoil down to 10 to 12 inches, resemble those of the pine hills, and the herbaceous growth is not much better than in the latter. The subsoil was taken at from 12 to 18 inches depth; it is a moderately heavy loam, glaringly orange-red, without any coarse sand. The analysis gave the following result:

Red-loam upland subsoil, Sabine parish.

	No. 165.	
Insoluble matter	49.120	72.570
Soluble silica	23.450	
Potash		0.202
Soda		0.065
Lime		0.268
Magnesia		0.290
Brown oxide of manganese		0.146
Peroxide of iron		5.324
Alumina		15.232
Phosphoric acid		0.038
Sulphuric acid		0.050
Water and organic matter		5.509
Total		99.694
Hygroscopic moisture		12.140
absorbed at		25.6 C.°

The high lime-percentage, and the extraordinarily large amount of soluble silica and alumina, together with the high moisture-coefficient, at once recall the fact that these soils are underlaid at no great depth by the calcareous clays of the Tertiary formation, and explain the prevalence of such trees as ash, and black and white oaks, on what appears very much like any other pine-upland soil, near the surface. There is, however, a marked deficiency in phosphoric acid, in consequence of which these lands would soon require the restoration of that ingredient. But deep-rooted crops, like cotton, with deep tillage, would doubtless be profitable on this soil for a number of years.

The limited prairie region on the waters of the bayou Anacoco, in Vernon parish, which in many respects greatly resembles the central prairie region, is treated of in connection with the long-leaf pine region, in which it forms a small but fertile oasis (see above).

THE OAK UPLANDS REGION.

The rolling, or sometimes hilly, oak uplands, to be considered under this head, form the prominent and characteristic feature of northwestern Louisiana, outside of the bottom of Red river and the long-leaf pine hills.

There are substantially four different kinds of soil, that, with their intermixtures, represent the agricultural resources of the uplands of this region, viz: the *red lands*, the *brown loam lands*, the *pale sandy loam lands*, and the *gray pine-flats soil*. These soils, however, are so irregularly spotted about among the ridges and valleys, that only a detailed sectional map could fully represent the respective areas of occurrence. For the purposes of the present work, it must suffice to indicate on the map some of the main features of their distribution, supplementing the same in the descriptions of the several parishes.

Red lands.

A striking feature of most of the better class of upland soils in northwestern Louisiana, is the deep orange or "red" tint of the subsoil, due to a large percentage of ferric hydrate (iron rust), very evenly and finely distributed through the mass, and imparting to it, in a high degree, the qualities of ferruginous soils. Not unfrequently the iron is also found in concretionary pebbles, up to masses of considerable size, constituting available deposits of good limonite ore; or, again, it may be so abundantly present in the finely pulverulent form only, as to tint with its red dust all exposed objects, during dry seasons. The "red lands" having a good "lay", and not rendered uncultivatable by an excess of ferruginous gravel or limonite nodules, are among the most highly esteemed soils of this portion of the state, although often most unpromising in their aspect; they being not only productive, but especially very durable. The usual timber growth is oak and hickory, almost always associated with more or less of the short-leaf pine; the greater or less prevalence of the black oak and hickories over the pine and inferior oaks (post and black-jack) being a fair index of the relative fertility of different tracts. The "red lands" proper, which prevail most extensively north of the Red river, in Lincoln, Jackson, Claiborne, and Bossier parishes, are usually hilly, and sometimes rather broken for cultivation; but some of these unpromising-looking lands have been cultivated in corn and cotton for thirty and forty years, without a sensible diminution of their productiveness. This best class of "red-land" soil is a loam rather than a clay, in consequence of the cementation of the soil particles by the iron. Occasionally this feature, carried to excess, interferes with the penetration of the roots, rendering the soil too gravelly or stony; but in that case good tillage improves it very much. Three samples of these characteristic red soils have thus far been analyzed, with the results given below.

No. 184. *Red-lands subsoil*, taken 7 miles southeast of Mansfield, De Soto parish, on the Pleasant Hill road. The surface soil is gray, rather sandy, about 5 inches in depth. The subsoil, taken from 5 to 12 inches depth, is glaringly orange red; full of ferruginous gravel. At 12 inches there underlies a bed of limonite-ore nodules. The timber is not large, consisting of short-leaf pine, Spanish and post oaks, and hickory, the roots scarcely able to penetrate the ore bed below.

No. 48. *Dolet hills subsoil.*—In the hilly country bordering the Red river bottom on the south, in De Soto and Natchitoches parishes (the Dolet hills country), the glaringly red subsoil also prevails largely, but is quite a heavy clay, and the forest growth it bears (black-jack, post, and scarlet, with a little black, oaks) is under-size on the uplands, while walnut, ash, and tulip trees appear in the narrow bottoms. A specimen of the heavy red subsoil was taken on a hillside about two miles from Granning's ferry over the bayou Pierre. The surface soil is only a few inches deep, a little more sandy and grayish; depth to which the subsoil was taken, 5 to 15 inches.

No. 231. *Red-lands soil*, from near Vienna, Lincoln parish. This is a typical red-land district. There is mostly a shallow, sandy surface soil, 2 or 3 inches deep, but often the red subsoil itself comes to the surface, as in the case of the land from which the sample was taken to the depth of 10 inches. Timber, oak and hickory, with short-leaf pine; said to be a very lasting and fairly productive soil.

Red lands soil and subsoils.

	DE SOTO PARISH. (S. 6, T. 11, R. 12 W.)		LINCOLN PARISH.
	South of Mansfield subsoil.	Dolet hills subsoil.	Vienna soil.
	No. 184.	No. 48.	No. 231.
Insoluble matter	74.710	71.800	48.055
Soluble silica	6.580 } 81.290	7.450 } 79.250	16.075 } 64.130
Potash	0.218	0.367	0.270
Soda	0.167	0.008	0.066
Lime	0.149	0.055	0.120
Magnesia	0.433	0.449	6.420
Brown oxide of manganese	0.213	0.066	0.210
Peroxide of iron	8.617	8.966	15.927
Alumina	4.993	7.118	11.710
Phosphoric acid	0.152	0.179	0.305
Sulphuric acid	0.054	0.007	0.090
Water and organic matter	3.279	4.320	7.674
Total	99.565	100.785	100.922
Hygroscopic moisture	5.675	8.980	14.118
absorbed at	26.6 C.°	21.6 C.°	28 C.°

The composition of the soil No. 231 shows good cause for its productiveness and durability in the high percentage of phosphoric acid, and the high degree of decomposition shown by the large amount of soluble silica and

alumina, indicating the availability of its store of plant-food. Moreover, the high percentage of iron, as shown by the moisture-coefficient, renders it almost drought-proof. Its lime-percentage is not high and could advantageously be increased by liming.

No. 184 is behind the one just referred to, both as to phosphoric acid and potash and moisture-coefficient, though somewhat ahead in respect to lime. Where it is sufficiently deep, it will doubtless prove very productive.

No. 48 is a very close and heavy soil, and its composition shows a deficiency in lime, which is so especially needed in land of this character. With this addition, thorough tillage, and the practice of green-manuring for the purpose of introducing the deficient vegetable matter, it would doubtless prove a very productive and durable soil, as apparently similar land in the same region is known to be.

Doubtless much of the heavy red subsoil mentioned repeatedly, is richer in nutritive ingredients than the last one mentioned; none probably is poorer. But I think the necessity for applying lime exists in all, judging by the usual vegetation.

Brown loam.

In the rolling uplands or broad ridges of Sabine, De Soto, and Caddo, as well as at some other points, we find a light orange or brown loam subsoil, covered by from 6 to 10 inches of a somewhat lighter soil, timbered mainly with good-sized black and Spanish oaks (*Quercus tinctoria* and *falcata*), with some post and black-jack oaks interspersed. The country covered by this soil is very similar to the table-lands region of northern Mississippi, and maintains a fair degree of fertility after long exhaustive cultivation, to which it has largely been subjected. Its quality improves as we descend from the dividing ridges, and especially on the gentler slope toward the Sabine; where the "Grand Cane" region in western De Soto forms one of the most fertile tracts in northwestern Louisiana. Here the oaks mingle with, and are gradually almost replaced by, beech, tulip tree ("poplar"), maple, elm, ash, hickory, and walnut, all large trees, indicating a generous, durable, and easily-tilled soil.

The brown loam soils are doubtless similar in composition to the "table-land soils" of Mississippi.

Pale loam.

A pale yellow, sandy loam subsoil prevails largely in the more level portions of northern Louisiana; the surface soil being grayish and sometimes rather ashy, and bearing a growth of post, black-jack, and some scarlet oaks, black gum, and more or less short-leaf pine. It is a third-rate soil, somewhat better than the pine-hills soil, but not thrifty, and wearing out beyond the limits of profitable culture, in the course of seven or eight years. When fresh it yields about 500 pounds of seed-cotton per acre, and 20 bushels of corn. It covers large areas in the northern parishes, and passes gradually on the one hand into the "red lands" (whose red subsoil is always a mark of improvement in quality, and is accompanied by an increase of the hickories among the timber), and on the other into the brown loam or table-land soil described above. The only Louisiana soil of this character thus far analyzed, is from the upland portion of Morehouse parish, known as the Bastrop hills, and more specially considered in another place.

No. 232. *Sandy loam soil*, from the undulating uplands 2 miles east of Bastrop; taken to the depth of 12 inches. Pale yellow, with little coarse sand. Vegetation: oak, hickory, short-leaf pine.

No. 233. *Subsoil of the above*, taken at the depth of 12 to 18 inches. Yellow, somewhat heavier and deeper tinted than the surface soil.

Bastrop hills soil, Morehouse parish.

	MOREHOUSE PARISH.	
	Bastrop hills soil.	Bastrop hills subsoil.
	No. 232.	No. 233.
Insoluble matter	81.700 } 87.450	68.690 } 81.540
Soluble silica	5.750 }	12.850 }
Potash	0.442	0.344
Soda	0.286	0.070
Lime	0.101	0.120
Magnesia	0.239	0.440
Brown oxide of manganese	0.386	0.223
Peroxide of iron	3.546	4.733
Alumina	4.868	9.231
Phosphoric acid	0.099	0.111
Sulphuric acid	0.079	0.093
Water and organic matter	2.544	3.376
Total	100.040	100.281
Hygroscopic moisture	5.471	9.441
absorbed at	29 C.°	29 C.°

This soil is almost identical in composition with that of the short-leaf pine uplands of Mississippi, and like these will soon require the supplementing of its somewhat scanty supply of phosphates, while its thriftiness should be increased by liming. Its potash-supply is fair, as is also its retention of moisture; but both can be advantageously increased by deep culture.

Pine flats.

In ill-drained tracts (as in the Black lake country in Natchitoches and Red River parishes, as well as in many of the lake regions on both sides of Red river) the subsoil becomes whitish by the formation of concretions of bog ore or black pebble; and thus the soil becomes poorer than in the uplands, unless enriched by sediment. This kind of "pine-flat soil" is about the least esteemed in this region; even its timber growth being rather indifferent, and often quite stunted.

In Bossier parish, between bayous Bodcau and Dorchite, there is a long level tract, extending from the Arkansas line to lake Bistineau. Much of it is sandy or ashy pine land, some heavier and "crawfishy", with a white clay subsoil. Where well drained (as near Cotton valley) some of this land is quite productive; farther south, some of it forms small prairies of a white soil covered with grass and thorn bushes, and very unproductive. These gray flats form a striking contrast to the "red-land ridges" to which they are frequently adjacent.

Most of the country northward of the main D'Arbonne, in Claiborne and Union parishes, forms level or slightly undulating plateaus between the larger streams, near which alone the country is sometimes somewhat broken. This plateau land has partly a soil intermediate in character between the brown and the pale yellow loam lands mentioned above; the subsoil often taking an orange or red tint at 18 or 20 inches, and thus occasionally, when near the surface, forming a kind of "red land". In part, again, it has a gray, somewhat ashy or sandy soil, underlaid by gravel at 18 to 24 inches; or sometimes by gray clay, and when this comes near the surface, it forms a heavy gary soil intermixed with gravel or broken rock, popularly called "cowhide" land. These soils have not been sufficiently examined, and none have been analyzed; but the fact that the country is well settled with small, thrifty farms, proves that they respond kindly to fair treatment. Some details regarding them will be found in the descriptions of the respective parishes.

GENERAL REMARKS ON COTTON PRODUCTION IN LOUISIANA.

TABLE III.—SHOWING POPULATION AND COTTON PRODUCTION IN EACH AGRICULTURAL REGION OF LOUISIANA.

Agricultural region.	Area.	POPULATION.			COTTON PRODUCTION.									
		Total.	White.	Colored.	Acres.	Bales (475 pounds).	Average per acre.				Total in tons.		Percentage of the state's total production.	Cotton acreage per square mile.
							Bales (475 pounds).	Seed-cotton.	Lint.	Seed.	Lint.	Seed.		
Alluvial region:	*Sq. mls.*							*Lbs.*	*Lbs.*	*Lbs.*				
North of Red river	7,313	121,415	29,019	92,396	278,192	221,115	0.79	1,125	375	750	52,515	105,030	43.5	38.0
South of Red river	5,881	161,435	60,611	100,824	86,598	61,275	0.71	1,011	337	674	14,553	29,106	12.0	14.7
Tide-water parishes	7,215	303,613	198,288	105,325	1,917	794	0.41	585	195	390	188	376	0.2	0.3
Bluff region	1,295	47,907	13,887	34,020	61,248	28,064	0.47	669	223	446	6,808	13,616	5.6	47.3
Attakapas region	4,346	78,643	43,038	35,605	64,474	29,656	0.46	657	219	438	7,043	14,086	5.8	14.8
Long-leaf pine region	9,956	64,155	43,753	20,402	56,598	22,382	0.40	570	190	380	5,316	10,632	4.4	5.7
Oak uplands	9,414	162,778	66,358	96,420	315,760	144,683	0.46	657	219	438	34,362	68,724	28.5	33.5
Total for the state	45,420	939,946	454,954	484,992	864,787	508,569	0.59	840	280	560	120,785	241,570	100.0	19.0


MAP
OF
LOUISIANA
SHOWING
IN THE DIFFERENT SECTIONS OF THE STATE
THE RELATION BETWEEN THE
AREA CULTIVATED IN COTTON
AND THE TOTAL AREA
BY
E. W. HILGARD
SPECIAL AGENT, 10TH CENSUS
1880.
LEGEND.
Percentage of total area planted in Cotton in 1880.
I 0 to 0.1 per cent.
II 0.1 to 1 " "
III 1 to 5 " "
IV 5 to 10 " "
V 10 to 15 " "
VI 15 to 20 " "
TEXAS
MISSISSIPPI
GULF OF MEXICO
Scale:
Julius Bien & Co. lith.

TABLE IV.—SHOWING "BANNER COUNTIES" AS REGARDS PRODUCTION AND PRODUCT PER ACRE IN EACH AGRICULTURAL REGION OF LOUISIANA.

Regions according to product per acre.	Average product per acre.	COUNTIES IN EACH REGION HAVING HIGHEST TOTAL PRODUCTION.					COUNTIES IN EACH REGION HAVING HIGHEST PRODUCT PER ACRE.					
		Name.	Rank in product per acre in the state.	Cotton acreage.	Total production.	Product per acre.	Name.	Rank in total production in the state.	Cotton acreage.	Total production.	Product per acre.	Rank in product per acre in the state.
	Bales.				*Bales.*	*Bales.*					*Bale.*	
Alluvial region, north of Red River	0.79	Tensas	4	50,555	41,859	0.83	East Carroll	2	40,167	38,160	0.95	2
Alluvial region, south of Red River	0.71	Pointe Coupée	8	24,136	18,935	0.78	Saint Charles	50	51	47	0.92	3
Bluff region	0.47	West Feliciana	23	21,072	11,810	0.56	West Feliciana	15	21,072	11,810	0.56	23
Attakapas region	0.46	Saint Landry	24	42,135	23,148	0.55	Saint Landry	7	42,135	23,148	0.55	24
Oak uplands region	0.46	Bossier	15	37,133	25,078	0.68	Bossier	4	37,133	25,078	0.68	15
Tide-water parishes	0.41	Cameron	39	1,662	636	0.38	Orleans	51	7	12	1.71	1
Long-leaf pine region	0.40	Saint Helena	37	13,626	5,328	0.39	Grant	29	11,155	5,158	0.46	26

"Banner county" of the state as regards total production, Tensas, 41,859 bales.

"Banner county" of the state as regards product per acre (omitting those whose production is less than 100 bales), East Carroll, 1,353 pounds of seed-cotton.

DISTRIBUTION OF PRODUCTION IN THE STATE AT LARGE.—The most broadly obvious fact, rendered apparent by a glance at the map showing the relative areas given to cotton culture in the state, or by an inspection of Tables II and III, is the decrease of cotton production as we advance southward. Seventy-eight and a half per cent. of the entire cotton crop of the state is produced north of the latitude of the mouth of Red river; 12 only in the alluvial region south of Red river, and in the tide-water parishes two-tenths of 1 per cent. only; no cotton at all being reported by seven of these in 1880.

Since cotton is successfully grown in all tropical countries, this decrease is evidently not caused by the lower latitude as such; and the fact that the decrease is equally apparent in the rich alluvial parishes and in those occupied by the long-leaf pine proves that it is not attributable to a difference in the soils.

An inspection of Table II (see first of the report) shows that, so far as the alluvial parishes are concerned, it is the replacement of cotton culture by that of the sugar-cane that causes the decrease. To this, as we approach the tide-water region, is added the culture of rice in increasing proportion.

The inference is that these crops are found to be more profitable than cotton, where the soil and climate are suitable. As regards the latter, the late and early frosts liable to occur in the region north of Red river shorten the season too much for the safety of the sugar-cane, but not for that of the cotton crop; hence it is only southward of that popularly recognized dividing line between north and south Louisiana that cane gradually gains precedence in the lowlands, while in the uplands bordering the great valley, and fairly settled, cotton culture continues far to southward, even reaching the gulf shore at the "Five islands", among which Petite Anse and Côte Blanche have possessed extensive cotton plantations. Apart from these, cotton is little seen in the tide-water region, even the culture of the long-staple having become almost extinct.

It is to be regretted that in consequence of the specific nature of the questions embraced in the schedules, but few of those sent to the cane-growing parishes have elicited any replies conveying positive information. In answer to direct questions as to the reasons for the overwhelming preference given to cane, two have been given. One, and the chief, is that "cane is more profitable than cotton where it can be grown", the implication being that while cotton has to compete with all the rest of the cotton-growing states, sugar-cane is almost a monopoly of Louisiana, and is more or less protected by the import duties on sugar. Some have added that the frequency of showers during the picking season interferes somewhat with the gathering of the crop, besides tending to depress its grade in the market. An inspection of the rain tables thus far available does not seem to show any general difference in the distribution of the rainfall as between the region north and that south of the mouth of Red river; yet it may be that an examination of the number of rainy days in each month would corroborate the assertion made. Nevertheless, it is not at all likely that the difference is so great as to interfere with the adoption of cotton as the chief crop of the now cane-growing region, in case commercial changes or the competition of sorghum sugar should render sugar production less profitable.

As regards the uplands in the same latitude, the fact that cane requires a deep, moist soil, and deeper culture than cotton, explains the fact that even in the more fertile portions of the Attakapas prairies, in La Fayette and Saint Landry, cotton is, with corn, the preferred crop. The decrease of the culture to westward occurs not only in the case of cotton, but holds as regards all branches of agriculture except stock raising on the natural pasture, which is altogether the predominant industry, the population being very sparse. The soils of these westerly portions of the Attakapas region are also, on the whole, less productive than in the portions lying adjacent to the

Mississippi valley; yet soils inferior to theirs are profitably employed in cotton growing in the southeastern states. The same is more or less true of the portion of east Louisiana lying north of lakes Maurepas and Pontchartrain—Saint Tammany, and the southern part of Tangipahoa, where stock raising and lumbering predominate at present. It is by comparison with the profusely fertile soils of the more immediate valley and delta plain of the Mississippi river that the soils of these regions are now frequently designated as "too poor to pay for cultivation". But cotton is profitably grown in Georgia, South Carolina, and Florida on land at least no better than that of the pine flats and gray silt prairies of southern Louisiana; and the time will come when these will be equally esteemed as available agricultural lands. In one case only does the cotton product per acre descend as low as is commonly the case in northern Florida and adjacent parts of Georgia on unmanured lands, viz, 0.23 bale in Vermillion parish; and this is probably due to imperfect culture by the Creole population, rather than to poverty of the soil.

DISTRIBUTION OF COTTON PRODUCTION AMONG THE AGRICULTURAL REGIONS.—Table III shows that the *alluvial region* north of Red river mouth, constituting 16.1 per cent. of the state's area, produces 43.5 per cent. of the whole cotton crop; 12 per cent. more is the product of the alluvial region lying south of the mouth of Red river. To this should be added the product of the alluvial bottom or Red river itself; but the form of the returns does not admit of its direct segregation from the totals of the parishes within which (above Rapides) it is mainly embraced. A near approach to such separate estimate can, however, be derived from the average product per acre given for the parishes concerned, viz: Natchitoches, Red River, Bossier, and Caddo. Allowing for the uplands portion of these parishes the general average of 0.40 of a bale, deducible from the average of the rest of the oak uplands region, and for the Red River bottom a slightly higher average product than that of the northern portion of the Mississippi alluvial region, viz, 0.84 bale per acre, the cotton acreages of these Red river parishes that should be assigned to the lowlands can be deduced from the excess of their averages above that of the upland parishes (viz, 0.40 bale). Making the calculation on this basis, we find that of the total product of 72,873 bales reported from these parishes, 39,335 are to be credited to the Red River bottom lands, making 7.7 per cent. of the state's total production. Including with these amounts the 0.2 per cent. grown in the tide-water parishes, we find that at least 63.4 per cent. of the state's total cotton crop is grown in the lowlands of the two great rivers, within not quite one-third of the area of the state. Since in the upland regions also a large part of the cotton crop is grown on bottom lands, it is obvious that an unusually large proportion of Louisiana cotton is of lowland growth, and this circumstance has doubtless much influence in imparting to "Orleans" cotton its character and commercial reputation.

Next to the alluvial region, the *oak uplands* of northwestern Louisiana contribute the largest share of the balance. Deducting from their tabulated quota the 7.7 per cent. estimated to belong to Red River bottom lands, we still have 20.7 per cent. coming from this upland region, as against 15.9 from all the rest of the upland parishes; the respective areas being to each other as 3 to 5.

The three *bluff parishes*, though constituting less than 2.9 of the state's area, contribute nevertheless 5.6 per cent. of the total cotton product, having the largest cotton acreage per square mile among the regions as a whole; nearly one-half of their area being given to that culture. The fact that they are among the earliest settled and most readily accessible portions of the state has doubtless largely influenced the choice and extent of the culture; but in addition, their generally light and calcareous soils are especially adapted to cotton culture, the crop, though only moderate in the yield per acre, rarely failing.

The *Attakapas region* is not readily comparable in regard to cotton acreage and production as a whole with other portions of the state, on account of its sparsely-settled condition, due largely to remoteness, as well as to historical and social causes. With an area three and one-third times greater than the bluff parishes, its cotton product is practically the same, and nearly ten-elevenths of this amount is produced in La Fayette and Saint Landry, or rather, as regards the latter parish, in the eastern half of the same, the western being merely a great cattle pasture up to this time. The small parish of La Fayette, with its 239.3 acres of tilled lands per square mile, of which one-fifth is occupied by cotton, gives a fairer idea of the capabilities of the region than can be derived from the average of the whole.

As to the *long-leaf pine region*, the smallness of its contribution of 4.4 per cent. of the state's production, from over one-fifth (21.9 per cent.) of its area, is also primarily due to sparseness of settlement; the population forming only 6.8 per cent. of that of the state. That it is not due alone to poverty of soil is apparent from the high product per acre (0.40 bale), being not very far behind that of the Attakapas region. In estimating the possible future production, however, it must not be forgotten that the lands now occupied by cotton are chiefly the bottoms of the streams, which may be estimated to constitute from 7 to 10 per cent. of the total area, the uplands being much less productive, and as yet but little under tillage.

In the *tide-water parishes*, as remarked before, commercial considerations restrict the growing of cotton to occasional spasmodic efforts, so that no general conclusions unfavorable to cotton-growing can justly be drawn from their statistics. All the cotton reported in 1880 seems to have been "uplands", or short staple. As regards the culture of sea-island or long-staple cotton, which before the war flourished at some points in the marsh parishes, the fact that the deep but fairly fertile soils on which it succeeds best elsewhere are of comparatively rare occurrence near the Louisiana coast may militate against a wide extension of this industry, so profitable where the natural

conditions are favorable. That the latter exist in the "live-oak ridges" of Cameron and Vermillion, experience has already established; but it seems likely that the same is true of the seaward portions of Saint Mary's, Terrebonne, and Lafourche, where similar lands lie along the bayous, and on the landward edge of the marshes toward the Attakapas prairies. It may well happen that there, and even in a part of the Houma country, the sugar-cane will before long be at least partially replaced by the long-staple cotton.

ACREAGE IN COTTON.—The graphic representation of the ratios between acreage in cotton and total areas given in the map conveys the general facts in this respect better than can be done in words or figures; the more as its shades are outlined, not by counties, but from data derived partly from detailed returns, partly from correspondence or personal observation. The causes and details of this distribution, however, require closer consideration.

As between uplands and lowlands, the summation by parishes, as per tables, places the cotton acreage in the lowlands at 42.4 per cent. of the state's total. But by making the proper allowance for the bottom portion of the Red River parishes, on the assumption explained above, the lowland acreage is raised to 46.8 per cent., or within 3.2 per cent. of half the cotton acreage of the state.

COTTON ACREAGE IN THE SEVERAL REGIONS.—The acreage table resulting from the summation by parishes gives to the *oak uplands region* the greatest total acreage. But when the correction, above made, for the Red River lowlands is applied, the acreage of the region is reduced by the 48,017 acres thus transferred to the lowlands, viz, to 267,743, or 31.0 per cent. of the total cotton acreage of the state, or somewhat over three-fifths of the total of the lowlands. Deducting from the total area of the oak uplands region the 950 square miles belonging to the Red River bottom above Rapides, we find for the uplands proper a cotton acreage of 31.6 per square mile, while that of the Red River bottom region embraced within these counties is 50.5. It thus appears that the Red River bottom as a whole is exceeded in its cotton acreage per square mile only by three of the alluvial parishes, viz: East Carroll, Tensas, and Concordia; and by three of the upland parishes, viz: East and West Feliciana, and Claiborne, the latter itself belonging to the oak uplands division.

As regards the *lowland division* north of Red river, the summations by parishes here also give results not fully representing the facts of the case on account of the large upland areas of comparatively low production embraced within the group. Thus West Carroll, Caldwell, and Catahoula give in nearly all the columns of Tables I and II figures strikingly below those of the exclusively alluvial parishes; and the same is true, to a less extent, of Richland and Franklin. It would be difficult to apply to the returns, as furnished, corrections similar to those made in the case of the Red River parishes, save upon the assumption that practically all the cotton grown in this group is produced in the lowlands. That this assumption is not very wide of the truth is proved by the figures of the columns showing product per acre, which, apart from the extraordinary product of East Carroll, oscillate not very far from 1,000 pounds of seed-cotton per acre. It is for this reason that the parishes above named, though having a largely preponderating upland area, have nevertheless been placed in the lowland group. Making the calculation on the above basis for the (partly upland) parishes of West Carroll, Morehouse, Ouachita, Caldwell, Richland, Franklin, and Catahoula, we find an average acreage of 52.2 per square mile for the whole group, but ranging from 25.0 in the case of West Carroll to 85.4 in that of Ouachita. The varying productiveness and availability of the alluvial lands, with the greater or less facility of communication with market, explain sufficiently such differences, while it is often difficult to follow them in detail. The cause of the marked preference given to cotton in East Carroll, for example, with its 100.4 acres in cotton per square mile, may lie mainly in the high production per acre, this parish having the maxima in the state in both respects. But the causes of this high production are doubtless themselves complex, and operate similarly in the adjoining counties of Chicot, Arkansas, and Washington, Mississippi, where similar maxima are observed.

Of the parishes of the group lying south of Red river mouth, Rapides shows an apparent anomaly in an acreage (17.1) lower than Avoyelles (27.8), and less than half of that of Pointe Coupée (42.0), the latter lying far to southward. As a matter of fact, by far the greater portion of the cotton product of Rapides comes from the Red River bottom lands, which constitute nearly one-third of its surface, and are as productive and as well settled as any portion of the Red River country. Assigning all the acreage to the lowlands, we find 53.9 per square mile of the 475, doubtless an excess; but making all probable allowance for the uplands, especially north of Red river, the density of cotton culture in the bottom will still remain higher than that of Avoyelles, and is probably not far from that of Pointe Coupée. Southward of the latter the proximity to the cotton-growing uplands affects West Baton Rouge on the one hand and Saint Martin on the other; but southward the sugar-cane overshadows all the *tide-water* parishes, scarcely requiring mention in this connection.

In the *bluff region* as a whole the cotton acreage reaches its maximum (47.3), its average being exceeded by only nine parishes in the state, and the highest acreage within it (viz: 58.7 in East Feliciana) only by East Carroll, Tensas, and Concordia, half of all the tilled land being in cotton, as against an average of 70 in the four river parishes (East Carroll, Madison, Concordia, and Tensas) with which a comparison can properly be made, and of 62.1 for the whole of the group north of Red river mouth. Indian corn is here, as elsewhere in the cotton-growing region, the chief competitor of cotton for the occupancy of the ground.

The unequal distribution of cotton production in the *Attakapas region* has already been alluded to, as also the fact that ten-elevenths of the total cotton product belong to Saint Landry and La Fayette, as does five-sixths of the total acreage. A large proportion of both factors, as regards Saint Landry, is derived from the portion of the parish belonging to the great alluvial plain. The parish of La Fayette, on the contrary, is almost wholly uplands, and one-fifth (20.0) of its tilled lands is devoted to cotton, the rest being mainly corn. While the cotton acreage per square mile in Iberia (12.8) is only a little over one-fourth as much as in La Fayette (47.8), yet the proportion of its tilled lands given to cotton culture (15.0) is three-fourths as great as in La Fayette. Moreover, it is reported to be on the increase, and certainly the soil of the Iberia prairies is eminently well adapted to cotton.

The causes of the relatively and absolutely small production and acreage of cotton in the *long-leaf pine region* have already been alluded to. It is as a whole the most sparsely settled portion of the state, as is apparent from its having the smallest percentage of tilled lands of all the regions, viz, 2.5 per cent., and a population of only 6.4 per square mile. Of the tilled lands, however, over one-third (35.6 per cent.) is devoted to cotton, showing the adaptability of its soils to that industry, which is also sustained by the relatively large cotton product per acre (0.40 bale). The causes leading to this result are more fully considered below, under the proper head.

PRODUCT PER ACRE.—As might be expected, the returns show the maxima of production per acre to occur in the *lowlands* of the Mississippi, northward of Red river; and the alluvial bottom of the latter must be credited with at least equal productiveness, according to the details of local observation. Eliminating as much as possible the influence of the upland production upon this factor, we find that the average of actual product per acre in the great bottoms may be assumed to be in the neighborhood of 0.84 bale, or 409 pounds of cotton lint per acre; the maximum occurring in East Carroll (0.95), the minimum among the purely alluvial parishes in Concordia (0.79 bale). Thence southward, there appears a pretty regularly progressive decrease, broken only by the extraordinary case of the 51 acres in Saint Charles, which, of course, cannot be counted in drawing averages, and the low product of Saint Martin, where the influence of an upland area is apparent.

The cause of the decrease southward is not obvious. It may be partly due to the fact that in the southern alluvial parishes the enormously productive "buckshot" soil is more frequently covered by the lighter and less thrifty modern alluvial deposits, and to some extent to the preference given to sugar-cane as the chief crop, upon which the best part of the land and care is bestowed.

But the above average, though nearly twice as great as that of the uplands at large, is but a partial index of the capabilities of the soil. Almost throughout the bottoms the land is owned in large tracts, and the entire business of production is managed in a "wholesale" style, which is little conducive to obtaining the best possible results from each acre. Moreover, as the population table shows, the work of cultivation is almost exclusively done by negroes, to a large extent not even under the direct supervision of whites. To those acquainted with the character of the southern negro, this clearly means that, on the whole, the work is done very roughly and superficially, even when the laborer's personal interest is directly involved in the amount produced. The negro, even more than the white planter, believes in cultivating as much land as possible when desiring to increase production; the idea of "intense culture", requiring close attention and thorough work throughout, is antagonistic to his instincts. It thus happens not unfrequently that in favorable seasons labor enough to pick all the cotton cannot be obtained, and the last picking, or a part thereof, is left in the fields. When special care and deep tillage has been given, and all the cotton picked, 1,000 and even 1,200 pounds of lint has been produced per acre in numerous cases, both in the Red River valley and on the buckshot lands of the Yazoo and Tensas bottoms. There is, evidently, no reason save a slovenly habit why a product twice as great as that now shown by the returns should not be the rule instead of the exception. The reply given in answer to question No. 1, p. 77, from Concordia, stating that the depth of tillage is "4 to 5 inches in sandy lands, 2 to 3 in black (*i. e.*, buckshot) lands", characterizes the state of things in this respect most fully and tersely. The sandy lands are plowed deeper, because it is easier; the heavy clay "buckshot" lands are merely scratched, even when a two-mule team is used (see question 2, same page), in order to get over more ground, and the roots of the crop are left to penetrate the subsoil as best they may. The labor thus left to be performed by the roots is certainly the most dearly paid for; it may be accomplished by them with comparative ease in favorable seasons, but in less favorable ones is certain to weigh heavily in the year's balance on the loss side of the ledger.

While, then, the sandy or "front-lands" may be presumed to be worked now up to within a reasonable approach to their maximum production, the best and most durable soils—those of the "buckshot" character—are certainly yielding a product far below their natural capacity, and may doubtless readily be made to yield double that amount. It is at present impossible to estimate the relative proportion of the two kinds of soil under cultivation, or naturally existing; the more as a permanent protection against overflows would render available a large "back-land" area, mostly of the buckshot character, that at present is practically irreclaimable swamp.

Taking into consideration all these circumstances, which at present tend to depress both the product per acre and the total production of the lowland region, its future possibilities under a more rational system of culture, and security against floods, cannot but be estimated very high.

Passing to the uplands, we find the next highest product per acre reported from the *bluff region* of east Louisiana. Analyzing the returns, however, it will be seen that those from West Feliciana and East Baton Rouge include the product of not inconsiderable lowland areas, that cannot be segregated from that of the uplands. That

from East Feliciana, again, includes the product of a considerable long-leaf pine area, so that the average is doubtless somewhat lower than corresponds to the average production of the "bluff" lands alone, which would probably be from 0.41 to 0.42 bale per acre. These lands have been under cultivation a long time, and have been severely injured by the washing away of the rich black surface loam from the hill lands, which are said to have originally yielded a (400-pound) bale of lint per acre with ease. The excellent deep subsoil still existing will doubtless enable these lands to recover from their present depressed production whenever a system of small farming shall have replaced that of the plantation. This change is now in gradual progress, and the prevailing opinion seems to be that the product per acre has increased during the last decade.

The average product given for the *Attakapas region* likewise requires a correction on account of the large lowland portion of Saint Landry, whose product cannot be segregated in the returns as made. La Fayette and Iberia (0.28 and 0.33 bale, respectively) may be regarded as giving a fair index of the production of the Attakapas uplands under the present system of culture, in which, judging from the small proportion of negroes in the population, a large amount of white labor is engaged. The practice involves, however, neither rotation nor the use of fertilizers, and but very indifferent tillage of a soil of very good native fertility, that could easily be made to yield at least 0.50, *i. e.*, half a bale of lint on an average, since 400 pounds has frequently been obtained under favorable natural conditions. This applies to the upland portion of Saint Landry (the Opelousas prairies) as well. The low product of Vermillion is probably to be accounted for on the ground of very imperfect culture by the Acadian population, and cannot be taken as proof of the decrease of native fertility in the Vermillion bayou lands.

The *long-leaf pine region* as a whole shows an unexpectedly high average product (0.40 bale) as compared with the long-leaf pine lands of the states east of the Mississippi. Two factors contribute to the latter end, viz, the thus far almost exclusive use of lowlands (creek bottom land) for cultivation; and secondly, the use of fertilizers, especially in east Louisiana, where uplands are to some extent occupied. It is thus (as appears from the special report from that parish) that the high product per acre credited to Saint Tammany (0.45 bale) was obtained, while in the case of Grant and Winn, not only the lowlands, but also the uplands, partake somewhat of the character of the adjacent oak uplands region. Eliminating these from the calculation of averages, we find 0.37 bale as the average for the six remaining parishes, 0.38 being that for the four lying east of the Mississippi (Saint Helena, Tangipahoa, Livingston, and Washington) and 0.346, or, say, 0.35, for Vernon and Calcasieu. In neither of the latter two has manure or other fertilizers been used, but the Calcasieu cotton is altogether grown on creek bottom land, while in Vernon both the bottoms and a limited area of black prairie contribute to the result. In the east Louisiana parishes not only bottom land, but also second bottom and upland, *fertilized*, enter into the producing area; and it is predicable that hereafter cotton will be largely grown on this basis in a large portion of the long-leaf pine region, which has been comparatively neglected so long as there was an abundance of richer land, and within easier reach of market, at low prices. The analyses of its soils show the uplands, as well as the lowlands, to be far from poor when compared with the soils of the southern Atlantic states, and in almost every case they are capable of profitable production under a rational system of culture. The part of the region lying north of Red river, in which the oak and hickory always intermingle more or less with the pine ("Oak, hickory, and long-leaf pine region") proves the higher native fertility of the soil thus indicated by the high product per acre of the parishes of Grant and Winn, competing in this respect with Bossier and Union. Here again, however, the production is almost confined to creek bottom land, while in the last-mentioned parishes the figure given is the general average from uplands as well as lowlands.

The correction necessary in the average per acre resulting from the summation by parishes in the case of the *oak uplands region* has already been referred to above. Excluding from the calculation of averages the parishes of Caddo, Bossier, Red River, and Natchitoches, which include nearly all of the Red River bottom lands, we obtain for the rest an average of nearly 0.39 bale; but excluding also the exceptionally low average of De Soto (0.30) with its broken ridge lands and comparatively narrow valleys, long under cultivation, we find for the rest an average of almost precisely 0.40 bale per acre, the figure upon which the calculation of the acreage in cotton of the Red River valley has been based. The difference in favor of the product of Sabine (0.39), so similar to De Soto in its agricultural and surface features, is readily accounted for by the small proportion of "tilled lands" in the former parish (2.9 against 15.0 in De Soto), indicating that chiefly bottom lands are in cultivation thus far; while in De Soto a large proportion of ridge or plateau land is under tillage. The average figure is, however, only slightly changed whether Sabine be counted in or omitted.

The oak uplands being a region of small farms, largely worked by whites (as is shown by the almost even balance of the two races), is of especial interest as being probably nearer to a permanent condition than any other part of the state. The large proportion of tilled lands in the parishes of Lincoln and Claiborne (34.8 and 24.7 per cent.) speaks of the extensive cultivation of the uplands, and a glance at the soil map shows as one cause thereof the large area of fertile and durable "red lands", whose influence on the product per acre is manifest in the high figure (0.42 bale) for both parishes. In both, likewise, the acreage of cotton and corn is nearly equal, and both together form only 41.3 and 71.0 per cent., respectively, of the total tilled area, thus showing an unusual diversification of crops. In contrast with this, it is curious to note that in the adjacent and naturally very similar parish

of Union these two crops occupy over 85 per cent. of the tilled area, cotton having 45 per cent.—a circumstance probably due to better facilities for shipment to market, via the Washita river; for the same relation appears in the case of Bienville, where lake Bistineau forms an available highway.

COTTON PRODUCT AND ACREAGE PER CAPITA OF POPULATION AND PERCENTAGE OF TILLED LAND GIVEN TO COTTON CULTURE.—These relations are of especial importance as regards the question of cotton production by white labor, and must therefore be discussed with reference to the ratio between the races.

Considering, first, the points of mixima and minima of these factors, we find at a glance that the maximum of 3.1 bales *per capita* coincides with three other maxima, viz, that of a predominance of the negro over the white race of 10.8 to 1; a cotton acreage of 100.4 to the square mile; and a product per acre of 0.95 bale—all in the parish of East Carroll. It seems difficult to escape from the inference suggested by this concurrent testimony, of an intimate correlation between the negro race and the precious staple. We vainly seek, however, for a corresponding concurrence of minima, since these occur from independent causes, notably the growing of cane. The smallest proportion of negro population occurs in Vernon, where there are 12.6 whites to one negro, being more than an inversion of the ratio existing in East Carroll. But Vernon, as well as the adjoining parish of Calcasieu, is so thinly settled (tilled lands being 1.7 and 0.6 per cent. of the respective areas) that no conclusions can be drawn from the present condition of agriculture. The proper comparison must be with the other parishes north of Red river, within the cotton zone proper.

We thus find that in the four strictly alluvial cotton parishes of East Carroll, Madison, Tensas, and Concordia, the negro population exceeds the whites in the proportion of over ten to one (average 10.4 to 1), the disproportion diminishing slightly as we advance southward; and in the same region, the acreage in corn stands to that in cotton in the ratio of nearly 5 to 1. Passing Red river there is a sudden change; the numbers of the two races are nearly equal in Avoyelles, and the corn acreage is little below that of cotton; while sugar-cane has not as yet materially influenced either. Southward, in the cane-growing region proper, the negro population again becomes predominant in numbers, but rarely exceeding the ratio of two to one white, and frequently approaching equality; in Lafourche even falling below this, to the proportion of three whites to two negroes. This clearly indicates that cane culture in the lowlands is very much less dependent upon negro labor than is that of cotton; and doubtless correlative with this is the fact that the cane acreage rarely differs widely from the figure showing the total population in the cane-growing parishes; while the cotton acreage in the lowlands north of Red river usually exceeds the numbers of the population in a ratio varying from two to three and one-third. The obvious inference is that cotton requires a larger proportion of purely manual labor, *e.g.*, in the picking of cotton, as against the wholesale methods employed in harvesting cane. The culture of the latter, also, seems to favor a diversity of crops more than does that of cotton, since it rarely occupies more than one-third of the tilled area; while in the cotton-growing parishes, over one-half is very commonly given to cotton culture, and in one case (Concordia) nearly 92 per cent. of the whole tilled area is thus occupied, showing that but an insignificant proportion of the necessaries of life is grown at home.

It is claimed by the inhabitants of southern Louisiana that their lowlands, so long as they are not invaded by the yellow fever, are more healthy than those lying north of Red river, where the malarial influences can be resisted by few whites for any great length of time. Though opposed to the general impression on the subject, there is much weighty testimony in favor of this claim; and its correctness would account in a measure for the larger proportion of whites in the sugar-cane region.

Passing to the uplands of north Louisiana, and again excluding from direct comparison those parishes which include large areas of the Red River bottom lands, the influence of which cannot be segregated, we find the correlation between the negro population and cotton production, acreage, etc., only partially sustained. Considering, again, the group of exclusively upland parishes north of Red river—Webster, Bienville, Jackson, Lincoln, Claiborne, and Union—and comparing them among themselves, we do not find that the percentage of the tilled lands in cotton is directly related to the ratio between the two races. The maximum of 45.2 per cent. occurs in Union, where the whites predominate in the proportion of 8 to 5.5; the minimum in Lincoln, where the ratio is nearly as 6 to 5; Claiborne, where the negro population is considerably in excess, shows nearly the same figure (36.0) as the average of the group (34.7) for the percentage of the tilled land in cotton, against 70.0 per cent. in the four representative lowland parishes. Union ranges with Natchitoches in this respect (45.2 and 45.4), although the latter embraces a very large proportion of Red River bottom lands; the total cotton acreages of the two, likewise, do not differ widely. Yet in Union the whites exceed the negroes in the proportion of 8 to 5.5, while in Natchitoches the proportion is nearly as 8 to 16 or 1 to 2. In Natchitoches the cotton is mainly grown on the lowlands of Red river, which form one large body; in Union, as the small percentage of tilled lands (10.8) shows, most of the cotton is also grown on bottom lands, (*a*) but the land is in small tracts (creek bottoms) and not as productive as the Red River bottom (0.41 bale against 0.84). The comparison of these two parishes shows well some of the determining points in the concentration of the negro population, which evidently gravitates to large continuous tracts of fertile land, which it occupies regardless of malaria, to the almost exclusion of the whites, wherever cotton culture (which appears to be the preferred industry) predominates. The small and thrifty farms in the uplands are less to his taste; their isolation interferes with the

a According to detailed measurements in north Louisiana and Mississippi the percentage of bottom land in the whole area ranges from 7 to about 10 per cent.

eminently social instincts of the race, and the more painstaking and varied modes of culture required on the less productive upland soils, with the greater need of the exercise of judgment and economy, are uncongenial to the habits of the vast majority. But it is quite evident that in these uplands the whites have successfully taken hold of cotton production, and the fact that the corn acreage is almost even with that of cotton, leaving a respectable balance to be occupied by divers other crops, proves that the self-sustaining plan of husbandry is being adopted.

In the *bluff region*, the two Felicianas, with their large predominance of negro population and cotton acreage (72.7 and 54.3 per cent. of the tilled areas), show the prevalence of the plantation policy which has been handed down from the time of settlement. East Feliciana, with its large proportion of inland country, shows less of this disproportion than West Feliciana, which has a considerable lowland area on the river.

In the *Attakapas region*, outside of thinly-settled Vermillion, the white population predominates somewhat over the negroes (nearly 12 : 11), as in the oak upland parishes; but the acreage given to cotton is only 23.4 per cent. of the tilled lands, corn and other food crops and cane receiving a large share.

In the *long-leaf pine region*, as a whole, the whites outnumber the negroes in the proportion of over two to one (2.14 to 1). Nevertheless, the average proportion of tilled lands occupied by cotton culture is 35.6 per cent., being over half that in the representative alluvial parishes (70.0), and about the same as that of the oak uplands proper (34.7). This near agreement is interesting, inasmuch as these parishes are largely remote from market and therefore of necessity self-sustaining in the matter of food crops. The above figures, therefore, afford some insight into *the proportion of provisions that require to be imported from the outside, wherever the proportion of tilled land occupied by cotton much exceeds one third of that area.*

Table I shows this disproportion between cotton acreage and tilled land to be greatest in the river parishes north of Red river (62.2), next in the Bluff region (50.5), and in the Red River parishes in the lowlands of which the ratio is doubtless about the same as in the Mississippi bottom. It is a concomitant of the wholesale planting, or plantation system, in which, even under good business management, it has but too often led to financial ruin. In its transmission, by force of habit and example, to the small farms, it proves doubly disastrous, since it results in keeping the farmer and laborer under a perennial load of indebtedness to the commission merchant, through the pernicious system of advances upon crops yet to be planted or growing. The answers to schedule questions 39 and 48 (pp. 83, 84) are eloquent on this point, and although the tenor of the answers to question 45 shows that the need of a change in this respect is being appreciated, yet the progress in the right direction seems to be slow. It cannot be doubted that this state of things has a large share in preventing the introduction of a better system of culture than the answers returned now show to exist. The shallow tillage of from 2 to 4 inches, subsoiling being scarcely known as yet; the "turning-out" of "tired land" without a thought of the benefits of fallow tillage resulting in injury rather than benefit to uplands so "rested"; the imperfect practice or total omission of rotation; the insignificant extent to which fertilizers, or any modes of fertilization, are thus far employed, including the inadequate appreciation of the high value of cotton-seed or cotton-seed cake as a return to the soil, especially for cotton production; and, not least, the waste of energy in the ever-repeated fight against an overwhelming host of weeds which a few years' consistent effort would to a great extent subdue once for all—all this speaks of a condition of agricultural methods still far removed from what can be claimed to be permanently possible, or rational even under existing circumstances, viz, as producing the best pecuniary results even for the time being.

Cultivating too much land indifferently, instead of carrying a small area to high productiveness, is in Louisiana as elsewhere in the southwest, the besetting sin of most farmers. How gratefully and profitably cotton responds to high culture has now been too often and pregnantly demonstrated to admit of question. In the present condition of most of the soils covered by cotton, improved tillage alone would allow of the maintenance and even increase of production, while diminishing the area to a considerable extent and thus making room for provision crops on lands already improved, and cutting loose from the mischievous practice of advances on provisions at least, which compel the producer to pay numerous heavy commissions and freight charges upon what he is perfectly able to produce at home. To plant cotton as a money crop, after subsistence is provided for, and to cultivate smaller areas well, while husbanding the powers of the soil, are two maxims that cannot be too strongly commended to the observance of Louisiana cotton growers.

Table of analyses of Louisiana soils and subsoils.

No.	Name.	Locality.	Parish.	Depth in inches.	Vegetation.	Insoluble residue.	Silica soluble in $NaCO_3$.	Total insoluble residue and silica.	Potash.	Soda.	Lime.	Magnesia.	Brown oxide of manganese.	Ferric oxide.	Alumina.	Phosphoric acid.	Sulphuric acid.	Carbonic acid.	Water and organic matter.	Total.	Hygroscopic moisture.	Temperature of absorption (C.).	Analyst.
	ALLUVIAL REGION.			*Inch.*																			
39	Reddish loam	Red river banks	Red River	12	Ash, water and basket oaks, cottonwood, and hackberry.	90.480	4.000	94.480	0.215	0.003	0.217	0.585	0.384	1.686	1.413	0.221	0.036	.....	1.292	100.532	3.050	21.0	Loughridge.
40	Red calcareous clay	Red river banks, Major Dickson's.	do	12		55.750	7.470	63.220	0.462	0.358	8.071	5.655	0.075	5.975	6.682	0.260	0.001	3.913	5.819	100.491	.....	.....	Do.
55	Dark bottom soil	Red river, near Major Dickson's.	do	12	Ash, water oak, cottonwood, hackberry, & honey locust.	78.180	6.536	84.710	0.614	0.064	0.485	1.041	0.249	3.303	4.229	0.151	0.010	.....	4.920	99.776	3.320	20.5	Do.
236	Stiff ash-colored back-land soil.	4 miles north of Girard	Richland	12	White oak, sweet gum, saw palmetto.	81.800	4.703	86.503	0.320	0.135	0.245	0.610	0.170	4.022	3.946	0.144	0.160	.....	4.160	100.415	8.796	28.0	Durrett.
237	Light sandy front-land soil	Girard	do	10	Willow, chestnut, and white oaks, maple, ash, and sweet gum.	90.120	2.626	92.746	0.148	0.078	0.154	0.017	0.083	1.980	3.205	0.215	0.034	.....	1.597	100.257	3.010	26.6	Do.
238	Red sandy clay front-land subsoil.	do	do	10–20		78.370	6.686	85.056	0.234	0.092	0.185	0.295	0.155	4.104	6.369	0.147	0.234	.....	2.978	99.349	5.731	26.6	Do.
239	Terrebonne front-land soil	Houma	Terrebonne	12	Live oak, sweet gum, magnolia	75.136	6.369	81.505	0.767	0.089	0.631	0.552	0.018	3.822	7.274	0.105	0.365	.....	4.460	99.528	8.507	*12.0	Colby.
240	Terrebonne back-land soil	do	do	12	Cypress, &c.	35.480	20.762	56.242	1.031	0.131	0.720	0.884	0.014	7.101	15.446	0.146	0.246	.....	18.520	100.481	18.822	†13.0	Do.
	ATTAKAPAS REGION.																						
230	Prairie soil	New Iberia	Iberia	10	Only grasses	67.210	9.960	77.170	0.207	0.172	1.737	1.484	0.265	2.779	4.829	0.208	0.114	2.060	8.596	99.621	10.639	12.7	Loughridge.
229	Loam subsoil	Weeks' island	do	10–20	Oaks, magnolia, cane	73.200	9.120	82.320	0.403	0.058	0.202	0.823	0.126	4.758	7.704	0.108	0.033	.....	4.024	100.559	8.960	20.5	Do.
197	Opelousas prairie soil	Half way betw. Opelousas and Ville Platte.	St. Landry	10	Paspalum, Baptisia, Vernonia, Andropogon.	86.810	3.340	90.150	0.189	0.138	0.148	0.234	0.086	1.941	2.088	0.226	0.037	.....	4.816	100.053	5.420	24.0	Do.
226	Opelousas prairie subsoil	do	do	10–18	do	74.740	6.960	81.700	0.315	0.013	0.251	0.604	0.081	4.788	7.723	0.152	0.011	.....	4.360	99.998	8.740	21.0	Do.
227	Subsoil loam	Côte Gelée	Lafayette	6–12	do	75.390	8.310	83.700	0.333	0.019	0.133	0.691	0.145	4.286	6.479	0.157	0.052	.....	4.536	100.531	7.780	19.0	Do.
210	Vermillion bottom subsoil.	Vermillionville	do	8–15	Water oak, magnolia, hackberry.	64.230	15.410	79.640	0.743	0.138	0.226	1.192	0.160	4.938	10.304	0.066	0.226	.....	2.627	100.260	8.763	26.6	Do.
	LONG-LEAF PINE REGION.																						
171	Anacoco prairie soil	Prairie creek	Vernon	12	No timber; some black-jack; grasses.	53.190	21.100	74.290	0.332	0.064	1.398	0.735	0.149	4.520	11.363	0.047	0.123	.....	7.266	100.287	18.110	25.5	Cory.
134	Pine woods subsoil	Sec. 9, twp. 2, range 9 west, near Nichol's.	do	8–18	Long-leaf pine, small black gum.	77.870	4.395	82.265	0.247	0.083	0.097	0.339	0.041	3.214	9.918	0.072	0.086	.....	3.546	99.908	6.790	26.6	Do.
195	Pine prairie soil	3 miles south of Serpent bayou.	Calcasieu	10	Paspalum and other grasses; clumps of pine and black-jack oak.	92.630	2.030	94.660	0.148	0.041	0.262	0.140	0.035	1.110	1.709	0.038	0.061	.....	2.614	100.818	3.160	‡13.0	Loughridge.
	OAK UPLANDS.																						
231	Red clay soil	Vienna	Lincoln	10	Oak, hickory, pine	48.055	16.075	64.130	0.270	0.066	0.120	0.420	0.210	15.927	11.710	0.305	0.090	.....	7.674	100.922	14.118	28.0	Durrett.
232	Yellow sandy soil	Bastrop hills, 2 miles east of Bastrop.	Morehouse	12	do	81.700	5.750	87.450	0.442	0.286	0.101	0.239	0.386	3.546	4.868	0.099	0.079	.....	2.544	100.040	5.471	29.0	Cory.
233	Yellow sandy subsoil	do	do	12–18	do	68.690	12.850	81.540	0.344	0.070	0.120	0.440	0.223	4.733	9.231	0.111	0.093	.....	3.376	100.281	9.441	29.0	Do.
234	Light sandy soil	South prairie Mer Rouge.	do	8		89.840	3.356	93.196	0.131	0.066	0.155	0.070	0.066	1.370	1.080	0.178	0.061	.....	3.297	99.670	3.278	28.0	Durrett.
235	Light yellowish subsoil	do	do	8–18		90.650	3.436	94.086	0.155	0.085	0.127	0.238	0.135	1.731	1.798	0.093	0.210	.....	1.606	100.264	2.648	26.5	Do.
48	Dolet hills subsoil	Dolet hills	De Soto	5–15	Short-leaf pine, black-jack, small post oaks.	71.800	7.450	79.250	0.367	0.008	0.055	0.449	0.066	8.966	7.118	0.179	0.007	.....	4.320	100.785	8.980	21.6	Loughridge.
184	Red upland subsoil	7 miles southeast of Mansfield.	do	5–12	Short-leaf pine, Spanish and post oaks.	74.710	6.580	81.290	0.218	0.167	0.149	0.433	0.213	8.617	4.993	0.152	0.054	.....	3.279	99.565	5.675	26.6	Cory.
165	Red subsoil	Uplands betw. Toreau and Sabine rivers.	Sabine	12–18	Oak, hickory, ash, some short-leaf pine.	49.120	23.450	72.570	0.202	0.065	0.268	0.290	0.146	5.324	15.232	0.038	0.050	.....	5.509	99.694	12.140	25.6	Do.

* Humus, 0.863; available phosphoric acid, 0.054. † Humus, 5.067; available phosphoric acid, 0.083. ‡ Bog ore 0.15.

PART II.

AGRICULTURAL DESCRIPTIONS

OF THE

PARISHES OF LOUISIANA.

AGRICULTURAL DESCRIPTIONS

OF THE

PARISHES OF LOUISIANA.

The parishes are here grouped under the heads of the several agricultural regions, previously described, to which each predominantly belongs, or, in some cases, under that to which it is popularly assigned. Each parish is described as a whole. When its territory is covered in part by several adjacent soil-regions, its name will be found under each of the several regional heads in which it is concerned, with a reference to the one under which it is actually described. In the lists of parishes placed at the head of each group, the names of those described *elsewhere* are marked with an asterisk (*); and the reference to the head under which these are described, will be found in its place, in the order of the list, in the text itself.

The descriptions of the parishes embracing portions of the bottom of Red river, above Rapides, are placed under the heads of the corresponding upland regions.

The regional groups of parishes are placed in the same order as that in which the regional descriptions themselves are given.

The statements of areas, of woodland, prairie, &c., refer to the original state of things, irrespective of tilled or otherwise improved lands.

Appended to the description of each parish from which a report or reports have been received, is an abstract of the main points of such reports, so far as they refer to natural features, production, and communication. Those portions of the reports referring to agricultural and commercial practice, are placed in a separate division (Part III), following that of the parish descriptions. In making the abstracts of reports, it has been necessary, in most cases, to change somewhat the language of the reporter, while preserving the sense. In some cases statements palpably incorrect or overdrawn have been altogether omitted, while sometimes explanatory words have been added, placed in parentheses.

ALLUVIAL REGION.

The following parishes lie wholly or partly within the alluvial region of the Mississippi river or its bayous: East Carroll, West Carroll, Morehouse, Ouachita, Caldwell, Richland, parts of Franklin, Madison, Tensas, Concordia, Catahoula, Avoyelles, Rapides, St. Landry*, Pointe Coupée, West Baton Rouge, Iberville, St. Martin, Assumption, Ascension, St. James, St. John Baptist, St. Charles.

The following embrace, besides alluvium, large areas of sea marsh or marsh prairie: Jefferson, Orleans, St. Bernard, Plaquemines, Lafourche, Terrebonne.

Marsh parishes west of the mouth of the Atchafalaya: St. Mary, southern Iberia*, southern Vermillion*, Cameron.

EAST CARROLL.

Population: 12,134.—White, 1,023; colored, 11,111.

Area: 400 square miles.—Woodland, all. All alluvial lands.

Tilled land: 56,793 acres.—Area planted in cotton, 40,167 acres; in corn, 7,115 acres; in sweet potatoes, 15 acres.

Cotton production: 38,160 bales; average cotton product per acre, (the highest in the cotton-states), 0.95 bale, 1,353 pounds seed-cotton, or 451 pounds cotton lint.

East Carroll parish is wholly alluvial, fronting on the Mississippi river, and bounded west by the bayous Maçon and Tensas. The latter diverges from the Mississippi river in the northeastern portion of this parish, at Bunch's bend, and, passing through lake Providence, takes a southwest direction.

No details regarding the agricultural features of this parish have reached me. It is doubtless similar in general to Madison and Tensas parishes.

WEST CARROLL.

Population: 2,776.—White, 1,339; colored, 1,437.

Area: 380 square miles.—Woodland, all. Alluvial land, 220 square miles; oak uplands, 100 square miles; pine lands, 60 square miles.

Tilled land: 10,071 acres.—Area planted in cotton, 5,517 acres; in corn, 3,868 acres; in sweet potatoes, 27 acres.

Cotton production: 4,012 bales; average cotton product per acre, 0.73 bale, 1,041 pounds seed-cotton, or 347 pounds cotton lint.

West Carroll, a parish lately formed, lies between bayous Maçon and Bœuf, but includes only a narrow belt of alluvium lying along these streams, the main body being an upland ridge similar to the Bastrop hills, constituting the most northerly portion of the upland peninsula, which, farther south, forms part of the parishes of Richland and Franklin (see above), under the general designation of "Bayou Maçon hills". This ridge rises rather abruptly from the bottom plain of the bayou Maçon to the height of 20 feet. It is composed of a sandy, yellow loam, and its eastern portion is timbered with short-leaf pine. In the western, the post and black-jack oaks predominate over the pine, but the soil is rather thin. The westward slope, toward bayou Bœuf, is gentle, and the land improves as we descend: the yellow loam subsoil being apparent for some distance into the Bœuf alluvial plain. The soil of the latter is highly productive. Nearly all the cotton grown in this parish is produced in the alluvial belts.

MOREHOUSE.

Population: 14,206.—White, 3,547; colored, 10,659.

Area: 842 square miles.—Woodland, all but about 20 square miles of prairie. Oak uplands, 294 square miles; alluvial land, 548 square miles.

Tilled land: 57,379 acres.—Area planted in cotton, 28,590 acres; in corn, 17,846 acres; in sweet potatoes, 496 acres; in sugar-cane, 78 acres.

Cotton production: 23,481 bales; average cotton product per acre, 0.82 bale, 1,170 pounds seed-cotton, or 390 pounds cotton lint.

Morehouse parish embraces two chief features, viz, the alluvial plains skirting bayous Bartholomew and Bœuf, and the Washita river, and the two upland peninsulas reaching down from Arkansas, on the eastern and larger one of which the town of Bastrop is situated. These ridges and the prairies at their foot have been fully described in Part I. Regarding the bottom plains of the bayous mentioned, it is noteworthy that their subsoil is often a red clay, not unlike that of Red river bottom, although it is hardly supposable that it can have come from that river. It may be derived from the adjacent upland ridges; in any case it is curious that, in overflowed ground, that color should have been retained. This can only be due to excellent drainage; and this doubtless has something to do with the high fertility of these detached alluvial areas, whose product is, by the inhabitants, reported at 450 pounds of cotton lint per acre. This is especially stated of the back-lands of bayou Bœuf, where the cotton scarcely ever rusts, while, singularly enough, the "rust" is said to appear in some years on the sandy front-lands.

The Washita bottom seems to lie lower, and therefore to be more liable to overflows, than the bottom lands of the Bœuf and Bartholomew. It is not as much in cultivation as the former, but its cotton product is said to be scarcely behind either in quality or quantity.

ABSTRACT OF THE REPORT OF A. S. KELLER, BASTROP.

The lands of the parish are a good deal diversified, and may be thus described: First, "gum lands," whose soil is very black in color, with a good deal of sand, rendering tillage easy. The timber is sweet gum, cottonwood, and pawpaw, with occasionally some red oak interspersed. Second, prairie lands of Mer Rouge and Jefferson, which are light and sandy, but not so rich as the "gum lands". Third, the stiff cane lands, which have a very black soil, hard to cultivate, especially when wet. These lands are very productive in good seasons, but are not much sought after on account of the difficulty of tillage. Their timber-growth is cottonwood, sweet gum, white and red oaks, and ash, with an immense amount of cane-undergrowth. Fourth, are the hummock lands, with light and somewhat sandy soil, not so productive as those of the second class. Timber: red and white oaks, dogwood, hickory, black gum, &c.

All of the lands above described are alluvial, contignous to the bayous Bœuf, Bartholomew, Bonne Idée, and De Gallion, and are almost level. On the "gum lands" the surface soil is from 2 to 4 feet deep, on prairie lands from 14 to 24 inches, and about the same on the hummock lands; on the cane lands from 24 to 36 inches. In all these the subsoil is yellow sand. The hummock lands have a stiff, grayish clay subsoil.

Besides these there are the pine uplands, which are not cultivated to any great extent, and are mainly valuable for their timber. Their soil is a reddish or yellow clay, rather stiff. Washing and gullying does serious damage on these uplands.

The lower lands are drained by ditching. Cotton constitutes about two-thirds of all crops. Corn, sweet and Irish potatoes, sugar-cane for molasses, oats, German millet, &c., are produced, but cotton seems to be the product to which the soil is best adapted. The average height of the stalk is 4½ feet, but varies according to the age of the land. It runs to weed when the weather is too wet. Cultivating altogether with sweeps is thought to be a remedy for this. The seed-cotton product on fresh land is from 1,500 to 2,500 pounds per acre, of which from 1,350 to 1,460 pounds is needed to make a 450-pound bale in a dry year; in wet years it takes more. After ten years' cultivation the cotton product runs from 900 to 1,500 pounds per acre, according to the season. It then takes from 1,575 to 1,675 pounds of seed-cotton to make a 450-pound bale—the staple is not so long as that from fresh land. The most troublesome weed of the lowland is the cocklebur. About 10 per cent. of land once cultivated now lies out for want of laborers.

The chief shipping-time is from October to March. Cotton is shipped mainly to New Orleans; from Monroe by rail at $2 50 per bale, or from Point Pleasant, on bayou Bartholomew, by water at $1 25 per bale. Boats also run to Monroe during a part of the year, in which case freight is less. When the waters are too low for navigation the railroad to Vicksburg charges what it pleases.

OUACHITA.

Population: 14,685.—White, 4,502; colored, 10,183.

Area: 640 square miles.—Woodland, all. Alluvial land, 340 square miles; long-leaf pine hills, 190 square miles; oak uplands, 110 square miles.

Tilled land: 48,847 acres.—Area planted in cotton, 29,040 acres; in corn, 13,143 acres; in sweet potatoes, 379 acres; in sugar-cane, 36 acres.

Cotton production: 18,729 bales; average cotton product per acre, 0.64 bale, 912 pounds seed-cotton, or 304 pounds cotton lint.

Ouachita parish, nearly equally divided between upland on the west and lowland on the east, has long-leaf pine hills of the usual character in its southwestern portion; the lower slopes of the ridges bearing an oak growth, while the crests are sandy and covered with long-leaf pine, the latter gradually disappearing as the bayou Castor is approached.

The northwestern portion has hilly oak-uplands with admixture of short-leaf pine, as in the adjoining part of Union parish. Among the oak and hickory timber of these uplands, the large-leaved magnolia (*Magnolia macrophylla*) is noteworthy, being rare elsewhere in the state. It usually denotes a soil rich in lime, and therefore thrifty. In the lowland swamps the genuine tupelo (*Nyssa uniflora*) forms a prominent (and, in Louisiana, somewhat unusual) feature.

Between the long-leaf pine hills and the oak uplands west of Monroe, there lies an extensive cypress brake, known as Chênière au Tondre, embracing about seven square miles. Numerous bayous emptying into this brake overflow much land, and render it difficult to reclaim.

The area lying east of the Washita river is wholly alluvial, except only a narrow upland ridge, with oaks and short-leaf pine, which lies between the river and bayou Lafourche. Much of the alluvial land is above any overflow experienced so far. This is especially the case with "the Island", lying between the Washita river and bayou De Siard, which is considered the garden spot of the region, producing both corn and cotton in great perfection.

On the Washita river, near Monroe, the prevalent timber growth is water oak, sycamore, honey locust, and black locust, indicating a soil containing much lime.

The river and navigable bayous render the alluvial country very easy of access, and afford great facilities for transportation of produce.

CALDWELL.

Population: 5,767.—White, 2,870; colored, 2,897.

Area: 535 square miles.—Woodland, all. Long-leaf pine hills, 170 square miles; alluvial land (Washita and Bœuf), 170 square miles; central prairie region, 145 square miles; oak uplands, 50 square miles.

Tilled land: 18,267 acres.—Area planted in cotton, 9,919 acres; in corn, 5,717 acres; in sweet potatoes, 182 acres; in sugar-cane, 39 acres.

Cotton production: 6,504 bales; average cotton product per acre, 0.66 bale, 939 pounds seed-cotton, or 313 pounds cotton lint.

Most of western Caldwell is a rough, broken, pine country, cut up by the several branches of bayou Castor. On the dividing ridge between bayou Castor and Washita river, however, a different feature prevails, as far north as several miles beyond Mount Pleasant. The country is also broken and ridgy, the ridges, especially near the Washita, running in the main parallel to that river, on which they occasionally form precipitous bluffs. These ridges have a dark-colored, loamy soil, giving evidence of the presence of lime by the absence of the long-leaf pine, and the prevalence of the better class of upland oaks, hickory, wild plum, and red haw or thorn. The best of this kind of country is in the neighborhood of Grandview, so called from the fine prospect over the Mississippi alluvial plain that is there presented. Between Grandview and Columbia there is a prairie (prairie Du Côte) about a mile in diameter, almost round, and with a yellow loam soil. The soil is very fertile, and is treeless except a few hawthorn bushes. East of the Washita river is mainly the alluvial bottom, subject to overflow, except a long narrow ridge of upland that runs down between Washita and Bœuf rivers, reaching nearly to their junction.

ABSTRACT OF THE REPORT OF W. B. GRAYSON, COLUMBIA.

The uplands are rolling, sometimes level table-lands, and vary greatly in soil. The soil principally cultivated in cotton is the black, sandy soil, with clay foundation, of the Washita bottom. Its timber growth is sweet gum, lowland oaks, elm, poplar (tulip tree), beech, cypress, &c. It varies from a fine sandy to a gravelly loam of gray, mahogany, or blackish tint; depth, 2 feet or more; underlaid by sand. It tills easily in dry, and with some difficulty in wet seasons, and is then late in getting into condition for planting. Cotton, corn, potatoes, peas, and oats are the chief crops of the region; cotton, mainly in the lowlands, and forms one-half of the crops. It grows from 6 to 8 feet in height. In warm, wet weather it may run to weed; this can be checked by plowing close to the stalks. The bottom soil yields about 1,500 pounds of seed-cotton per acre, of which 1,460 pounds are required for a 450-pound bale; rates from low to good middling in market. On older lands the staple is not so long as on fresh land. Tie-vine and cocklebur are the most troublesome weeds. Cannot tell what amount of land lies turned out. After resting awhile the river bottom land produces well. Shipments are made by (Washita) boat to New Orleans, at $1 per bale.

RICHLAND.

Population: 8,440.—White, 3,161; colored, 5,279.

Area: 578 square miles.—Woodland, all. Oak uplands, 288 square miles; alluvial land, 250 square miles; pine lands, 40 square miles.

Tilled land: 31,409 acres.—Area planted in cotton, 15,809 acres; in corn, 9,378 acres; in sweet potatoes, 66 acres; in sugar-cane, 3 acres.

Cotton production: 11,631 bales; average cotton product per acre, 0.74 bale, 1,053 pounds seed-cotton, or 351 pounds cotton lint.

Richland parish embraces two chief features: the alluvial plain of Bœuf river (here intersected by numerous bayous), and the western portion of the upland peninsula lying between the alluvial belts of the Bœuf and bayou Maçon up to Big creek, which traverses that peninsula in a northeast and southwest direction, and forms most of the line between Richland and Franklin parishes. In the northeast corner of the parish the line extends eastward to the bayou Maçon, and thus includes a portion of the alluvial bottom of the latter, as well as a portion of the pine belt which runs along the eastern edge of the uplands.

The alluvium of the Bœuf seems to be somewhat varied with higher tracts or ridges, above overflow, and of an upland character, and rather sandy. A sandy tract of this kind lies between bayou Lafourche and Bœuf river, on the Monroe and Winnsboro road, and smaller ones occur elsewhere. The alluvium proper is of a reddish tinge, apparently from the admixture of red upland soil; it is highly productive.

The uplands east of the Bœuf are gently rolling, the ridges generally running parallel to Big creek. The timber is mainly oaks with some hickory; the land being on the whole quite similar to that of the Bastrop hills, in Morehouse parish.

The transportation of cotton to market is either by steamer, on the Bœuf river direct to New Orleans, or by rail to Vicksburg and thence by river.

FRANKLIN.

Population: 6,495.—White, 2,701; colored, 3,794.

Area: 596 square miles.—Woodland, all. Oak upland, 241 square miles; alluvial land, 170 square miles; pine lands, 160 square miles; bluff (Bayou Maçon hills), 25 square miles.

Tilled land: 22,054 acres.—Area planted in cotton, 12,563 acres; in corn, 7,235 acres; in sweet potatoes, 149 acres.

Cotton production: 8,472 bales; average cotton product per acre, 0.67 bale, 954 pounds seed-cotton, or 318 pounds cotton lint.

Franklin parish is chiefly rolling upland, embracing the southeasterly portion of the Maçon peninsula, and a narrow belt of the alluvium lying between bayou Maçon and the eastern edge of these uplands. It contains also, in its southwestern portion, a similar band of the alluvial plain of bayou Bœuf.

Almost all the streams of the Maçon peninsula run parallel to its longer axis, in a southwesterly direction, which is also of course the prevailing trend of its ridges. Thus we find the pine belt, which, at the northern end of the peninsula, is met with on the eastern edge of the upland (see description of West Carroll parish). This pine belt is nearly level, with a thin, sandy soil, and occupies nearly the middle of the upland tract lying between the Maçon alluvium and Big creek, widens as it progresses southwestward, attaining its maximum width of 5 miles about Winnsboro, and runs out along Turkey lake. The pine in its southern portion is chiefly of the long-leaved species. The oak lands lying on either side of the pine belt are fairly productive; the bottoms of the streams are excellent. The land of the Bayou Maçon hills proper, rising from the edge of the plain, improves in its southern portion and becomes similar, in its soil and productiveness, to that of Sicily island opposite, across Deer creek.

ABSTRACT OF REPORT OF A. F. OSBORN, WINNSBORO.

About one-fifth of the parish is what is designated "swamp", that is, alluvial land of bayous Maçon and Bœuf. The soil of these lands is mostly heavy "buckshot", gray intermingled with brown, and about 18 inches deep; the subsoil is lighter than the surface-soil, variegated from whitish-gray to yellowish-brown, mixed with sand; hence it is easier to till than the ordinary surface-soil, and is nearly or quite as fertile. The surface-soil is crumbly in dry weather and easy to till; in wet seasons very clammy and difficult to work. The natural timber-growth is lowland oaks, sweet gum, swamp hickory, hackberry, box-elder, black and honey locusts, maple, sycamore, cottonwood, and, in low grounds, cypress. The soil is best adapted to cotton, and six-tenths of the improved land is occupied by this crop. It is most productive when 6 feet high; is inclined to run to weed when the soil is fresh; topping is resorted to by some, to restrain this tendency. In fresh land the seed-cotton product ranges from 1,500 to 2,500 pounds per acre, of which 1,520 make a 450-pound bale of lint, middling staple. After fifteen years' cultivation the product, in good years and with good culture, will still range from 1,200 to 2,000 pounds, about 1,432 being then needed for a 450-pound bale. The staple from old land is considered to be of finer texture than from fresh land.

About 25 per cent. of land once in cultivation now lies turned out.

The most troublesome weeds are crab-grass, cocklebur, careless-weed, tea-weed, buffalo-weed.

West of bayou Maçon and east of bayou Bœuf and Big creek, there are undulating table-lands, interspersed with cypress brakes and flats, some 15 miles wide east and west, and 35 miles north and south. Timber on higher lands: oaks with hickory and, in part, pine; on lower lands: oaks, black walnut, hickory, sweet and black gums, maple, sassafras, beech, poplar (tulip tree), magnolia, dogwood, wild cherry, honey and black locusts, &c.

The soil is a fine, sandy one, from brown through buff and gray to whitish in lowlands, about 8 inches deep; subsoil heavier than surface-soil, putty-like, yellowish tint, sometimes impervious, occasionally containing black gravel underlaid by sand, blue mud and sand alternately, 12 feet from surface. Where this subsoil comes to the surface no crops do well, although it tills easily.

The soil is best adapted to cotton and sweet potatoes; cotton occupies about six-tenths of the land cultivated, and attains the height of 6 to 8 feet. It seems to boll equally well at either height. On newly cleared land it sometimes inclines to run to weed; topping is resorted to, but with doubtful advantage. Seed-cotton product, from 1,300 to 1,400 pounds per acre, of which 1,520 pounds make a 450-pound bale usually; sometimes only 1,350 are required; clean staple rates middling. After fifteen years' cultivation the product is 1,100 pounds; in very favorable seasons as high as 1,350 pounds per acre; about the same amount of seed-cotton needed for a bale; staple of somewhat finer texture than that from fresh land.

Crab-grass is the chief pest on this soil, also careless-weed, &c.

About 25 per cent. of this land now lies turned out; it improves by this if kept from washing, and will sometimes produce as much as fresh land; but it washes and gullies very rapidly on slopes if neglected, and is thus soon ruined. In most cases the valleys are

injured by these washings of the uplands, the yellow clayey subsoil covering up the valley soil so deeply that roots fail to reach it. Little is done to prevent this trouble; horizontalizing is very successful when properly managed.

Cotton shipments are made, from September to February, by rail and steamboat to New Orleans. Rates of freight per bale are: by rail, $2; by steamboat, in low water, $2 to $2 25, or, in high water, $1 25 to $1 50.

MADISON.

Population: 13,906.—White, 1,261; colored, 12,645.
Area: 672 square miles.—Woodland, all. All alluvial lands.
Tilled land: 48,395 acres.—Area planted in cotton, 28,103 acres; in corn, 7,797 acres; in sweet potatoes, 140 acres.
Cotton production: 23,391 bales; average cotton product per acre, 0.83 bale, 1,182 pounds seed-cotton, or 394 pounds cotton lint.

Madison parish is included between the Mississippi river and bayou Maçon, with Tensas river traversing its western half. In this respect, as well as in its soils and forest growth, it greatly resembles Tensas parish, as described below. The same is true as regards the occupancy of the cultivated lands by cotton as the chief crop. No details of its agricultural features have been accessible to me. The following general statement is made by Mr. A. C. Gibson, of Waverley station, on the Vicksburg and Texas railroad:

The entire parish is alluvial, level, intersected by bayous, but no hills; all subject to overflow; only protected from inundation by levees. It is in the center of the genuine cotton-producing belt.

Timber is sweet gum, oaks, hackberry, pecan, persimmon, cottonwood; cypress in the swamps. The soil varies from sandy loam to a prairie-like clay ("buckshot"); color, blackish or black; most of it warm and well drained (by underlying sand?), easy to till, warm and early. It is best adapted to cotton, and three-fourths of the cleared land is occupied by that crop; the rest is in corn. Five feet is the average height of the cotton plant. It inclines to run to weed in wet seasons, but can be restrained by shallow cultivation. The land, when fresh, will produce 500 pounds of lint per acre; on old land about 400, and on the latter 1,520, pounds of seed-cotton is needed for a 450-pound bale. The staple from old land rates about the same as from fresh. It is a shade finer, but not so strong.

Cocklebur and crab-grass are the most troublesome weeds.

About one-half of lands once in cultivation now lie turned out; when again cultivated these lands yield as well as ever, after the first year.

Cotton is shipped chiefly in November, and to New Orleans; the rate of freight is $2 25 per bale.

TENSAS.

Population: 17,815.—White, 1,571; colored, 16,244.
Area: 612 square miles.—Woodland, all. All alluvial lands.
Tilled land: 78,679 acres.—Area planted in cotton, 50,555 acres; in corn, 11,427 acres; in sweet potatoes, 271 acres.
Cotton production: 41,859 bales; average cotton product per acre, 0.83 bale, 1,182 pounds seed-cotton, or 394 pounds cotton lint.

Tensas parish is very similar to Madison and Concordia in its location, surface, and soils. It is wholly alluvial. The bayou Maçon forms most of its western boundary, the Mississippi river the eastern one. The Tensas river meanders through its western portion, from north to south, joining the bayou Maçon in the southern part, and thenceforth forming the boundary of Catahoula parish. The Tensas river is perhaps the stream in whose alluvial plain the fertile "buckshot" soil is most predominant in Louisiana; and Tensas parish has often laid claim to the highest cotton product per acre of the alluvial parishes. It has a comparatively small area of cypress swamp, and while the majority of the large cotton plantations lie along the bayous, on account of facility of tillage and communication, there is a vast area of cultivatable back-land still covered with a dense and beautiful forest growth, awaiting the hand of the husbandman to prove its splendid productiveness. The most densely settled portion of the parish is on the Tensas river, and especially on Choctaw and Tiger bayous, in the southern portion, and it would be difficult to find a more profusely fertile country. In some of the cleared regions the levelness of the fields and their shining black furrows, with honey locust and crab-apple forming clumps here and there, reminds one forcibly of the prairie regions of the West and South. Overflows are the only drawback, and sometimes prevent planting at the proper time; but frosts come late, and in the best seasons so much is grown that a portion of the abundant cotton product is often left in the fields, for want of time and force to gather it all. The staple grown on the Tensas "buckshot" soils is claimed to be the type of high quality lowland, or "Orleans" cotton.

CONCORDIA.

Population: 14,914.—White, 1,320; colored, 13,594.
Area: 680 square miles.—Woodland, all. All alluvial land.
Tilled land: 45,816 acres.—Area planted in cotton, 42,044 acres; in corn, 6,114 acres; in sweet potatoes, 162 acres.
Cotton production: 33,110 bales; average cotton product per acre, 0.79 bale, 1,125 pounds seed-cotton, or 375 pounds cotton lint.

Concordia parish is almost surrounded by large streams of the bottom plain, the east fronting on the Mississippi, and the west on Tensas and Black rivers (the latter formed by the junction of the Tensas and Washita), and bounded on the south by Red river. It is wholly alluvial, and one of the largest of the cotton-growing parishes; the uncultivated lands are densely timbered with the usual bottom growth. There is an unusual proportion of the black "buckshot" land in Concordia, the river front alone being sandy; and the producing capacity of the lands is reported as very high.

ABSTRACT OF REPORT OF W. D. SHAW, BLACK HAWK.

The river front is sandy land; farther back, a coarse or fine sandy loam, dark-colored. The "buckshot" soil varies from gray to black, and is from 1 to 6 feet in depth. The subsoil is generally heavier than the surface soil, and lighter in color, sometimes greenish-yellow (this probably where there is much lime in the mass), or brown, varying greatly according to location. The "buckshot" is somewhat difficult to till in wet seasons, and is late when ill-drained.

Cotton, corn, and sweet potatoes are the chief products; of these, cotton occupies nine-tenths of the cultivated lands. It is most productive when about 5 feet in height; inclines to run to weed when crowded and weedy; to prevent this, it must be well thinned and kept clean. The yield per acre is from 1,400 to 1,800 pounds of seed-cotton, of which about 1,575 pounds go to make a 450-pound bale. After fifty years' cultivation, the "buckshot" land still yields about one-half of the above product; but it takes only about 1,520 pounds of seed-cotton for a bale of lint, which rates somewhat lower than that from fresh land.

The most troublesome weeds here are indigo, cocklebur, and tie-vine (Convolvulus).

Two shipments of cotton per week, while ginning, are made to New Orleans; rate of freight per bale is $1.

ABSTRACT OF REPORT OF GEO. S. WALTON, BOUGÈRES.

Soils, light sandy loam on the river front, for one-half to three-quarters of a mile; then begins the black land, which is partly black loam, partly black "buckshot". The latter two form about two-thirds of the land. The "buckshot" is heavy, and in wet weather very sticky and difficult to till. The same kinds of soil are found all the way to the (Catahoula) hills, and from the Arkansas line to the Gulf. The thickness of the soil differs greatly from place to place, varying from one to several feet; the subsoil is sometimes fine sand, and again stiff clay; sometimes a hard-pan, impervious to water.

The soil is best adapted to cotton, and three-quarters of the lands planted are in cotton. The height of the stalk varies from 4½ to 8 feet; from 5½ to 7 feet is the best height for yield. In rainy seasons, and with deep plowing, the cotton inclines to run to weed; by light cultivation, or the use of sweeps, the tendency can be checked. The land, when fresh, will yield from 1,500 to 2,000 pounds of seed-cotton per acre, of which from 1,520 to 1,575 pounds make a 450-pound bale of lint. This staple rates first-class in market when clean. After twenty years' cultivation, the product runs from 1,000 to 1,500 pounds per acre; 1,350 to 1,500 pounds of seed-cotton then make a standard bale, the staple rating somewhat lower than that from fresh land, but still much better than uplands.

The weeds most troublesome are cocklebur and black-vine.

About one-fourth of the land once cultivated now lies out. When taken into cultivation again it will produce almost as well as at first, after the first year.

Shipping of cotton begins early in September; it is sent by steamboat to New Orleans. Rate of freight is 75 cents per bale.

CATAHOULA.

Population: 10,277.—White, 5,724; colored, 4,553.

Area: 1,378 square miles.—Woodland, 985 square miles. Alluvial land, 550 square miles; long-leaf pine hills, 460 square miles; central prairie region, 240 square miles; bluff land (Sicily island), 30 square miles; oak upland, 38 square miles; Catahoula lake, 60 square miles.

Tilled land: 29,823 acres.—Area planted in cotton, 15,885 acres; in corn, 11,094 acres; in sweet potatoes, 264 acres; in sugar-cane, 24 acres.

Cotton production: 11,766 bales; average cotton product per acre, 0.74 bale, 1,056 pounds seed-cotton, or 352 pounds cotton lint.

Catahoula parish embraces a great variety of soils, as will be apparent from a glance on the map. Its western or upland portion is largely of the true pine-hills character, but to northward the sandy hill-land is interrupted by the lowland belt of the central prairie region, which occupies the northwestern portion of the parish. East of the Washita river, the alluvial plain of the Mississippi, here known as the Tensas bottom, forms the main feature, the only exception being the detached mass of upland on "Sicily island", which is separated from the mainland by the Washita river and bottom, and from the great bottom plain by several connected bayous. This island, which has attracted a good deal of attention, from its unusual position and character, has been sufficiently described already (see map), as has also the Catahoula prairie, on the mainland. The pine hills of southwestern Catahoula, though not differing materially in aspect from the usual character, are not generally abrupt. Near the edge of the Washita bottom their soil is frequently very pebbly, but seems on the whole to be better than that farther west, as appears from the subjoined report, and from the fact of being better settled. The "prairie region" lying north of the pine hills is also quite hilly, especially in its eastern portion, where the black-prairie soil often lies high up on the ridges, which are heavily timbered on their slopes with lime-loving trees, walnut, tulip tree, &c. In the western portion of the tract the "hog-wallow" soil and post-oak flats are more prevalent, varied with spots of true black prairie. The largest of the black-prairie tracts lies in the fork of bayous Castor and Dugdemona, in Winn parish (Pendarvis' prairie).

ABSTRACT OF THE REPORT OF MICHAEL DEMPSEY, JENA.

(Refers to townships 7, 8, 9, and 10, ranges 2 and 3—the southwestern portion of the parish, between Little river and Catahoula lake.)

The country is hilly and rolling, some parts level; the bottom lands are small and confined to the numerous creeks of the uplands; their soil is alluvial, with a mixture of gray and yellow sand. The soils are very variable in color, depth, and quality; some as shallow as 2 inches, or as deep as 2 feet (in bottoms); the latter is the best; a mahogany-colored soil, called "mulatto" land (on hillsides?), is next best, and most largely cultivated. The timber (in the uplands) is yellow or pitch (long-leaf) pine, with more or less oaks and hickory, increasing toward the bottoms; in the bottoms, beech, ash, sweet and black gums, poplar, maple, sassafras, wild cherry, dogwood, &c. Except in the pine lands, the subsoil is mostly heavier than the surface soil. The crops grown are cotton (about half of each farm), corn, peas, sweet and common potatoes, sugar-cane, tobacco, oats, turnips, melons, pumpkins, and all kinds of vegetables. Cotton varies in height from 2 to 8 feet on the several soils. It will run to weed in wet seasons; can be restrained by topping in July or early in August. One

thousand pounds of seed-cotton per acre can be produced (on "mulatto" land?), when the land is fresh; 600 to 700 pounds after five years' cultivation. 1,575 pounds on an average are needed for a 450-pound bale. Crab-grass, tea-weed, and tie-vine are the most injurious weeds. Very little land lies turned out; a great deal has been newly taken in during the last ten years. Lying-out improves it for a few years. When cultivated, the land washes readily on slopes, and heavy damage is thus done, but can be prevented by circling. The valleys are rather improved by the washings of the light upland soils. The latter are damaged to the extent of 5 per cent. annually, in wet years more. Little has been done to check the damage; where circling and hillside ditching has been done, the lands are well preserved.

Cotton is shipped to New Orleans, by steamer, at $1 50 per bale.

AVOYELLES.

Population: 16,747.—White, 8,483; colored, 8,264.

Area: 852 square miles.—Woodland, all. Bluff prairie, 40 square miles; oak uplands, 65 square miles; alluvial, 747 square miles.

Tilled land: 84,787 acres.—Area planted in cotton, 23,722 acres; in corn, 21,403 acres; in sweet potatoes, 510 acres; in sugar-cane, 890 acres; in rice, 178 acres.

Cotton production: 18,355 bales; average cotton product per acre, 0.77 bale, 1,098 pounds seed-cotton, or 366 pounds cotton lint.

Of Avoyelles parish, all but about a hundred square miles is alluvial, the Red river and Atchafalaya forming its northern and eastern boundaries, respectively.

The upland is substantially prairie land, in part sparsely timbered, including, on the mainland, part of the promontory between the flood-plains of the Mississippi and Red river (known as Hollowell's prairie), and two "islands", evidently outliers from that promontory, of which the larger is known as Avoyelles prairie.

The parish town of Marksville lies nearly in the center of Avoyelles prairie. The surface of the latter is elevated about 30 feet above high-water of Red river, sometimes forming steep bluff banks. The soil of the southern portion of the Avoyelles prairie resembles, altogether, that of the bluff plateau of West Feliciana, and is similarly productive of cotton, corn, &c. The portion of the prairie lying north of Marksville is less productive, has grayish or whitish silt soil, with ferruginous concretions, and resembles in this respect the greater portion of Hollowell's and Catahoula prairies, and prairie Dubute, farther north. The smaller island is reported to be of a sandy character, with soil and timber resembling the pine hills of the mainland.

The alluvial lands of western Avoyelles parish are mainly of the same character as those of Rapides, being chiefly derived from the sediments of Red river. In the Atchafalaya country, however, the sediments of the Mississippi and Red river frequently alternate in the banks, and there is a greater prevalence of the lighter alluvial soils of the Mississippi river.

RAPIDES.

Population: 23,563.—White, 9,512; colored, 14,051.

Area: 1,498 square miles.—Woodland, all. Long-leaf pine hills, 900 square miles; Red river bottom, 475 square miles; oak uplands, 123 square miles.

Tilled land: 76,149 acres.—Area planted in cotton, 25,622 acres; in corn, 29,366 acres; in sweet potatoes, 232 acres; in sugar-cane, 1,875 acres; in rice, 2 acres.

Cotton production: 17,990 bales; average cotton product per acre, 0.70 bale, 996 pounds seed-cotton, or 332 pounds cotton lint.

The parish of Rapides, as outlined since the formation of the parishes of Vernon and Grant, embraces substantially but two main features, viz, the pine-hill uplands, constituting about two-thirds of the area; and the Red river bottom lands, which form the productive portion.

The pine-hill lands west of Red river are rolling and hilly, with the usual sandy, infertile soils, and the narrow but fairly fertile bottoms of the streams. The great swamp formed by the bayou Cocodrie, on part of the southern line of the parish, is a noteworthy feature.

The uplands east of Red river, within this parish, are nearly of the same character as the pine lands on the west side, although the bottoms of the streams are on the whole wider, and produce a fine quality of upland cotton. Toward the point where the alluvial plain of Red river proper terminates (near the "Egg bend", opposite the Avoyelles prairie), the long-leaf pine is gradually replaced by the short-leaved species, oak-growth increases and finally becomes prevalent, and the open woods pass insensibly into an open plain, forming part of "Hollowell's prairie", the main body of which lies within the limits of Avoyelles parish.

The portion of Red river bottom lying within Rapides parish is claimed by its inhabitants to be the most fertile portion of the Red river alluvial lands. Messrs. C. J. Barstow and George L. Haygood give the following description of the soils occurring near Cheneyville, Rapides parish, in the bayou Boeuf country.

Three kinds of soils may be distinguished:

1. Light, sandy, alluvial soil near the bayous, forming about one-half of the cultivatable land of the region; it is of an orange tint, which shades off into—

2. (About three-tenths of the land.) Dark brown or "mahogany" back-land, the clayeyness increasing at the same time. Both back- and front-land yield from 2,000 to 2,500 pounds seed-cotton per acre, of which 1,542 pounds are required for a 450-pound bale; the best height of the stalk being 5 to 5½ feet. After forty or fifty years' cultivation, the yield is still 1,400 pounds, and the staple better; 45 per cent. of these soils is in cotton.

3. Besides these, there is a heavy red clay, or "buckshot" soil, in the lower back-lands, somewhat difficult to till in wet seasons. On this, cotton is most productive at 4 feet, yielding 1,000 pounds seed-cotton when fresh; staple rating low middling. About 20 per cent. of this land is in cotton.

The timber on all these soils is about the same, viz, lowland oaks, sweet gum, hackberry, cottonwood, sycamore, and cypress. The ordinary weeds (which are least troublesome on No. 3) are bind-weed, cocklebur, and crab-grass. All the lands are drained by ditches only.

This description applies for 30 miles up and down bayou Bœuf.

Cotton is shipped, usually as fast as it can be got ready, by water to New Orleans; the rate of freight is $1 50 per bale.

ABSTRACT OF THE REPORT OF P. H. HYNSON, ALEXANDRIA.

The lands cultivated in cotton are the first and second bottoms of Red river and its bayous, also sandy bottom lands on the waters of Spring and Flaggon creeks.

The Red river bottom lands are about half-and-half sandy front-land and stiff clay back-land, both along the main river and the bayous. The timber is ash, oak (basket or chestnut-white), gum, hackberry, honey locust, mulberry, pecan, walnut, haw, elm, cypress; elm and sweet gum more especially on the stiff lands.

The soil of the front-lands is brown or brownish-yellow; a clay loam, more or less heavy, averaging about 3 feet in thickness. Just under the soil there is generally found a coarse, light sand for about 8 to 10 inches, then clay for 6 or 8 feet. The soil, when well broken, drains well, and tills easily in both wet and dry seasons, and hence is always early, thus enabling planters to plant as soon as frost will permit, the seed being frequently in the ground by March 10. This sometimes renders replanting necessary, but the danger from the caterpillar is greatly lessened. Besides cotton, which occupies about one-third of this soil, corn, sugar-cane, oats, rice, sweet potatoes, and other vegetables grow well, but cotton and corn yield most heavily on the stiff land. When in 5-foot rows, cotton grows about 5 feet high, but is most productive when planted in checks 2 by 3 feet. Continuous rains and continued working favor running to weed; to avoid it, shallow cultivation only should be given. The land, when fresh, readily yields one and a half bales, or from 2,000 to 2,600 pounds of seed-cotton per acre; that from the first picking requires about 100 pounds more for a bale of lint than that from the second. The staple from fresh land is somewhat longer and coarser than that from land long under cultivation, but after fifty years' cultivation without manure, such land still yields one bale per acre. Perhaps one-fourth or one-fifth of such land now lies out; rest improves it. The most troublesome weeds on this soil are: coco-, Bermuda-, wire-, blue-, and crab-grass; of others, tie-vine.

The stiff back-lands have a heavy clay soil, of yellow to blackish tint, to the depth of about 3 feet, where they are underlaid by coarse sand. The timber is like that on the front-land, but more gum, elm, sycamore, and pawpaw. The soil tills easily in all seasons when once broken; is well adapted to cotton and corn, about one-half of it being in the former crop. The stalk grows to the height of 7 feet, but is most productive at 5 feet. The product is from one and a half to two bales per acre on fresh land. It takes about 1,760 pounds for a 450-pound bale. After seven years' cultivation, the seed-cotton product is about 1,800 pounds per acre; the staple a little better than at first. The weeds are cocklebur, rag-weed, tie-vine.

The sandy loam of the pine-woods creek bottoms may constitute about one-tenth of the lands of the parish. These bottoms are timbered with lowland oaks, a little ash, holly, magnolia, sweet gum, beech, cherry, dogwood, box-elder. It is a fine sandy loam, blackish from vegetable mold to the depth of from 4 to 12 inches. The subsoil is red or blue clay, underlaid by sand or gravel at 3 to 4 feet. The soil tills readily in all seasons. Corn, cotton, and sugar-cane are planted; about one-third of the cultivated region being in corn. On new land the cotton sometimes runs to weed; 4 to 5 feet is the usual height. The seed-cotton product on fresh land is about 1,700 pounds, and about that amount is needed for a bale. After three years' cultivation the product is about 900 pounds, and the staple then rates somewhat higher; perhaps one-sixth of such land once cultivated now lies out; it is improved by rest, but should have manure when again taken in. Crab-grass, tie-vine, and rag-weed are the most troublesome weeds.

ST. LANDRY.

(See under "Attakapas prairie region".)

POINTE COUPÉE.

Population: 17,785.—White, 4,785; colored, 13,000.
Area: 575 square miles.—Woodland, all. Alluvial throughout.
Tilled land: 56,594 acres.—Area planted in cotton, 24,136 acres; in corn, 14,817 acres; in sweet potatoes, 188 acres; in sugar-cane, 6,027 acres.
Cotton production: 18,935 bales; average cotton product per acre, 0.78 bale, 1,110 pounds seed-cotton, or 370 pounds cotton lint.

The parish of Pointe Coupée is altogether of the alluvial character, lying as it does between the Atchafalaya and Mississippi rivers. Large plantations line all the water-courses, along which there are tracts of higher land, from 1 to 2½ miles in depth, on the landward edge of which the grizzly, moss-curtained cypress forest limits the view. Between these high border belts, lie low, and thus far unreclaimed, cypress swamps, forming a large part of the surface. The floods in this parish reach a greater height than in any other portion of the Mississippi valley, and the "Great Morganza" and the "Grand Levee", 15 to 18 feet in height, have been built to restrain them. These levees protect from overflow no fewer than thirteen of the most productive parishes of the state.

Sugar-cane is one of the principal and most important crops of the parish. The plantations are generally well improved, and the residences, sugar-houses, and laborers' quarters, usually located close to the banks of the numerous bayous and "old river" lakes, oftentimes form exceedingly attractive pictures. The sloping banks are turfed to the clear water's edge with Bermuda-grass, and are shaded by groves of gigantic oaks, sycamores, and sweet gums.

Considerable belts of cultivated lands lie along the following bayous: Atchafalaya, Moreau, Couteau, Letsworth, Latanache, Cow-head, Fisher's, and especially bayou Fordoche.

WEST BATON ROUGE.

Population: 7,667.—White, 2,252; colored, 5,415.
Area: 210 square miles.—Woodland, all. Alluvial throughout.
Tilled land: 26,753 acres.—Area planted in cotton, 3,784 acres; in corn, 7,263 acres; in sweet potatoes, 68 acres; in sugar-cane, 6,400 acres.
Cotton production: 2,426 bales; average cotton product per acre, 0.64 bale, 912 pounds seed-cotton, or 304 pounds cotton lint.

West Baton Rouge is wholly alluvial, being included between the Mississippi river on the east, and bayous Poydras and Grosse Tête on the west. The main body of its available lands lies along the Mississippi river, the landward depth of this "coast" belt being from 1½ to 2½ miles. Then begin the swamp lands, which make up much the larger part of the parish, and extend almost uninterruptedly to the western boundary. Of the many bayous within these back-lands, bayous Poydras, Clause, and lake Clause have fine lands and some handsome plantations on their borders. The other bayous are generally unsettled.

The forest growth of the higher lands is composed of water, chestnut white, willow, and pin oaks, sweet and black gums, sycamore, ash, pecan, sassafras, honey locust, cottonwood, &c., with cypress, sweet and tupelo gums, and willow in the swamps. There are also in the interior extensive canebrakes, where the wild cat, bear, and panther are still found.

The lands along the bayous are highly productive, sugar-cane being the chief crop, with cotton and corn as subsidiaries. The parish has no town or village within its limits, as yet.

IBERVILLE.

Population: 17,544.—White, 4,784; colored, 12,760.

Area: 646 square miles.—Woodland, all. Alluvial throughout.

Tilled land: 42,122 acres.—Area planted in cotton, 771 acres; in corn, 11,991 acres; in sweet potatoes, 52 acres; in sugar-cane, 16,687 acres; in rice, 3,129 acres.

Cotton production: 579 bales; average cotton product per acre, 0.75 bale, 1,068 pounds seed-cotton, or 356 pounds cotton lint.

Iberville parish lies between the bayou Grosse Tête and the Mississippi river on the east, and the upper Grand river and its chain of lakes and bayous bordering the parish of St. Martin, on the west. It is wholly alluvial; belts of cultivatable and highly productive lands lie along most of the bayous to the depth of one-half to two miles, especially in the northern portion, those along bayous Grosse Tête, Maringuin, and Deglaize. Between the Grosse Tête and Maringuin there is an extensive swamp, occupying nearly the whole space between them, just north of Grand river. A similar swamp extends between the Maringuin and Deglaize, from the northern boundary of the parish to lake Oksibe. The lands lying on the forks of Alabama bayou, and between them and Grand river, are also occupied by plantations.

In the southern part of the parish, along lower Grand river and its tributaries, bayous Pigeon and Sorrel, the lands have been partially cleared, and are of fine quality, but the overflows prevent their occupation to a great extent. Bayou Plaquemine, connecting Grand river with the Mississippi, is a large navigable stream, and is thickly settled along both of its banks. The court-house town of Plaquemine has a flourishing business in the shipment of agricultural produce and (cypress) lumber.

The "coast" of Iberville is remarkable for the highly improved condition and great extent of its plantations, there being many handsome residences, surrounded by parks of live oak and pecan trees. Cleared lands lie also along bayou Goula and Manufactory bayou, extending back almost to lake Natchez, by which they are thoroughly drained. The rice crop for 1879 was 2,198,550 pounds.

ST. MARTIN.

Population: 12,663.—White, 5,783; colored, 6,880.

Area: 618 square miles.—Alluvial lands, 518 square miles. Woodland, 460 square miles. Lowland prairie, 58 square miles; upland prairie, 100 square miles.

Tilled land: 39,876 acres.—Area planted in cotton, 6,942 acres; in corn, 11,283 acres; in sweet potatoes, 412 acres; in sugar-cane, 3,525 acres; in rice, 7 acres.

Cotton production: 2,232 bales; average cotton product per acre, 0.32 bale, 456 pounds seed-cotton, or 152 pounds cotton lint.

This parish, greatly reduced in area since the creation of Iberia parish, is predominantly alluvial land, lying between the bayou Tèche and the Atchafalaya river, while the portion lying west of the Tèche, between it and bayou Tortue, is mainly rolling prairie of the "brown loam" character.

The Tèche is here, as in Iberia, bordered by a narrow belt of live-oak groves, whose branches shade the narrowing, but still deep and navigable, stream. The narrow band of Red river alluvium also continues on both sides, on the eastern shading off gradually into the alluvial prairie, which here borders the stream instead of the woodlands, the belt varying from 3 to 5 miles in width. Eastward of these there lie arable lands, densely wooded with a growth of lowland oaks, ash, sweet gum, pecan, sycamore, magnolia, &c. Here, as elsewhere, the culture of sugar-cane occupies nearly all the cultivated alluvial lands, which are profusely fertile. Still farther east, toward the Atchafalaya, the land becomes more low and wet, and is occupied mainly by cypress and tupelo gum. Butte à la Rose is on a tract of higher land on the Atchafalaya.

West of the Tèche (which is navigable to St. Martinsville during most of the year), the prairies average about 3 miles in width. They are bounded on the west by the wooded lands along bayous Vermillion and Tortue. In the southern part of the prairies in this parish, woodlands also occur along bayous Capucin and Cypress, and on Cypress island. Lake Martin, near Breaux bridge, is one of the largest of the prairie "ponds" characteristic of the region, and is a pretty sheet of water.

ASSUMPTION.

Population: 17,010.—White, 8,938; colored, 8,072.

Area: 327 square miles.—Woodland, all. All alluvial land.

Tilled land: 36,511 acres.—Area planted in cotton, 285 acres; in corn, 14,055 acres; in sweet potatoes, 138 acres; in sugar-cane, 12,945 acres; in rice, 1,420 acres.

Cotton production: 119 bales; average cotton product per acre, 0.42 bale, 600 pounds seed-cotton, or 200 pounds cotton lint.

Assumption, though not bordering on the Mississippi river, is a rich alluvial parish throughout. Its prominent hydrographic feature is the bayou Lafourche, which, after leaving the main Mississippi, a little above Donaldsonville, traverses the eastern part of the parish, and along which the improved and cultivated lands chiefly lie. This belt of highly fertile land is about 20 miles in length within the parish, and has a width, on either side of the Lafourche, of from 1 to 1½ mile. It is closely settled, and presents the appearance of one continuous town, with many handsome residences and plantation buildings.

In addition to this continuous tract of open land there are, east and west of the Lafourche, detached bodies of cleared and settled land, called "brulées". Of these, the principal ones are the Sacramento, Grand Bayou, Pierpart, St. Vincent, Big and Little Texas, and L'Abadie "brulées". These lie at distances varying from 4 to 10 miles from the main body of the bayou, and are not inferior in fertility.

The banks of the Attakapas canal, which connects the Lafourche, at Napoleonville (the parish town), with lake Verret, are also settled and under cultivation, as is the western shore of lake Verret, where there are some extensive and well-improved plantations. The eastern shore of this lake has a few scattered settlements, whose inhabitants are engaged in hunting, fishing, and lumbering. The remaining portions of the parish, not specially mentioned, are wooded and mostly swampy.

Sugar-cane and corn, with a little cotton, form the products of the parish.

According to the statement of Mr. Lewis Guion, of Napoleonville, what little cotton is produced in the parish is almost exclusively grown in small patches in the "brulées", back from the main streams. It grows vigorously and bolls well, but the caterpillar and army-worm are very prevalent; and this, coupled with the fact that at the picking season rains are liable to prevail, and with the high price of labor in the sugar-belt, renders cotton culture unprofitable in this region.

ASCENSION.

Population: 16,895.—White, 5,968; colored, 10,927.

Area: 373 square miles.—Woodland, all. All alluvial land.

Tilled land: 37,908 acres.—Area planted in cotton, 1,285 acres; in corn, 6,112 acres; in sweet potatoes, 241 acres; in sugar-cane, 15,545 acres; in rice, 616 acres.

Cotton production: 592 bales; average cotton product per acre, 0.46 bale, 657 pounds seed-cotton, or 219 pounds cotton lint.

Ascension parish is throughout alluvial; the portion fronting on the Mississippi river is identical in character with that of the "coast" of Iberville; the parish is almost entirely a sugar-growing one, and the lands highly productive. The parish town, Donaldsonville, is a thriving village of about 2,000 inhabitants, and at one time was inclined to dispute precedence with New Orleans and Baton Rouge. No detailed data regarding the portion of the parish lying east of the Mississippi river have come into my possession. It appears that lake Maurepas, which on the north and east is bordered by such extensive swamps, is edged by only a narrow fringe of the same south of the Amite river, where it adjoins this parish, which would thus seem to possess an unusual proportion of cultivatable land.

ST. JAMES.

Population: 14,714.—White, 4,850; colored, 9,864.

Area: 308 square miles.—Woodland, 253 square miles. Alluvial land, 253 square miles; marsh and marsh prairie, 55 square miles.

Tilled land: 54,675 acres.—Area planted in cotton, none; in corn, 11,303 acres; in sweet potatoes, 139 acres; in sugar-cane, 15,227 acres; in rice, 5,870 acres.

The parish of St. James, north of the river, resembles more the river parishes farther north, than those of the delta plain proper. The highlands near the river are highly productive and densely settled, and mostly occupied by sugar plantations. Northward of this belt, the drainage is toward lake Maurepas, through bayou Des Acadiens and Mississippi bayou, which head a few miles from the main river. The belt of marsh land, fringing the shores of lake Maurepas, is only from three-quarters to one mile wide, and the land along the bayous south of the river, the cultivated border belt, of the usual width of from 2½ to 3 miles, is somewhat abruptly terminated by the marsh prairies that border the lake Des Allemands, which thence extend westward as a belt about 6 miles in width, a little beyond the principal meridian of the survey, about half-way between the river and bayou Lafourche. The rice crop for 1879 was 2,718,586 pounds.

ST. JOHN BAPTIST.

Population: 9,686.—White, 3,855; colored, 5,831.

Area: 190 square miles.—Woodland, all. Nearly all alluvial land.

Tilled land: 29,213 acres.—Area planted in cotton, none; in corn, 2,888 acres; in sweet potatoes, 3 acres; in sugar-cane, 9,453 acres; in rice, 696 acres.

This small parish, reaching southward to the lake Des Allemands and its bordering marshes, while to the northward it embraces the neck of land that separates lakes Pontchartrain and Maurepas, is in most respects similar to St. Charles (see below). Between the main river and lake Maurepas, it comprehends a fine expanse of agricultural land of great productiveness and in a high state of cultivation. Fields of sugar-cane and market gardens occupy most of the cultivatable lands in the parish. The region between the two lakes is partly marsh prairie, partly cypress swamp, rendered almost impenetrable by a thick undergrowth of saw palmetto. The prairie on the border of lake Pontchartrain is partly of the "trembling" character, which is perceptible even to the passer-by on the great highway—the New Orleans and Chicago railroad—that traverses it. A few cultivated spots and settlements exist in this region also.

ST. CHARLES.

Population: 7,161.—White, 1,401; colored, 5,760.
Area: 284 square miles.—Woodland, 234 square miles; marsh and marsh prairie, 50 square miles. Alluvial land, 234 square miles.
Tilled land: 21,171 acres.—Area planted in cotton, 51 acres; in corn, 1,287 acres; in sweet potatoes, 28 acres; in sugar-cane, 7,787 acres; in rice, 1,320 acres.
Cotton production: 47 bales; average cotton product per acre, 0.92 bale, 1,311 pounds seed-cotton, or 437 pounds cotton lint.

The parish of St. Charles embraces a comparatively large area of fine, cultivatable lands, forming belts of about 3 miles wide on either side of the river. Beyond this "coast belt", which is in a high state of cultivation and thickly settled, the ground becomes lower, and more or less swampy, until, along lake Des Allemands and the upper portion of the bayou of the same name, we find a border belt of marsh, 2 or 3 miles in width. This feature becomes less pronounced to the southward, on the lower part of the bayou, where the cypress-swamp land closely approaches the bayou. Across the latter, in Lafourche parish, lies the great grassy prairie Des Allemands. North of the river we find, beyond the cultivated coast belt, a swamp and marsh region from 5 to 6 miles wide, bordering lake Pontchartrain.

JEFFERSON.

Population: 12,166.—White, 4,864; colored, 7,302.
Area: 395 square miles.—Woodland, 170 square miles; marsh and marsh prairie, 225 square miles. Alluvial, 170 square miles.
Tilled land: 19,767 acres.—Area planted in cotton, none; in corn, 2,065 acres; in sweet potatoes, 88 acres; in sugar-cane, 6,136 acres; in rice, 1,841 acres.

Jefferson parish stretches from lake Pontchartrain on the north, to the head of Barataria bay on the Gulf coast. Most of the tillable lands lie in the northern portion, along the Mississippi river, just west of, as well as opposite to, the city of New Orleans. The relatively high banks of the Mississippi, on which the towns of Algiers and Gretna are located, form a dividing ridge, from the south side of which the water drains southward through bayou Barataria and its connections into Barataria bay. On the higher land accompanying this bayou, as well as bayou Dauphine or Des Familles, there are some fine sugar-plantations, although the tillable lands are of little depth, and from about the junction of the two bayous, near the eastern end of lake Washa, the marsh prairie closes in upon their banks.

In this southern portion, the surface of the parish is almost entirely covered by swamp, marsh prairie, and sea marsh, traversed by an intricate network of bayous and dotted with lakes, resorts of fishermen and duck-hunters only. Numerous shell-heaps form the only elevations in the level plain; they are almost exclusively composed of the "clam" or gnathodon, and will doubtless in the future be made profitable for the making of roads, as are those on lake Pontchartrain.

Through Verret canal, light-draught steamers and other craft can pass from the Mississippi, near Algiers, into bayou Barataria, and Harvey's canal establishes a similar communication farther west. Barataria bayou is navigable, and through its connections the waters of the Gulf are reached without difficulty. Prior to the construction of the South pass jetties, this route was strongly urged as the most desirable outlet for the shipping from New Orleans, and it may even yet become of considerable importance for the coasting trade, since there is but little current to be encountered in making the passage up from Barataria bay.

The shore of lake Pontchartrain, at the northern end of the parish, is bordered by 4 to 5 miles of marsh prairie, whose landward limit is marked by a belt of live oak, forming the background of the landscape as seen from the river. The lands intervening between the live-oak belt and the river are thickly settled and highly productive of sugar.

ORLEANS.

Population: 216,090.—White, 158,367; colored, 57,723.
Area: 187 square miles.—Alluvial land, 20 square miles; marsh, 167 square miles.
Tilled land: 4,436 acres.—Area planted in cotton, 7 acres; in corn, 35 acres; in sweet potatoes, 48 acres; in sugar-cane, 1,162 acres; in rice, 1,332 acres.
Cotton production: 12 bales; average cotton product per acre, 1.71 bales, 2,436 pounds seed-cotton, or 812 pounds cotton lint.

The city of New Orleans and its suburbs, with a population of 216,090, covers nearly all of the higher land lying within Orleans parish. The rear of the city itself almost touches the swamp land, originally timbered with cypress, passing into the marsh prairie that borders lake Pontchartrain with a depth of from 3 to 4 miles. The Great Levee protects the city-front from the flood-waters of the Mississippi; but the enemy not uncommonly finds its way to the rear, through breaks in levees above or below, not so well cared for, when the northern part of the city suffers more or less from water. Bayous St. John and Gentilly, heading near that part of the city, then serve to convey the overflow into lake Pontchartrain.

The New Orleans and Mobile railroad traverses the portion of the parish lying between lakes Borgne and Pontchartrain, a region of little else than swamp and marsh prairie, of which small tracts are gradually being reclaimed for market gardens. The body of those supplying the New Orleans vegetable market lie, however, above the city, in the adjoining parishes of Jefferson, St. Charles, and St. John Baptist. Rice crop, 1,239,240 pounds.

ST. BERNARD.

Population: 4,405.—White, 2,104; colored, 2,301.

Area: 680 square miles.—Woodland, 5 square miles; marsh and marsh prairie, 675 square miles. Alluvial ridges, 25 square miles.

Tilled land: 11,850 acres.—Area planted in cotton, 248 acres; in corn, 395 acres; in sweet potatoes, 215 acres; in sugar-cane, 2,879 acres; in rice, 1,807 acres—yield, 1,027,200 pounds.

Cotton production: 146 bales; average cotton product per acre, 0.59 bale, 840 pounds seed-cotton, or 280 pounds cotton lint.

The parish of St. Bernard embraces but small and incontinuous tracts of land susceptible of cultivation at the present time. The strip of high land lying on the left bank of the Mississippi, about the "English turn" of the river within this parish, is only about three-quarters of a mile wide. Beyond, the cypress swamp takes possession, and beyond that, on the shore of lake Borgne, we find the marsh prairie, about 3 or 4 miles wide at this point.

A narrow strip of live-oak land also lies on the bayou Terre-aux-Boeufs, and on a few others of the bayous. The rest of the parish, so far as I have been able to learn, is occupied by marsh prairie and sea marsh, cut up by bayous and innumerable inlets, frequented only by hunters and fishermen in pursuit of their game. To all but these, notwithstanding its nearness to the commercial metropolis of the Southwest, this region is in a great measure a *terra incognita*.

The Chandeleur islands are said to resemble those of the Mississippi sound, being low and sandy, with an occasional sandhill blown up by the wind. Their growth is mostly scrub with a few pitch pines. They are visited only occasionally by oystermen's and fishermen's crafts.

PLAQUEMINES.

Population: 11,575.—White, 4,254; colored, 7,321.

Area: 930 square miles.—Woodland, 285 square miles; marsh and marsh prairie, 645 square miles. Alluvial land, 285 square miles (along main river).

Tilled land: 36,908 acres.—Area planted in cotton, none; in corn, 1,767 acres; in sweet potatoes, 46 acres; in sugar-cane, 12,684 acres; in rice, 10,181 acres—yield, 6,609,954 pounds.

The cultivatable lands of Plaquemines parish lie wholly along both banks of the Mississippi river. Just below the city of New Orleans, these belts of comparatively high land, are from 1 to as much as 3 miles wide, but gradually decrease in width as we descend the river, until, at forts St. Philip and Jackson, the marsh closes in upon the banks of the great river itself.

Down to the forts, the aspect of this "lower coast" is pretty much the same. Nearest the river, and highest above water-level, are the sandy "willow battures", where the willow, mingled with, and occasionally replaced by, the cottonwood, forms the predominant growth. Beyond lies a belt of woodland, timbered chiefly with live oak, magnolia, and cottonwood, often deeply veiled with "long moss". This woodland belt denotes the richest and most durable soils of the region, and is mostly occupied by sugar plantations and orange orchards. Still beyond these, loom in the distance the somber-hued, moss-curtained denizens of the cypress swamp, their tops forming a level platform sharply defined against the horizon. Between the swamp and the water's edge, to seaward, there usually intervenes a zone of rushes, with here and there a stunted cypress, bay, or candleberry bush, where the salt-water has but slight access.

Of these four belts, either or both of the middle ones may locally be absent. The "cypress" is the rule below the forts; thence to the mouths of the "passes" the willow batture and rush-grown marsh alone form the barrier between the river and the sea, which, in the portion known as "the Neck" is often so exceedingly narrow, as to make it a matter of surprise to the novice that the river does not break through almost anywhere, and thus shorten its course to the sea. There are, indeed, a few connecting bayous naturally formed, and many more excavated by the duck-hunters who frequent this region and supply the New Orleans market. In reality, the narrow barrier is not as frail as it seems, being composed not so much of river sediment as of tough clay, ejected in a semi-fluid condition by the singular mud volcanoes or "mud lumps", that form a unique feature of the Mississippi mouths, and so greatly impede their navigation. They are originally formed by the bulging up of the bottom on and inside of the bar, followed by the breaking out of a mud-spring, which in the end forms an island consisting of tough clay. These islands remain undisturbed along the margin of the channel, and the intervals between them are gradually filled up, partly from their own mass, partly from river sediment. Thus a canal with solid clay walls is being built by the river out into the Gulf, and hence the singular shape of its mouths, which are often compared to the web-feet of water-fowl. The bank that stands directly in the way of the current of the main river, at the "head of the passes", consists of mud-lump clay, and thus, resisting washing away as readily as solid rock, it has divided the current of the great river into the several "passes".

At numerous points (as at Stake island, in the Southwest pass), the mud-lump islands rise as much as 15 feet above the sea-level, though more commonly their height is from bare emergence to 8 or 10 feet. The waves alone make but little impression upon the tough material of the mud lumps; but when the mud springs cease to eject their fluid mud, sun-cracks are formed on the surface, and huge fragments cleave off into the water, where they are soon leveled by the waves, forming mud banks, while the remnant stands up as a steep cliff, whose height is usually greatly overestimated by the passer-by, and their shrubby growth exaggerated into trees. Only one of these islands, Stake island in the Southwest pass, is inhabited. The rest are the resort of sea-fowl, and sometimes of their enemies, the mink and otter.

Few efforts at cultivation of the soil have been made in the marsh region below the forts, and the light-houses and pilot-stations almost alone constitute the resident population. A few settlers' houses are seen on the main river below the forts, and on Southwest pass, where some vegetables have been successfully grown. The dwellings are all on piles, for the sake of safety in time of flood or storm-tides.

Doubtless the culture of rice could be successfully pursued in a large portion of these marshes, thus far left, as their undisputed domain, to the alligator and the mosquito. The portion of the "coast" above the forts is almost entirely devoted to the culture of sugar-cane and tropical fruits.

LAFOURCHE.

Population: 19,113.—White, 11,282; colored, 7,831.

Area: 1,024 square miles.—Woodland, 295 square miles; marsh and marsh prairie, 729 square miles. Alluvial land, 295 square miles.

Tilled land: 44,802 acres.—Area planted in cotton, none; in corn, 16,018 acres; in sweet potatoes, 331 acres; in sugar-cane, 12,249 acres; in rice, 9,732 acres—yield, 4,692,334 pounds.

Lafourche is a long, narrow parish, lying on both sides of the navigable bayou from which it takes its name, its length being from 80 to 85 miles, its width never exceeding 20. The northern portion is similar to Assumption, the rich belt of sugar-cane land continuing to follow the course of the bayou Lafourche; it is in a high state of cultivation to within 25 miles of the Gulf coast. After passing Thibodeauxville, the depth of the high lands gradually diminishes, and toward the lower part of the parish the sea marsh encroaches to within a few hundred yards of the banks of the bayou. For some distance below the site of any plantations, the ridge along the bayou is covered with a dense growth of live oaks. These are gradually crowded out by the rank grass of the marsh, which borders the Lafourche for the last fifteen miles of its seaward course.

Narrow belts of arable lands are also found along bayous Checby and Chattamahan, in the northern part of the parish, and along the borders of the lake Des Allemands, lake Boeuf and its outlet, bayou Boeuf. Bayous De la Vacherie, Coquille, and Middle bayou, near the center of the parish, also have some extensive and very fine tracts of improved lands upon their borders. Along the bayou Des Allemands and lake Salvador only a few scattered localities lie high enough to be inhabited. In the western part of the parish, on bayou Bleu and some of the smaller bayous, some live-oak ridges exist, and small isolated tracts of a similar nature are occasionally seen in the open, low, grassy prairies, which form the prevalent feature of the Gulf coast of the state inside of the sea marsh proper. Immense tracts on the borders of the lakes are of the "trembling prairie" character, the surface consisting of matted roots and decayed marsh vegetation, sometimes half afloat upon underground sheets of water. Cattle graze upon these prairies, although they vibrate at every tread, and the small-hoofed breeds cannot sustain themselves on account of the continuous paddling motion required for safety.

Outside of these prairies, the tidal sea-marsh presents to the Gulf a ragged edge of islands, peninsulas, and inlets, and is traversed by an intricate maze of tide-water bayous, into which only the duck-hunter cares to penetrate.

The predominant crop of Lafourche is sugar-cane, and next to it, rice and corn. Tropical fruits—oranges, bananas, and figs—are also largely produced.

TERREBONNE.

Population: 17,957.—White, 8,613; colored, 9,344.

Area: 1,806 square miles.—Woodland, 306 square miles; marsh prairie and marsh, 1,500 square miles. Alluvial land, 306 square miles.

Tilled land: 40,403 acres.—Area planted in cotton, none; in corn, 14,338 acres; in sweet potatoes, 459 acres; in sugar-cane, 15,390 acres; in rice, 705 acres.

In total area, Terrebonne is one of the largest parishes of the state, but it contains within its limits a vast extent of salt-marsh, of "trembling", and open, wet prairies.

In the northeastern quarter of the parish there rise a number of bayous, which traverse it from north to south; the most important of these are bayous Terrebonne, Bleu, Petit Caillou, Du Chien, Grand Caillou with its branches, bayou Au Large, and Cade. Running in a westerly direction, there are bayous Black, Chuckahoula, Tigre, L'Ours, Chêne, and Penchant. These bayous are at first narrow, shallow streams, frequently becoming perfectly dry in the summer and autumn; but they gradually increase in breadth and depth, until they become navigable for the smaller class of steamboats. In wet seasons they become large streams, and are of great importance in affording outlets for the flood-waters of the Mississippi. Along all these bayous is a (relatively) high ridge of excellent land, which, however, is not as deep here as farther above, rarely exceeding forty acres (a quarter of a mile) in depth; as on bayous Terrebonne, the Caillous, Black, and Chuckahoula. On others, as on bayou L'Ours, the bordering ridge is often barely wide enough for the public road which follows its windings. In the vicinity of Houma, however, and at several other points, the ridges of contiguous bayous meet and crowd out the intervening swamp, so as to form large tracts under one continuous ownership. Elsewhere, Terrebonne is a region of small farms rather than of extensive plantations. The cultivatable ridges accompany the bayous to within from 10 to 20 miles of the sea, when the ridge becomes a live-oak grove for some miles farther, and finally, the salt-marsh closes in upon the bayou. The products of Terrebonne are the same as those of Lafourche—chiefly sugar-cane, with rice, some corn, and tropical fruits. Within the parish are many large lakes, such as lake Long, on its eastern boundary, lakes Quitman, Washa, De Cade, and numerous other smaller sheets of water. On the coast are several important indentations, namely, Timbalier, Terrebonne, Caillou, and Atchafalaya bays; and beyond, there lies a chain of islands, of which the largest are Timbalier and Last islands. These are occasionally swept by storm-tides, but the latter, despite a catastrophe thus caused some time ago, is still occupied as a place of resort. The lakes and bays are frequented chiefly by duck-hunters and fishermen.

ST. MARY.

Population: 19,891.—White, 6,717; colored, 13,174.

Area: 648 square miles.—Woodland, 305 square miles; marsh and marsh prairie, 333 square miles; black prairie (Cyprès-Mort), 10 square miles. Two islands, 4 square miles. Alluvial land, 381 square miles.

Tilled land: 66,326 acres.—Area planted in cotton, none; in corn, 11,302 acres; in sweet potatoes, 136 acres; in sugar-cane, 17,396 acres.

The parish of St. Mary consists almost entirely of alluvial lands (the cultivatable portions bordering the various bayous) and of sea marsh; the Cyprès-Mort prairie, in the northwestern portion south of the Tèche, and the islands of Côte Blanche and Belle Isle, being the only exceptions.

On the bayou Tèche, the tillable lands vary in depth from 1 to 3, and in places even 5, miles. All those lying on the eastern side are subject to overflow at the highest stages of the Mississippi river, though at no time has it been known to reach above Centreville. The height of the banks of the Tèche at Franklin is 13 feet above the Gulf level, and at the northern line of the parish, 15 feet. On the other bayous within the parish, the depth of the tillable lands is only from a half to one mile, as on Berwick's bay, bayous Boeuf, Shaffer, and Atchafalaya. Fine bodies of cultivated lands are also found on bayous Salé and Cyprès-Mort, those on bayou Salé being considered the best sugar lands in the parish, while the "Cyprès-Mort woods" are remarkable for their beautiful groves of live oak, ash, magnolia, sweet gum, and cypress. The soil here is a dark alluvial loam, several feet in depth, and very easily tilled. The soil of the Tèche lands is of a lighter tint, and above the town of Franklin the red tint of the Red river alluvium is occasionally observable. Sugar-cane is by far the predominant crop; the cotton shown by the returns being chiefly produced on the island of Côte Blanche. The latter, resembling altogether in its features the islands of Petite Anse and Grande Côte, mentioned in the description of Iberia parish, lies on the shore of Côte Blanche bay, is almost circular, and rises 180 feet above tide-water; area, about 2,000 acres. It was originally heavily timbered with oak, magnolia, &c., with an undergrowth of cane, but is now almost entirely cleared.

Belle Isle, the smallest of the chain of five islands, lies on the western headland of Atchafalaya bay. Its area is only 350 acres; its character substantially the same as that of Côte Blanche.

IBERIA.

(See under "Attakapas prairie region".)

VERMILLION.

(See under "Attakapas prairie region".)

CAMERON.

Population: 2,416.—White, 2,087; colored, 329.

Area: 1,545 square miles.—Woodland, 50 square miles; marsh and marsh prairie, 1,495 square miles. Live-oak ridges, 50 square miles; black prairie, 50 square miles.

Tilled land: 5,743 acres.—Area planted in cotton, 1,662 acres; in corn, 2,726 acres; in sweet potatoes, 184 acres; in sugar-cane, 51 acres; in rice, 12 acres.

Cotton production: 636 bales; average cotton product per acre, 0.38 bale, 543 pounds seed-cotton, or 181 pounds cotton lint.

Cameron parish, originally part of Calcasieu, is mainly sea marsh, embracing at the north from 50 to 100 square miles of the Calcasieu prairie, and in its southern portion the following habitable spots: the island of Grande Chênière; a narrow ridge along the Mermentau pass to its mouth; thence to the mouth of Calcasieu pass; thence, still along the Gulf coast, and but a short distance from it, to the mouth of Sabine pass; also Hackberry island, in the western part of Calcasieu lake; a part of St. John's island, in the southern part of the same lake, and along Calcasieu pass to its mouth; also, at a few points along Sabine pass, and along Johnson's bayou, Black bayou, and a few others emptying into Sabine lake. All of these lands, though above the ordinary tidal overflow, are subject to the unusual high floods produced by long-continued gales from the south, and nearly all have at times suffered from these extraordinary floods. Still, the lands are so good, and the climate generally so fine, that the inhabitants cling to their homes in spite of occasional disasters.

The marketable productions of Cameron are cotton, rice, corn, cattle, fish, oysters, game, oranges, figs, and bananas. (a)

BLUFF REGION.

(Comprising West Feliciana, East Feliciana, and East Baton Rouge parishes.)

WEST FELICIANA.

Population: 12,809.—White, 2,287; colored, 10,522.

Area: 370 square miles.—Woodland, all. Bluff land, 220 square miles; alluvial land (Mississippi bottom), 110 square miles; oak uplands, 40 square miles.

Tilled land: 28,985 acres.—Area planted in cotton, 21,072 acres; in corn, 9,000 acres; in sweet potatoes, 271 acres; in sugar-cane, 22 acres; in rice, 5 acres.

Cotton production: 11,810 bales; average cotton product per acre, 0.56 bale, 798 pounds seed-cotton, or 266 pounds cotton lint.

The parish of West Feliciana comprehends substantially two kinds of lands, outside of small portions of the Mississippi bottom lying east of the river, viz: the bluff lands, forming a belt varying from 10 to 15 miles wide

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a Lockett, Report of the Topographical Survey of Louisiana, 1870, p. 35.

east and west, which skirt the Mississippi river from Vicksburg to Baton Rouge and constitute the main body of the parish, and rolling oak and pine uplands, with a more or less sandy loam soil, timbered with oaks and some short-leaf pine.

The bluff lands are quite hilly and broken in the northern part of the parish, forming sharp-backed ridges elevated several hundred feet above the river, with narrow valleys intervening. In some places (especially inland) there are larger or smaller areas of level or gently rolling plateau-land, with a yellow or brown loam soil on the tops of the ridges, and, in such cases, the slopes of the latter are less abrupt and have an excellent soil, resulting from the intermixture of the brown loam of the hill-tops with the marly silt that forms the body of the ridges. Where the silt itself forms the cultivated soil, the latter, though productive, is somewhat droughty, being very light and porous, so that the water of the streams sinks below the surface very rapidly, and springs exist only where the older sandstones and clays shed the water (see report on Mississippi, "Cane-hills region").

In the southern portion of the parish the ridges gradually become less high and abrupt, and the rolling plateau character which prevails in East Feliciana, and East Baton Rouge, becomes more prevalent, and the farms increase in area. Near the river, however, deep, narrow valleys with steep sides are still common.

The oak uplands in the northeastern portion of the parish are altogether similar to those described as forming the middle portion of East Feliciana.

ABSTRACT OF THE REPORT OF R. H. RYLAND, BAYOU SARA.

The lowlands of the Mississippi river are very rich, producing splendid crops of cotton.

The upland is table-land, from hilly to rolling and almost level. The original timber is magnolia, sweet gum, oaks, beech, black walnut, and wild cherry.

The land was originally very rich; much of it is now worn and gullied; level tracts still good; soil, a loam or clay loam; the former brown to nearly black and rather light; the latter from grayish-brown to red. These soils frequently alternate or are mixed. The subsoil is mostly clay, heavier than surface soil.

Cotton, corn, and potatoes are the chief crops to which the soil is well adapted. Cotton forms about two-thirds of the crop; 4 to 6 feet is the usual height of cotton on the uplands; it runs to weed in wet weather; no remedy applied. Fresh land yields 1,500 pounds of seed-cotton per acre, of which from 1,350 to 1,575 pounds make a 450-pound bale, the staple rating middling. After eight to ten years' cultivation, the land yields 600 to 1,000 pounds; in bottoms, 800 to 1,200. About the same amount of seed-cotton is needed for a bale, but it is not quite so long in staple nor so heavy in body. The most troublesome weeds are rag-weed, careless-weed, and cocklebur.

Perhaps as much as one-fourth of upland once cultivated lies out; when taken into cultivation it produces well for a few years. It gullies readily on slopes, serious damage being done. The lowlands are rather benefited by the washings. Little is being done to check the damage now, but before the war, horizontalizing and hillside ditching were successfully practiced.

Cotton is shipped, as soon as it is ready, by river to New Orleans; rate of freight is 50 to 75 cents per bale.

EAST FELICIANA.

Population: 15,132.—White, 4,497; colored, 10,635.

Area: 483 square miles.—Woodland, all. Long-leaf pine hills, 403 square miles; bluff land, 80 square miles.

Tilled land: 52,218 acres.—Area planted in cotton, 28,368 acres; in corn, 16,522 acres; in sweet potatoes, 1,067 acres; in sugar-cane, 169 acres; in rice, 19 acres.

Cotton production: 11,098 bales; average cotton product per acre, 0.39 bale, 555 pounds seed-cotton, or 185 pounds cotton lint.

The eastern portion of East Feliciana is a rolling plateau-land, rising in the northern part upward of 100 feet above the Mississippi river, but in the southern, at Port Hudson, declining to between 60 and 70 feet. Deep and rather abrupt ravines are cut into the plateau by the small streams that flow directly toward the Mississippi, while on the eastward slope, toward the Comite, they descend more gently. The belt of "bluff" lands, with their light and fertile soil, is here about 13 miles wide, their general character and timber growth being as described in East Baton Rouge (see below).

Beyond the point mentioned, the short-leaf pine begins to intermingle with the timber growth of the "bluff"; for a short distance there are alternations and intermixtures of the pine and bluff soils, and then the pine predominates, and with post, black-jack, and some Spanish oaks, continues on to the edge of the Comite bottom, in the direction of Clinton, the parish town. The Comite and its branches have quite extensive bottoms of very fertile land, partly swamp. East of the Comite, the country becomes more broken and the soil poorer, the pine predominating over the oaks, and mingling with the long-leaved species. Finally, east of the Amite river, the open long-leaf pine country sets in.

It is claimed that the uplands, timbered with oak and short-leaf pine, between the Comite and Amite, produce as much as half a bale of cotton per acre. This, however, is certainly considerably above the average product, and probably refers more especially to the lands of the Comite proper.

The shipment of products is made almost entirely from various landings on the Mississippi river to New Orleans.

EAST BATON ROUGE.

Population: 19,966.—White, 7,103; colored, 12,863.

Area: 442 square miles.—Woodland, all. Bluff land, 282 square miles; alluvial land, 85 square miles; long-leaf pine hills, 75 square miles.

Tilled land: 40,026 acres.—Area planted in cotton, 11,808 acres; in corn, 11,735 acres; in sweet potatoes, 443 acres; in sugar-cane, 3,584 acres; in rice, 6 acres.

Cotton production: 5,756 bales; average cotton product per acre, 0.49 bale, 699 pounds seed-cotton, or 233 pounds cotton lint.

The parish of East Baton Rouge is essentially a "bluff" parish, there being only a small area of the "oak and pine uplands" character in the northeastern corner. Two small areas of Mississippi bottom are also within the parish limits; and an alluvial tract stretches in along Ward's creek, from bayou Manchac.

At the northwestern corner of the parish, the plateau still rises to about 70 feet above the Mississippi river, but at Baton Rouge descends to about 40 feet only. A short distance below the town the bluff terminates, taking a sweep southeastward, parallel to bayou Manchac, and forms the northern limit of the delta plain proper.

At Baton Rouge, and eastward as well as northward, the bluff plateau is almost level or gently undulating, but much cut into by deep and abrupt ravines, which have been greatly enlarged in consequence of the denudation resulting from deforesting, and turning-out of the older lands.

The soil of the "bluff plateau" is a light buff-colored loam at the surface, but the dark orange-yellow subsoil lies quite near the surface. At most points, these uplands (which were among the earliest settled in the state) were originally covered with an open forest of magnolias, oaks (especially the swamp-chestnut oak), beech, sweet gum, sassafras, &c., with a prevailing undergrowth of tall cane. The soil was a black, deep, easily tilled loam, whose fertility was so satisfactory, that few felt tempted to invade the bottoms. In the course of time, what with the removal of the timber and cane, and shallow tillage, the original soil is scarcely to be seen anywhere, and cane has become a myth. Fortunately for the country, the Bermuda-grass early took possession of the ground abandoned by the cane and the planter, and prevented a great deal of damage by washing; at the same time it forms an excellent pasture during the greater part of the year, and yet does not seem to trouble the cultivated fields in the guise of the "wire-grass", that is such a dreaded pest in the hill country. The rich and deep subsoil loam is thus retained on the uplands, and needs only deep and thorough tillage and rational treatment to restore it to its original fertility. The upland plantations were gradually abandoned by the large planters from the time at which the reclamation of the bottom lands began, and the bluff country has become more and more a land of small farms; thus, under more thrifty management, it is resuming its natural position in the scale of productiveness.

Cotton is by far the predominant crop, but the soil is adapted to a great variety of crops, and more especially to fruits; among these it is probable that the grape would be one of the most successful. Very little has, as yet, been done in this direction.

There are a few local exceptions to the fertility of the bluff plateau, where certain white materials, visible at the Port Hudson bluff, come to the surface. Such is the case with "Bullard's plains", about 7 miles north of Baton Rouge, and another locality about 5 miles east of Port Hudson (in East Feliciana). These are level tracts, with a white soil, putty-like when wet, and almost barren; an irregular growth of crab and hawthorn is all that is found on them.

Communication with market is via Baton Rouge to New Orleans by river.

ATTAKAPAS PRAIRIE REGION.

(Comprising parts of the parishes of Iberia, St. Martin,* St. Landry, Vermillion, and Calcasieu,* and the whole of Lafayette.)

IBERIA.

Population: 16,676.—White, 8,100; colored, 8,576.

Area: 582 square miles.—Woodland, 185 square miles; dry prairie, 130 square miles; sea marsh, 267 square miles. Bottom, 175 square miles; three islands, 10½ square miles.

Tilled land: 49,604 acres.—Area planted in cotton, 7,443 acres; in corn, 23,740 acres; in sweet potatoes, 917 acres; in sugar-cane, 6,501 acres; in rice, 33 acres.

Cotton production: 2,482 bales; average cotton product per acre, 0.33 bale, 471 pounds seed-cotton, or 157 pounds cotton lint.

This parish presents a considerable variety of features. About two-fifths of its area belong to the great bottom plain which borders the left bank of the bayou Tèche. Within this alluvial area lie Grande and Fausse Pointe lakes, which are in their turn bordered by extensive cypress swamps. The higher portion of the bottom lands, lying along bayou Tèche, with a width of from 1 to 3 miles, has (except within 50 yards of the bayou) a black loam soil, 2 to 2½ feet in depth, timbered with lowland oaks, ash, magnolia, sweet gum, hackberry, &c. It is chiefly devoted to the culture of sugar-cane.

Immediately along the bayou Tèche there lies a strip of red clay land, from 30 to 50 yards wide, on each side above ordinary overflows, and about 6 feet below the level of the upland prairie. It is timbered with beautiful live oaks, and is very fertile—evidently a portion of the alluvial deposits of Red river, made long ago.

From this red-land terrace there is a more or less sudden ascent of from 2 to 6 feet, into the black prairie intervening between the river lands and the sea marsh. It is here a good deal intersected by "coulées", and notably by the "Grand Marais", a fresh-water marsh, about 1 mile wide, extending for some 10 miles in a northwestern and southeastern direction, at a distance of 3 or 4 miles from the Tèche, and forming the extreme head of bayou Cyprès-Mort. The cultivated lands lie mainly along the Tèche, the open prairie being as yet but little cultivated, although well adapted to the culture of cotton. This is partly due to the fact that they are so nearly level, that the water "seems unable to determine which way to flow", and drainage ditches are needed to relieve the soil early in the season for planting purposes.

In the sea marsh of this parish lie the two "islands" of Petite Anse (2,240 acres) and Grande Côte or Weeks' island (2,300 acres). These are tracts of rolling uplands, of the character of the brown loam prairie, but originally densely wooded, and having an undergrowth of tall cane among the oaks and magnolias. Their highest points rise, respectively, to 160 and 180 feet above the sea-level. Their products are chiefly upland cotton, and in the lower lands some sugar-cane; Petite Anse is noted for its great rock-salt mine.(*a*) Another similar "island" lies in the

a For a detailed description of this region see Smithsonian Contribution to Science, No. 248.

prairie, on the shore of lake Peigneur; its area is about 2,250 acres, and its chief product has given it the name of "Orange island".

Communication and shipment of products is by steamers on the Tèche, or by the Louisiana and Texas railroad, to New Orleans.

ST. MARTIN.

(See under "Alluvial region".)

LAFAYETTE.

Population: 13,235.—White, 7,694; colored, 5,541.

Area: 262 square miles.—Woodland, 32 square miles; brown loam prairie, 148 square miles; black calcareous prairie, 82 square miles.

Tilled land: 62,704 acres.—Area planted in cotton, 12,517 acres; in corn, 21,713 acres; in sweet potatoes, 469 acres; in sugar-cane, 783 acres; in rice, 110 acres.

Cotton production: 3,489 bales; average cotton product per acre, 0.28 bale, 399 pounds seed-cotton, or 133 pounds cotton lint.

The small parish of Lafayette embraces chiefly level or slightly rolling uplands, of the brown loam prairie character; in its southern portion about 50 square miles of prairie is of the black calcareous type. About one-eighth of its area is wooded and bottom land; the timber occurs chiefly along the edge of the plateau toward the bayou Tortue, along the bayou Vermillion and bayou Carancro, where it forms the "Carancro hills". The timber belts are from one-half to one mile in width; the timber is water, live, basket, and scarlet oaks, magnolia, sweet gum, tulip tree, and hackberry, indicating a warm, generous soil.

The prairie is high and rolling near the eastern line of the parish, and, in its southern portion especially, bears the name of Côte Gelée. The brown loam prairie is mainly occupied by the culture of corn and cotton, while on the black prairie some sugar-cane is grown. The black prairie yields, when fresh, from 1,100 to 1,300 pounds of seed-cotton per acre; the brown loam prairie averages about 200 pounds less. The staple of both is stated to be excellent. Cotton culture prevails mainly in the eastern portion of the parish, while in the western the breeding of neat-cattle and horses is prominent, abundant pasturage being afforded by the prairie grasses.

Communication and shipment of products are by steamers down the Tèche, or by the Louisiana and Texas railroad, to New Orleans.

ST. LANDRY.

Population: 40,004.—White, 20,473; colored, 19,531.

Area: 2,276 square miles.—Woodland, 1,020 square miles; upland prairie, 1,256 square miles. Oak uplands, 150 square miles; pine lands, 250 square miles; Mississippi bottom, 600 square miles.

Tilled land: 137,370 acres.—Area planted in cotton, 42,135 acres; in corn, 57,411 acres; in sweet potatoes, 1,376 acres; in sugar-cane, 2,711 acres; in rice, 856 acres.

Cotton production: 23,148 bales; average cotton product per acre, 0.55 bale, 783 pounds seed-cotton, or 261 pounds cotton lint.

The western or upland portion of the parish of St. Landry consists predominantly of prairie, partly of the brown loam, partly of the gray silt character, with some black prairie occupying the extreme southwestern portion. The areas covered by these are, respectively, about 825, 268, and 163 square miles.

Narrow timber belts extend along most of the streams, and are more especially developed at the heads of these, in the northwestern part of the parish. Thus a considerable belt of long-leaf pine timber extends along the Nezpiqué, and an oak-upland tract of some 90 square miles along bayou Chicot (see map).

Corn and cotton are the chief products of this upland portion, but the greater part is thus far devoted to the pasturage of stock, chiefly neat-cattle and horses. A great deal of cotton is produced in the prairie region lying between the bottom and bayou Plaquemine Brulée, notably in the region of St. Charles or Grand Coteau, and in the neighborhood of Opelousas. Shipments are made by water down bayous Cocodrie and Tèche. The product is from 800 to 1,200 pounds of seed-cotton per acre, and the staple, when clean, rates as first and second class uplands. The corn product, occupying about half the area cultivated, is from 35 to 45 bushels per acre.

The eastern portion of the parish forms part of the great bottom plain, lying between the Atchafalaya river and the uplands, along the foot of which are bayous Cocodrie, Boeuf, Courtableau, and Tèche. All these derive their waters mainly from Red river, and their alluvium is predominantly of the character described under that head.

ABSTRACT OF THE REPORT OF ELBERT GANTT, WASHINGTON.

Cotton, sugar-cane, and corn are the principal crops grown, with rice and sweet potatoes as secondary ones. The cane is grown almost wholly in the alluvial lands, yielding 2 to 3 hogsheads of sugar per acre. The only lands that do not produce well are the cypress swamps (undrained), which lie back from the bayous. The land along the bayous is a blackish loam, very easily tilled, 10 to 20 inches in depth. Beneath lies either a red or bluish clayey subsoil, or a coarse sandy one.

Cotton forms over 50 per cent. of the crops grown. On the lowlands the product on fresh land is about 2,000 pounds of seed-cotton per acre, of which about 1,470 pounds make a 450-pound bale. After six years' cultivation, without manure, the yield is from 1,200 to 1,400 pounds of seed-cotton. The staple rates the same in the market in either case—fair to good middling when clean.

The cotton plant tends to run to weed in very wet seasons. No remedy is applied. The most troublesome weeds are smart-weed and crab-grass, the latter very troublesome in wet seasons. There are no bottom lands turned out of cultivation.

Cotton is shipped to New Orleans. Shipping begins early in October, and continues until all is shipped. Rate of freight per bale is $1 25 to 1 50.

VERMILLION.

Population: 8,728.—White, 6,771; colored, 1,957.

Area: 1,226 square miles.—Woodland, 100 square miles; prairie, 280 square miles; sea marsh, 826 square miles; live-oak ridges, 20 square miles.

Tilled land: 25,330 acres.—Area planted in cotton, 2,379 acres; in corn, 13,554 acres; in sweet potatoes, 360 acres; in sugar-cane, 1,574 acres; in rice, 606 acres.

Cotton production: 537 bales; average cotton product per acre, 0.23 bale, 327 pounds seed-cotton, or 109 pounds cotton lint.

The northern portion of Vermillion parish is chiefly level prairie, similar in character to that of Iberia. A timbered belt extends along Vermillion river and its tributaries, and here the cultivated lands mainly lie. A narrow belt of timber also follows the bayou Queue de Tortue, and the Mentau river and lake. But little of the open prairie is in cultivation, it being chiefly devoted to pasturage; but it is susceptible of profitable tillage, and improves for several years after breaking up. The breed of small ponies commonly reared, is but ill-adapted to the work of ploughing and cultivating. The cattle also are not the best of beef stock, and worthless as milkers.

The sea marsh, forming the southern part of the parish, is mostly impassable, and no attempts to reclaim it have thus far been made. Cultivated tracts are on Pecan island, a sinuous ridge in the marsh, about 7 miles from the beach. This is densely timbered with pecan trees, and, besides the nuts of this tree, has produced sea-island cotton, also cane, and tropical fruits in abundance, the soil being a rich black loam of great depth. It comprehends about 10,000 acres. No long-staple cotton has of late been grown there. Petite Chênière island, on the coast east of Pecan island, is similar in its character and productions.

Besides the products above mentioned, game and poultry are sent to market from this parish in considerable quantities. The inhabitants are largely of French-Canadian origin—"Acadians".

CALCASIEU.

(See under "Long-leaf pine region".)

THE LONG-LEAF PINE REGION.

(Comprising, west of the Mississippi: all of Vernon, and parts of Calcasieu, Sabine*, Natchitoches*, Rapides*, Grant, Winn, Bienville*, Jackson*, Ouachita*, Caldwell*, and Catahoula*. East of the Mississippi: East Feliciana*, Livingston, St. Helena, Tangipahoa, St. Tammany, Washington.)

CALCASIEU.

Population: 12,484.—White, 9,919; colored, 2,565.

Area: 3,400 square miles.—Woodland, 1,870 square miles: long-leaf pine flats, 1,385 square miles; long-leaf pine hills, 285 square miles; oak uplands, 35 square miles; Sabine swamp, 165 square miles. Marsh and marsh prairie, 235 square miles; gray silt prairie, 855 square miles; black calcareous prairie, 440 square miles.

Tilled land: 14,003 acres.—Area planted in cotton, 1,493 acres; in corn, 7,995 acres; in sweet potatoes, 517 acres; in sugar-cane, 67 acres; in rice, 600 acres.

Cotton production: 514 bales; average cotton product per acre, 0.34 bale, 486 pounds seed-cotton, or 162 pounds cotton lint.

Calcasieu, the largest parish of the state, and but very thinly settled, is thus far chiefly devoted to the pasturage of large herds of cattle and horses, and in the wooded portions is accessible by navigable streams for lumbering purposes.

East of the main Calcasieu river, and south of the west fork, almost all is prairie to the edge of the sea marsh. In the northeast corner of the parish, about 75 square miles of wet pine flats lie east of the Calcasieu. To the southward of these extends the Calcasieu (gray silt) prairie, interrupted only by the fertile "cove" of Hickory flat. This prairie pastures large herds of cattle and horses, and the few inhabitants grow rice in the marshy flats on the streams. In its southern portion, on English bayou and bayou Lacacine, fine crops of corn are grown, and the black-prairie soil prevails more or less until the sea marsh is reached. Of this latter, since the formation of Cameron parish, Calcasieu embraces only about 170 square miles.

West of the Calcasieu river, and between the west fork and the marsh, the gray-silt pine prairie again prevails, with many marshy flats interspersed. The Big woods form a remarkable fertile "cove" in this region.

North of the west fork of Calcasieu river (sometimes called Houston bayou on maps, a name not known to the inhabitants), and west of the main river, the long-leaf pine forest covers all but a strip of cypress swamp along the west fork and the Sabine river, varying from 1 to 5 miles in width (on the Louisiana side), and embracing some 200 square miles. The rest, except about 300 square miles of pine-hill lands lying between the east fork of Calcasieu river and Bundick's creek, is of the "pine-flats" character, covering about 1,720 square miles. The chief settlements of the region lie on Bundick's and Sugar creeks, where a good loam subsoil renders the soil both durable and fertile.

Cotton has thus far been produced in Calcasieu to a very limited extent only.

Shipments are made to New Orleans by rail, or by coasting vessels via Calcasieu pass.

VERNON.

Population: 5,160.—White, 4,783; colored, 377.

Area: 1,540 square miles.—Woodland, all but about 10 square miles of black prairie. Anacoco prairie region, 60 square miles; long-leaf pine hills, 1,430 square miles; long-leaf pine flats, 50 square miles.

Tilled land: 16,303 acres.—Area planted in cotton, 4,791 acres; in corn, 8,320 acres; in sweet potatoes, 284 acres; in sugar-cane, 22 acres; in rice, 31 acres.

Cotton production: 1,662 bales; average cotton product per acre, 0.35 bale, 498 pounds seed-cotton, or 166 pounds cotton lint.

This parish is almost throughout of the "pine-hills" character, with the exception of the "Anacoco prairie region" described above, where the bulk of the cotton grown in the parish is produced. The great distance from market, and the difficult communication through the hilly country lying between the Anacoco prairie and Red river, have stood greatly in the way of its settlement.

The bottoms of the heads of Calcasieu river on the east, and of the tributaries of the bayou Anacoco on the west (especially that of bayou Castor), are productive, and will, in time, be brought under cultivation. On the eastern head-tributaries of Bundick's creek, and especially on Sugar creek, there are prosperous settlements, the bottoms being wide, and even the uplands of fair productiveness, as shown by a considerable admixture of oaks with the pine growth.

ABSTRACT OF THE REPORT OF R. T. WRIGHT, ANACOCO.

(Refers to township 3, range 16; resides on section 15.)

The land is hilly and rolling, partly upland prairie, on the waters of East and West Anacoco creeks. The upland soils vary greatly from one ridge to another, in tracts of from 10 to 40 acres. They are chiefly of three kinds: black upland-prairie, dark clay-loam soil of the two branches of Anacoco and Prairie creeks, and light, sandy upland soil.

The chief one is the black prairie, it forming about one-fifth of the lands in the region, from 5 to 10 miles either way. Its natural timber is hickory, oak, haw, ash, dogwood, persimmon. Its color is black to the depth of over 2 feet. The subsoil is a tough, yellow clay, which becomes very hard when first exposed, but by cultivation pulverizes. It is quite impervious while undisturbed. It is underlaid by hard, white soapstone rock at 4 feet. The land tills with difficulty in wet seasons, but is well drained, and early and warm. Corn, cotton, sweet potatoes, sugar-cane, and rice are produced. The soils seem best adapted to cotton, which is one-half of all crops planted. It is most productive at 6 feet, but reaches 8 feet in height. Too much rain makes it run to weed, and topping will help to make it boll. Fresh land produces from 1,500 to 2,000 pounds of seed-cotton per acre; 1,350 pounds make a 450-pound bale. When clean, it rates in market as low middling. After eight years' cultivation the yield is 1,400 to 1,500 pounds, and a little more is needed to make a bale, but it rates the same in market as that from fresh land. Cocklebur and tie-vine are the most troublesome weeds. Perhaps one-tenth of such land originally cultivated is turned out; when again taken in, it produces 800 to 1,000 pounds per acre. It is a little subject to gullying, but hillside ditches prevent damage.

The dark, sandy-loam soil is timbered with gum, hickory, beech, and pine. It is a brown, fine sandy loam; forms about one-third of the lands; half of it is planted in cotton; will yield about 1,600 pounds of seed-cotton per acre when fresh; the staple rates low middling. After eight years' cultivation it will yield 800 pounds. About one-sixth of it lies turned out; will produce 1,000 to 1,200 pounds when again cultivated. No serious damage is done by washing on hillsides. Weeds: crab-grass and tie-vine.

The light, sandy soil is a grade lower than the preceding, in the amount and quality of the staple produced.

Cotton in the lowlands is liable to be late, and to take the rust; hence the uplands are preferred.

Cotton is shipped to Alexandria; freight, $2 per bale.

SABINE.

(See "Oak-uplands region".)

NATCHITOCHES.

(See "Oak-uplands region".)

RAPIDES.

(See "Alluvial region".)

GRANT.

Population: 6,188.—White, 3,320; colored, 2,868.

Area: 642 square miles.—Woodland, all but small strips of prairie in central prairie region, covering 110 square miles; long-leaf pine hills, 482 square miles; Red river bottom, 50 square miles.

Tilled land: 24,094 acres.—Area planted in cotton, 11,155 acres; in corn, 8,177 acres; in sweet potatoes, 22 acres.

Cotton production: 5,158 bales; average cotton product per acre, 0.46 bale, 657 pounds seed-cotton, or 219 pounds cotton lint.

Grant is one of the new parishes formed since the war, from portions of the territory of Rapides and Winn. Its soils are more varied than is the case in the latter parish, inasmuch as it embraces a small portion of the Red river bottom and also of the "central prairie region", the rest being long-leaf pine lands, similar in character to those of the southern part of Winn, with some level lowlands resembling those on Black lake in Red River parish, and timbered with short-leaf pine, and lowland oaks.

In the northeastern portion of the parish the face of the country is largely level, the soil consisting partly of heavy gray clay, timbered with post oak and short-leaf pine ("hog-wallow"), partly of small, incontinuous tracts or belts of black prairie, either timberless, or only with clumps of hawthorn and crab-apple, and groups of honey locust. These soils are ill-drained, and partly on that account, partly because of the difficulty of obtaining a supply of water, not as much settled as their intrinsic fertility would warrant.

Little river is skirted, mostly on its western side, by a hummock or second bottom, timbered mainly with lowland oaks, and above overflow; the bottom itself is often overflowed to the depth of 6 to 8 feet, but is densely wooded, and full of cypress sloughs. Little river is a navigable stream for small steamers, at all times of the year, to the junction of bayou Castor.

Shipments are made by Red river steamers (or occasionally on Little river) to New Orleans.

WINN.

Population: 5,846.—White, 4,797; colored, 1,049.

Area: 970 square miles.—Woodland, all but small strips of prairie in the central prairie region, covering 30 square miles; long-leaf pine hills, 850 square miles; oak uplands, 90 square miles.

Tilled land: 22,548 acres.—Area planted in cotton, 7,379 acres; in corn, 8,588 acres; in sweet potatoes, 250 acres; in sugar-cane, 41 acres; in rice, 4 acres.

Cotton production: 3,002 bales; average cotton product per acre, 0.41 bale, 585 pounds seed-cotton, or 195 pounds cotton lint.

The surface of Winn parish is rolling, rarely hilly, and its greater part is covered with long-leaf pine forest, affording a great deal of fine timber. Such is especially the case in the western portion; in the eastern, and particularly to southward, the long-leaf pine is mainly restricted to the upper portions of the ridges, while their flanks have a good growth of upland oaks, and short-leaf pine. Where this is the case, we mostly find the dark orange-colored subsoil of the "red lands" underlying the light gray surface soil; while higher up on the ridges the pale-yellow loam is predominant. Hence there is, in the country bordering on the Dugdemona river and its larger tributaries, a considerable amount of good farming upland, on which very fair crops of cotton and corn are produced. The bottoms, however, are not very wide, and being subject to overflow, are as yet but little cultivated. Want of easy communication with the outside world, has stood greatly in the way of the settlement of this region, whose reputation as a farming country is not nearly as good as it deserves to be. A tract of true black prairie (Pendarvis' prairie) lies within this parish, in the fork of Dugdemona river and bayou Castor.

A curious feature of this parish are the salt licks, low flats with salt springs, and usually underlaid by limestone (of the Cretaceous formation), occurring at several points, as Price's lick, Drake's salt-works on Saline bayou, Cedar lick, near Winfield, and others. Of the same geological origin is the limestone hill, a few miles west of Winfield, an isolated mass of Cretaceous limestone, from which excellent lime (much needed in the improvement of the pine lands) is made. At Louisville, in the northeastern part of the parish, a small tract of black prairie is formed by one of these limestone masses approaching the surface.

Cotton is hauled to landings on Red or Washita rivers, and thence goes by steamer to New Orleans.

ABSTRACT OF THE REPORT OF W. T. JONES, WINFIELD.

(Description refers to township 12, range 2 west, in northeastern Winn.)

This is a rolling pine country, with some "hog-wallow" prairie. Cotton does best in the lowlands, although in good seasons the uplands do well also. The creek bottoms (such as that of Kyiche creek) are timbered with lowland oaks, hickory, ash, and some walnut. The soil is dark-colored, light, easily tilled; at 6 inches depth a lighter subsoil underlies. Corn, cotton, sugar-cane, oats, and sweet potatoes are grown. Cotton occupies about one-half of the cultivated land; grows from 4 to 6 feet high, the higher the better. Draining will prevent it from running to weed in wet seasons. The yield per acre is 1,000 pounds of seed-cotton on fresh land; 1,350 pounds required for a 450-pound bale of lint, which rates well in market. After fifteen years' cultivation this land yields about 800 pounds, and perhaps 50 pounds more of seed-cotton is then needed for a bale, the staple being about the same. About one-fourth of such land, once cultivated, now lies out.

The pine uplands gully readily on slopes, and serious damage is done to them, but none to the lowlands.

Cotton is hauled from here to landings on the Washita river, and shipped to New Orleans by boat; freight, $1 50.

BIENVILLE.

(See "Oak-uplands region".)

JACKSON.

(See "Oak-uplands region".)

OUACHITA.

(See "Alluvial region".)

CALDWELL.

(See "Alluvial region".)

CATAHOULA.

(See "Alluvial region".)

EAST FELICIANA.

(See "Bluff region".)

LIVINGSTON.

Population: 5,258.—White, 4,265; colored, 993.

Area: 600 square miles.—Woodland, all. Long-leaf pine flats, 390 square miles; long-leaf pine hills, 122 square miles; alluvial land, 88 square miles.

Tilled land: 10,467 acres.—Area planted in cotton, 3,876 acres; in corn, 3,936 acres; in sweet potatoes, 399 acres; in sugar-cane, 127 acres; in rice, 166 acres.

Cotton production: 1,344 bales; average cotton product per acre, 0.35 bale, 498 pounds seed-cotton, or 166 pounds cotton lint.

Most of the good land of Livingston parish lies along the Amite river, elevated from 25 to 30 feet above the low bottom; with an undulating surface, and a timber growth consisting of oaks, beech, gums, dogwood, short-leaf pine, and some scattering magnolias. The soil is grayish-brown or chocolate-colored, overlying a red, sandy clay subsoil, a fine growth of grass, on even the abandoned lands, forming excellent pasturage for stock. This belt is only a few miles in width, and as we recede from the Amite river the soil becomes poorer; the rest of the parish consisting mainly of broad, level tracts of open long-leaf pine forest, with a whitish unproductive soil. Intersecting these level pine regions are various streams, tributaries of the Amite and Tickfaw, running north and south, with broad, marshy, dense swamp bottoms, often covered with such thick canebrakes as to be absolutely impassable. These canebrakes serve as pasture for cattle in winter, enabling them to keep in fine condition throughout the year. Pine timber, turpentine, and cattle form the chief products of this portion of the parish. In its northeastern portion the land is more rolling, and has a reddish loam subsoil, gradually passing into the lands bordering upon the Amite river.

Communication is partly via Baton Rouge and the Mississippi river, partly by rail on the New Orleans and Chicago railroad.

ST. HELENA.

Population: 7,504.—White, 3,328; colored, 4,176.

Area: 423 square miles.—Woodland, all. Long-leaf pine hills, 413 square miles; pine flats, 10 square miles.

Tilled land: 28,285 acres.—Area planted in cotton, 13,626 acres; in corn, 10,540 acres; in sweet potatoes, 661 acres; in sugar-cane, 114 acres; in rice, 68 acres.

Cotton production: 5,328 bales; average cotton product per acre, 0.39 bale, 555 pounds seed-cotton, or 185 pounds cotton lint.

St. Helena parish, outside of the bottoms and immediate hummocks of the Amite and Tickfaw rivers, is a rolling, sometimes only gently undulating, pine-woods country, covered with open long-leaf pine forest. The soil is mostly a pale, sandy loam, underlaid at a few inches depth by a pale-yellow, sandy subsoil, changing to grayish in the more level portions, with bog-ore spots. These pine-woods soils are, as usual, of little native fertility, "giving out" in a few years; but they are nevertheless quite susceptible of improvement, and the region being esteemed very healthy, is, by many, preferred as a place of residence, to more fertile districts. Thrifty farmers can, by the aid of fertilizers, cultivate profitably such portions of the parish as lie within easy reach of transportation. The streams afford water-power for manufactures, and fuel is abundant.

ABSTRACT OF THE REPORT OF MR. H. C. NEWSOM, GREENSBURG.

In range 25 east, township 2 south, the lands cultivated are, first bottom lands of Darling's and other creeks, tributaries of Amite river, and rolling table-land, whose soils vary considerably from ridge to ridge, in tracts of from 5 to 40 acres.

The most important soil is the black, clayey loam, constituting about half of the land. It is timbered with pine, oak, hickory, gum, beech, &c. The dark surface-soil is about 6 inches thick; then comes a subsoil of heavy red or yellow clay. The soil tills with some difficulty in wet seasons, being rather ill-drained. The crops produced here are corn, cotton, sweet potatoes, and oats; the soil is apparently best adapted to cotton, which occupies half of the land cultivated. The plant attains a height of from 3 to 6 feet, and is most productive at from 4 to 5 feet. It may run to weed in wet seasons, and topping is resorted to to restrain it. The product is from 500 to 1,000 pounds of seed-cotton, rating low middling; it takes 1,350 pounds for a 450-pound bale. After six years' cultivation, the production comes down to 400 pounds per acre. Less seed-cotton is then needed for a bale, and the staple compares favorably with that from fresh land. Very little land lies turned out; it produces well when again taken into cultivation. The uplands wash and gully readily on slopes, and the damage thus done is serious to both uplands and lowlands. Hillside ditching has been successfully used to check the damage.

The soil next in importance is that of the heavy bottom lands, being about one-fourth of the cultivated lands. It is timbered with beech, gum, magnolia, oaks, &c. It is generally a black clay loam, about 6 inches thick, and with a subsoil of stiff, heavy, yellow clay. It tills easily in dry seasons, with difficulty in wet ones, and is liable to be late, being ill-drained. About one-half the crop planted on it is of cotton; the plant inclines to run to weed, and deep culture and topping is used to restrain it. Fresh land will yield 1,000 pounds of seed-cotton; after eight years' cultivation, 800 pounds; rates as low middling. Cocklebur is the worst weed on both these soils.

The pine lands, with a coarse sandy soil, constitute perhaps one-fourth of the land of the region. The soil is four inches deep, blackish; the subsoil is somewhat heavier, usually a pale-yellow color, and leachy. It is underlaid by sand and gravel at 10 to 15 feet. When fresh, this land will produce 500 pounds of seed-cotton; after five years, about 300 pounds; it must be fertilized to produce well.

Cotton in the bottoms is subject to rust in very hot weather, especially where the hillsides are allowed to wash down on the fields. Such weather also favors the cotton-worm.

Shipments are made by rail to New Orleans; freight, $2 per bale.

TANGIPAHOA.

Population: 9,638.—White, 5,608; colored, 4,030.

Area: 790 square miles.—Woodland, all. Long-leaf pine flats, 390 square miles; long-leaf pine hills, 320 square miles; alluvial land, 80 square miles.

Tilled land: 21,021 acres.—Area planted in cotton, 7,682 acres; in corn, 6,617 acres; in sweet potatoes, 677 acres; in sugar-cane, 396 acres; in rice, 248 acres.

Cotton production: 2,934 bales; average cotton product per acre, 0.38 bale, 543 pounds seed-cotton, or 181 pounds cotton lint.

Tangipahoa parish resembles, in its northern portion, the parish of St. Helena, being a rolling or level pine-woods country, with a soil that, if not naturally productive, is quite susceptible of improvement; and on account of its healthfulness and the easy communication afforded by the Great Northern railroad, the region is becoming of importance, both for its lumber and manufacturing advantages, and the inducement it affords for summer residence to the citizens of New Orleans.

Amite City, the parish town, is situated in level pine woods, altogether resembling those of eastern Livingston, both as to soil and timber, the latter being almost exclusively the long-leaf pine, which is largely utilized by sawmills. The same face of country continues as far south as Pontchatoula; beyond that point there begin the willow and cypress swamps and grassy prairies that lie between lakes Pontchartrain and Maurepas, and thus continue up to the city of New Orleans.

ABSTRACT OF THE REPORT OF ROBERT LYNNE, INDEPENDENCE.

The soil chiefly under cultivation is in the first bottoms of the streams, forming perhaps 7 per cent. of the lands of the parish. The soil is a sandy loam, dark brown, friable, and easily tilled until the humus is consumed, when it becomes more tenacious. Its timber is magnolia, beech, iron-wood, sweet and black gums, cypress in low spots; receding from the streams, this timber becomes mixed with hickory, dogwood, and some smaller growth. The subsoil is generally yellow clay, sometimes gray and red in spots. These last are not easily penetrated by the plow when wet, and are rather impervious to water. The subsoil contains some flinty and angular pebbles, and is underlaid by sand and gravel at 14 feet. The soil is easily tilled at all times.

Corn, cotton, and sweet potatoes are produced; peas, sweet potatoes, and strawberries seem to do particularly well on the natural soil, but when manured it will produce anything. About one-third of the tilled land is planted in cotton. It grows to 4½ feet the first five years, then lower; never grows too tall. Stable-manure and frequent rains make it run to weed; the application of lime, ashes, plaster, or bone-meal, alone or mixed with well-rotted manure, will restrain it.

The land when fresh produces about 700 pounds of seed-cotton per acre, of which it takes 1,406 pounds to make a 450-pound bale, the staple rating low middling and middling. After four years' cultivation, without manure, the yield is 400 pounds of seed-cotton per acre, and the staple does not rate as well.

The soil next in importance is that of the hummocks or second bottoms, which form about 5 per cent. of the land, and lie between the pine lands and the bottoms. Its timber is white oak, hickory, poplar, and dogwood, with occasionally (short-leaf) pine, and beech. The soil is a brown loam, about 4 inches thick; subsoil red or gray, sometimes almost impervious, intermixed with a few pebbles. Sand with some gravel underlies at 20 feet. This soil is well drained and easy to till; it is well adapted to sweet potatoes and peas. About half of it is planted in cotton, which grows about 4 feet high, never too tall, and never runs to weed. The product on fresh land is about 600 pounds per acre, about 1,400 being needed for a 450-pound bale. Staple rates low middling to middling. After four years' cultivation, without manure, the product is about 300 pounds seed-cotton, staple not rating quite so high in market as before.

Crab-grass is the only weed requiring to be kept down; if this is done, no others will trouble.

Very little land lies out; when taken into cultivation again it produces well for two years, and then is "dead".

The washings of the uplands benefit both these soils.

Pine land forms from 88 to 90 per cent. of our land. Timber—pine, with oak (post)—here and there. Surface soil only an inch or two deep; hence the subsoil usually gives the color. This is red, yellow, gray, often with some pebbles, and almost impervious to water. It is underlaid by sand with some gravel at 18 to 40 feet, according to altitude.

Without manure, this soil produces almost nothing; with it, almost anything, including sugar-cane. Very little of this land is cultivated, and only with manure. Its slopes are not steep enough to wash to any extent.

Cotton is shipped by rail to New Orleans as soon as it is packed; the distance is 60 miles; rate of freight per bale is $1 50.

The report of W. H. Garland, Amite City, agrees substantially with the preceding; but places the estimate of creek-bottom and hummock lands at 20 per cent., these bottoms being from 200 to 600 yards wide. Half the agricultural labor is devoted to cotton production; the plant is rather inclined to run to weed; by selection of seed and manuring, this tendency can be restrained. A compost made of cottonseed, stable-manure, lime, saltpeter, and earth (as prescribed by Mr. B. D. Gullett), yields excellent results.

ST. TAMMANY.

Population: 6,887.—White, 4,258; colored, 2,629.

Area: 923 square miles.—Woodland, 765 square miles. Long-leaf pine flats, 540 square miles; long-leaf pine hills, 95 square miles; alluvial and marsh lands, 288 square miles.

Tilled land: 3,895 acres.—Area planted in cotton, 225 acres; in corn, 1,224 acres; in sweet potatoes, 441 acres; in sugar-cane, 90 acres; in rice, 127 acres.

Cotton production: 102 bales; average cotton product per acre, 0.45 bale, 642 pounds seed-cotton, or 214 pounds cotton lint.

St. Tammany is almost altogether a "pine-flat" parish, the undulating or level surface being covered by open (mostly long-leaf) pine forests, with the exception of the marshes along the lower course of Pearl river, and a portion of lake Pontchartrain, which forms the southern boundary. At Mandeville, the lake shore is fringed with

a lowland belt, having a timber growth of large sweet gum, swamp chestnut, water, and post oaks. The ground here and elsewhere has a good deal of bitter-weed (*Helenium tenuifolium*), as in the prairies of Opelousas. Outside of this belt, short-leaf pine is the exclusive growth, and prevails very generally, with a little oak, northward to Covington, the parish town. The banks of bayou Phalia are 20 to 30 feet high, and show the same clays as seen on the lake shore.

ABSTRACT OF THE REPORT OF MILTON BURNS, COVINGTON.

(This report refers to the western portion of the parish, drained by bayou Phalia.)

The upland has many small creeks running through it, with fine water and water-power. Cotton culture has been but recently introduced into the parish, and not over 150 bales have been grown, annually. Sugar-cane, also but recently introduced, is the favorite crop. Formerly stock-breeding, lumbering, and the burning of brick and charcoal were the only industries.

The soil of the upland is a light sandy loam, about 6 inches deep, with a red clay foundation, not easily pervious to water. Natural growth is pine; about three-fourths of the land is of this character. Gravel is usually found at the depth of 15 feet.

The soil of the bottoms is a sandy loam, with vegetable mold, and a yellow clay foundation. The bottoms are from 1 to 3 miles wide, and timbered with oaks (water and willow, chiefly), hickory, gums, magnolia, dogwood, holly, beech, poplar, and cypress.

The chief crops produced are sugar-cane, oats, peas, sweet potatoes, and corn, to all of which the soil is well adapted. Cotton will grow to the height of 5 feet, and inclines to run to weed only in excessively wet weather. Without fertilizers, the yield is about one-half bale per acre; 1,350 pounds of seed-cotton are needed for a 450-pound bale. The staple rates as low middling, when clean. After four years' cultivation without fertilizers, the yield is reduced to about one-fourth of a bale, and 1,460 pounds of seed-cotton are needed for a 450-pound bale. The staple then rates as good ordinary. Crab-grass is the only weed of note. No land is turned out, but the area cultivated is increasing. The uplands do not suffer from washing or gullying.

Cotton is shipped chiefly by lake steamer to New Orleans at the rate of 25 cents per bale; shipping begins in September, and continues till January.

WASHINGTON.

Population: 5,190.—White, 3,475; colored, 1,715.

Area: 668 square miles.—Woodland, all. Long-leaf pine hills, all.

Tilled land: 18,224 acres.—Area planted in cotton, 6,371 acres; in corn, 7,974 acres; in sweet potatoes, 480 acres; in sugar-cane, 68 acres; in rice, 264 acres.

Cotton production: 2,338 bales; average cotton product per acre, 0.37 bale, 528 pounds seed-cotton, or 176 pounds cotton lint.

The parish of Washington consists almost altogether of undulating, sometimes rolling, pine woods, like those of northern Tangipahoa and St. Helena. The open long-leaf pine forest covers all but the bottoms and narrow first terraces or "hummocks" of the streams. Of these, the Bogue Chitto, traversing the middle of the parish, is the principal one. Cultivation is restricted to the lands along the water-courses, the pine lands being naturally unproductive, although, as in Tangipahoa, quite susceptible of culture by the aid of fertilizers. Stock-raising and lumbering are prominent among the industries of the inhabitants, and sheep would be especially profitable but for the depredations of dogs. The turpentine industry, also, is to some extent pursued, but is greatly interfered with, by the burning of the grass practiced by the stock-raisers.

The bottom of Pearl river is mostly subject to overflow, but is of high fertility wherever reclaimed.

Lumber is rafted down the streams to Pearl river and tide-water. The western part of the parish is accessible by the New Orleans and Chicago railroad.

THE OAK-UPLANDS REGION.

(Comprising—whole or part of—Sabine, Natchitoches, De Soto, Caddo, Bossier, Webster, Red River, Bienville, Jackson, Lincoln, Claiborne, Union, Ouachita*, Morehouse*, Richland*, Franklin* parishes.)

SABINE.

Population: 7,344.—White, 5,486; colored, 1,858.

Area: 1,008 square miles.—Woodland, all. Oak uplands, 658 square miles; central prairie region, 200 square miles; long-leaf pine hills, 150 square miles.

Tilled land: 18,524 acres.—Area planted in cotton, 5,952 acres; in corn, 7,971 acres; in sweet potatoes, 191 acres; in sugar-cane, 85 acres.

Cotton production: 2,313 bales; average cotton product per acre, 0.39 bale, 555 pounds seed-cotton, or 185 pounds cotton lint.

Sabine parish, as a whole, is occupied by rolling oak-uplands, excepting only a few townships in the southeastern corner, where the long-leaf pine prevails, as it does in the adjoining portions of Vernon and Natchitoches parishes. From these hilly, long-leaf pine lands, whose soil is sandy and unthrifty, there is rather a sudden transition to the better soils of the "central prairie region", beginning west of the bayou Toreau. Here oaks, mingled with more or less of short-leaf pine, prevail; the pale-yellow subsoil gives place to a deep-tinted orange or red clayey loam on the hills, while in the valleys there are occasional black-prairie spots, and trees indicative of the limy ingredients of the Marine Tertiary formation prevail. See an analysis of a subsoil from this region. Belts of deep red soils, derived from a shelly ironstone that underlies them, are occasionally found. Lands of the character described form a band 6 or 7 miles wide, running in a northeast direction from the Sabine river to the line of Natchitoches parish, where the long-leaf pine again sets in. Ridges, crested by the latter, run out into the uplands northward of Manny; but on the flanks of these, as well as in the valleys, a good oak-growth mingled with

short-leaf pine prevails, and so continues toward De Soto parish, on the dividing ridge between the Sabine and Red rivers. The lands on bayous Negrete and San Patricio are reputed to be the best of the region, and greatly superior to those on the Red river side of the divide. A fine staple of cotton is grown on these lands, which are both productive and lasting.

Communication with the New Orleans market is via landings on Red river.

ABSTRACT OF THE REPORT OF D. W. SELF, MILL CREEK.

This is a rolling-upland parish, with numerous creek and bayou bottoms; the latter have a stiff, heavy, gum soil, subject to overflow in the back-lands, while the front-lands are sandy and characterized by beech timber. The creek bottoms are the most important for cotton culture, forming quite one-half of the land on which cotton is grown. The timber is lowland oaks, sweet gum, hickory, holly, and magnolia. The soil is a clay loam, sometimes putty-like; color, from yellow to blackish, and black when containing lime; it is 15 to 24 inches deep; the subsoil is heavier and more sticky, but becomes similar to the surface soil under tillage. Heavy or pipe clay underlies at 5 feet. Corn, cotton, sweet potatoes, peas, oats, and rice are grown, the last to a small extent only, but yields well on the stiff soil. The bayou bottoms are best adapted to cotton, and 40 to 50 per cent. of their land is in that crop. The stalk grows from 4 to 6 feet high; is most productive at 4 feet, being inclined to run to weed on this soil in regular seasons, and doing best in dry ones. Close, deep plowing will restrain it; when well advanced, topping. From 1,200 to 1,500 pounds of seed-cotton per acre are produced, of which from 1,350 to 1,400 pounds make a 450-pound bale. The staple rates good middling when clean; fifteen years' cultivation make little difference in quality or quantity of product. Very little of this land lies out; some has been in cultivation for forty years; when resting four or five years, it produces almost as well as when fresh.

The sandy front-land, or beech soil, forming about one-fourth of the cultivated lands, is more generally planted in corn and potatoes. Its timber is beech, magnolia, white oak, holly, wild peach, &c. It is a fine sandy loam, yellowish, down to 2 feet depth; the subsoil is heavier, and of a more yellow cast. It admits of earlier planting than the back-lands, being well drained. Cotton grows 6 to 8 feet high when the land is fresh; six feet is best. About 1,200 pounds of seed-cotton is the product on fresh land, staple, &c., the same as on the back-land. Crab-grass is the most troublesome weed on both of these soils. Cotton in these lowlands is subject to injury in cold, wet seasons, but fruits so much better, and is so much less liable to shedding, that we prefer the lowlands to the uplands for cotton culture.

Hummock, or uplands soil, forms about one-fourth of the tillable lands. The timber is post, red, and black oaks. The soil is fine and sandy, of an orange-red tint, from 12 to 15 inches depth. The subsoil is heavier, and clay is found at a depth of two feet. It tills easily at all times; it is mainly given to the culture of corn and potatoes. Cotton grows from 3 to 5 feet, best at the latter height; it yields 800 to 1,000 pounds of seed-cotton per acre. About 1,050 pounds of seed-cotton are required for a bale; it rates low middling, and about the same after six years' cultivation, when the yield falls to 600 or 700 pounds. A good deal of such land lies turned out, and without manure it is worthless for further cultivation. It washes on slopes, but the valleys are benefited by the washings, and "we let it go". Cotton is hauled to Natchitoches, and generally sold there.

NATCHITOCHES.

Population: 19,707.—White, 7,638; colored, 12,069.

Area: 1,200 square miles.—Woodland, all. Long-leaf pine hills, 600 square miles; oak uplands, 300 square miles; Red river bottom, 300 square miles.

Tilled land: 58,969 acres.—Area planted in cotton, 26,784 acres; in corn, 17,871 acres; in sweet potatoes, 197 acres; in sugar-cane, 28 acres.

Cotton production: 15,320 bales; average cotton product per acre, 0.57 bale, 813 pounds seed-cotton, or 271 pounds cotton lint.

Natchitoches is one of the oldest parishes in the state, and, although nearly one-half of its area is hilly pine land, it ranks third in population, and fifth in cotton production, among the upland parishes. The chief area of production is, of course, the portion of Red river bottom embraced within its limits, and the oak uplands adjoining the same on either side.

South of the old town of Natchitoches, and outside of Red river bottom, the uplands are mainly of the pine hills character, varied only in the hilly, broken country on bayou Casatche by the occasional appearance of limestone, and of lime-loving trees in the deep, narrow valleys, while the hills are often capped with ferruginous sandstone. The bluff banks of the river at Natchitoches and Grand Ecore are crowned with pines. To the northwestward, however, beyond Spanish lake, the pine is absent, and rolling oak-uplands, with an admixture of short-leaf pine among the timber, and with a reddish loam soil of fair fertility, take the place of the pine hills. These oak uplands are substantially identical in character with those of the adjoining parishes of Sabine and De Soto.

North of Red river, the long-leaf pine appears on the bluff at Campti, forming a tract isolated from the main body of the long-leaf pine hills farther north and east, by the lowlands bordering on Black lake, with their growth of oaks and short-leaf pine.

ABSTRACT OF THE REPORT OF JOS. HENRY, WILLOW P. O.

Seven-eighths of all the land cultivated is the red alluvial soil of the Red river bottom. The timber is pecan, oak, ash, elm, hackberry, locust, cypress. The (front-land) soil is porous, as much as 20 feet in depth; pretty well drained. The crops grown are cotton, corn, sweet potatoes, and some tobacco for home use. Cotton and sweet potatoes are the chief crops, the former occupying two-thirds of the cultivated land. The plant frequently attains a height of 8 feet, but is most productive at 5 feet. The land produces 2,000 pounds of seed-cotton when fresh; after fifteen years' cultivation, about 1,800. About 1,460 pounds are needed for a 450-pound bale of lint; the staple rates good middling. Perhaps one-eighth of land once cultivated lies out now; when again cultivated it produces nearly as well as fresh land. The most troublesome weeds are cocklebur and rag-weed.

The prevalence of south winds is thought to be especially favorable to the growth and productiveness of cotton.

Communication with market is by Red river steamers to New Orleans; freight on cotton $1 per bale.

DE SOTO.

Population: 15,603.—White, 5,116; colored, 10,487.

Area: 856 square miles.—Woodland, all. Oak uplands, 836 square miles, of which 60 square miles are "red lands"; bottom (Red river), 20 square miles.

Tilled land: 82,239 acres.—Area planted in cotton, 37,807 acres; in corn, 31,080 acres; in sweet potatoes, 733 acres; in sugar-cane, 34 acres.

Cotton production: 11,298 bales; average cotton product per acre, 0.30 bale, 426 pounds seed-cotton, or 142 pounds cotton lint.

De Soto parish may be classed as a good oak-upland parish, with generally a durable soil, having a subsoil of yellow or orange-colored loam. The divide between Red and Sabine rivers crosses the parish diagonally, a little east of its middle; the parish town of Mansfield being located on it. On the Red river side, the country is rather hilly and broken, the subsoil rather clayey, prevalently of a deep red tint, and not very thrifty on the hills, though very productive in the valleys (Dolet hills). Numerous lakes, and an intricate network of shifting bayous, lie at the foot of these hills, on the western edge of the Red river bottom; of which but little is, however, included within the limits of this parish. On Rambin's bayou there is a post-oak flat tract, some 2 or 3 miles in width, which bears a luxuriant growth of forest trees, but is almost devoid of undergrowth, except a few hawthorn bushes. The surface is covered with countless little knolls, similar to those prevailing in the prairies of the Attakapas parishes. This is probably a heavy soil, requiring drainage to render it productive.

The streams on the Sabine side are larger, the country is more gently rolling, the valleys wider, and the soil more of the character of the "yellow loam table-lands" of Mississippi, the short-leaf pine appearing only in isolated patches to northward of Mansfield, and not at all to westward. The Grand Cane country, on the Sabine slope, on the bayou of that name, is reputed to be the richest part of the parish; the forest growth is luxuriant, and consists of beech, tulip-tree ("poplar"), red, white, pin, chestnut, water, and other oaks, maple, elm, hickory, walnut, magnolia, &c. These lands produce as much as 1,400 pounds of seed-cotton per acre.

Parts of De Soto parish are among the oldest settled in northern Louisiana, and in the uplands not inconsiderable damage has been done by the washing away of the soil and gullying of the fields, in consequence of their having been "turned out" after years of exhaustive cultivation. This is especially the case where the subsoil is underlaid by sand, as frequently happens. Numerous moderately large and well-kept farms, with neat houses and out-buildings, impart to this parish an air of comfort and prosperity scarcely marred by the war.

ABSTRACT OF REPORT OF A. V. ROBERTS, MANSFIELD.

The soil of the uplands, from Red river to the Sabine, is a sandy loam, varying in quality and timber according to location. The top soil is dark colored, sometimes to the depth of 12 inches, with more or less sand and gravel of various colors, and more or less productive. The subsoil is more clayey, usually reddish, and by intermixture with the top soil makes brown and mahogany colors. Sometimes rock is found at 5 to 15 feet. Cotton, corn, sweet potatoes, some oats, peas, and sorghum, are cultivated on the uplands; the soil seems best adapted to cotton, and one-half of the upland now cultivated is in cotton. The cotton grows from 4 to 6 feet in height. When fresh the land produces from 800 to 1,200 pounds of seed-cotton per acre; from 1,460 to 1,520 pounds are needed for a 450-pound bale; the lint, when clean, rates middling to good middling. After ten years' cultivation, if maintained by horizontalizing, the product is 600 to 800 pounds; not much difference in quality of lint; a shade below. Perhaps 25 to 50 per cent. of such land once in cultivation now lies turned out; it improves thereby, unless washed away or trodden by stock. The most troublesome weeds are cocklebur and crab-grass.

The bottom lands of bayou Bonnechose have a dark and rather stiff soil, a little more sandy near the bayou; depth from 2 to 3 feet. Tills easily in dry seasons; somewhat troublesome in wet ones. Crops the same as in the uplands, with a little sugar-cane. Two-thirds of the bottom land in cultivation is in cotton; the yield is from 1,200 to 1,800 pounds per acre when fresh, 1,000 pounds after ten years' cultivation. It is but little different in quality from the uplands product, or in the amount needed for a bale. It rates good middling when clean. The most troublesome weeds are cocklebur, crab-grass, careless-weed, tie-vine, and morning-glory. Perhaps 10 per cent. of bottom land once cultivated lies turned out; produces well when again cultivated, though not as well as fresh land.

The timber of the uplands is oaks and hickory chiefly, with more or less short-leaf pine, according to quality. The bottoms have ash, sassafras, gum, beech, magnolia, walnut, ironwood, hackberry, chinquapin, persimmon, haw, witch-hazel, cottonwood, maple, &c.

Most farmers sell their cotton at the nearest market, or at Shreveport. Buyers, and those who ship, send their cotton to New Orleans by water, or from Shreveport by rail; rate of freight per bale is $1 50.

Remarks on cotton production.

Cotton production has certainly increased during the past ten years. The one reason is that the number of persons engaged in its cultivation has increased. Whether farming is carried on under the share or wages system, only cotton and corn are raised, excepting the small sweet-potato patch which every tenant has. Cotton is the chief crop, the only product upon which the farmer can depend for money. Every one, white or black, who tills the soil, produces cotton as the chief crop. It is true that there has been an increase in the relative amount of corn, potatoes, sugar-cane, sorghum, oats, peas, &c., produced, and in the attention paid to rearing horses, cattle, and sheep. Relatively more cotton is now produced by white labor than formerly. Less cotton is now produced by negroes than twelve or fifteen years ago, not even as much as they produced in the days of slavery. It is believed that half the cotton of the uplands is produced by white labor, even in our state.

CADDO.

Population: 26,296.—White, 6,921; colored, 19,375.

Area: 852 square miles.—Woodland, all. Oak uplands, 695 square miles; Red river bottom, 157 square miles.

Tilled land: 95,409 acres.—Area planted in cotton, 46,238 acres; in corn, 23,169 acres; in sweet potatoes, 315 acres; in sugar-cane, 1 acre.

Cotton production: 20,963 bales; average cotton product per acre, 0.45 bale, 642 pounds seed-cotton, or 214 pounds cotton lint.

The upland portion of Caddo parish resembles, on the whole, the corresponding portion of De Soto; but it is greatly "cut up" by numerous lakes and bayous, and in the northern portion by the overflowed lands and lakes caused by the Red river raft. The uplands and second bottoms are, almost throughout, good farming lands.

In the southwest portion we find the continuation of the dividing ridge between Red and Sabine rivers, already described under the head of De Soto parish. The bottoms of the streams here, as well as farther north, are overflowed, and quickly become impassable in wet weather.

Northward of this region the dividing ridge between the waters of Boggy bayou and Cross lake runs east and west, and on its eastern termination stands Shreveport, the second city in the state (population, 11,017), and connected by rail with Vicksburg on the one hand, and with the Texas system of railways on the other.

Northward of Shreveport, the raft gives the character to the country; the lower lands being overflowed, and converted into lakes, swamps, and bayous, of very variable extent, at every freshet (caused by a rise above). Some of these lakes contain tracts of dead forest still standing, but on the subsidence of a flood, appear as mere mud flats. The country between Cross and Soda lakes is otherwise hilly, as is, on the whole, the country bordering Red river bottom. Numerous hilly islands appear both in the lakes and in the country intervening between Red river and bayou Pierre; the bottoms are mainly settled immediately along the streams. In the northeast corner of the parish there is a dense cypress brake, covering about half a township.

The cotton produced is mainly sold to merchants at Shreveport by the producers; shipments to New Orleans are made by the Red river steamers, which reach Shreveport during the greater part of the year; and during the season of low water, cotton is also sent by rail through Texas to New Orleans as well as to St. Louis.

BOSSIER.

Population: 16,042.—White, 3,256; colored, 12,786.

Area: 773 square miles.—Woodland, all. Oak uplands, 553 square miles, of which about 80 square miles are "red land"; alluvial land, 220 square miles.

Tilled land: 69,420 acres.—Area planted in cotton, 37,133 acres; in corn, 20,153 acres; in sweet potatoes, 175 acres; in sugar-cane, 7 acres.

Cotton production: 25,078 bales; average cotton product per acre, 0.68 bale, 969 pounds seed-cotton, or 323 pounds cotton lint.

Bossier parish is a good deal varied in its surface and soil, and is one of the best cotton parishes in the state. Its southwestern portion is formed by Red river bottom, which, between Benton and Shreveport, is protected from overflow by levees, and grows splendid cotton. A detailed account of this region is given below, in the report of Mr. Fort.

The oak-upland country lying between Red river bottom and lake Bistineau, in Bossier and Webster parishes, is known as "the Point", and is somewhat peculiar in its soils; its surface varies from hilly to level. This region is more specially described below by Mr. Fort; its prevailing soil is said to produce, when fresh, 1,000 pounds of seed-cotton per acre.

Northward of the Point, lands timbered with short-leaf pine, black oak, hickory, and dogwood, form the prevailing feature, but varied by belts of different lands running north and south. Thus between Red river and Cypress bayou there is a belt 6 miles wide of a fair rolling, upland farming country. East of Cypress bayou there is a belt of red ridge-lands from the Arkansas line to the mouth of the bayou; these are broken sometimes with high hills covered with red, ochreous rocks, ferruginous earth, &c. East of this ridge there is a belt of level post-oak land, which is nearly continuous from the "Point" to the Arkansas line. These flats are scarcely if at all cultivated, and in wet weather become almost impassable; in the southern portion (as east of Bellevue) there are treeless tracts—"prairies"—with a white soil and very unproductive; surface covered with grass and thorn bushes. Farther south there are again ridgy lands, partly of red rocky soil.

About half the cotton is sold to local buyers; these and others send it to New Orleans by water, or from Shreveport by rail. Rates of freight per bale are $1 to $1 50.

ABSTRACT OF THE REPORT OF B. F. FORT, BELLEVUE. (*a*)

The Red river bottom averages in width 7 miles, with a length of 65 miles in Bossier and Caddo.

The local climate is as follows: Heavy rains in March and April; dry May; droughty June; seasonable July and August; dry and pleasant September, October, November, and first half of December, and fine for picking. Summer weather in May; 85° to 100° heat in June, not sultry; 85° to 100° heat in shade in July and August, and very sultry. Drought and heat of June delay the coming of the caterpillar. Heavy rains of April melt down the stiff plowed land of back-lands, and make it friable for the balance of the season.

The soils may be classified as follows: 1. Sandy loam, fronts a quarter of a mile wide on each bank of river; half the tilled soil, but only one-fourteenth of the whole bottom. 2. Stiff, red back-lands; nearly half the tilled soil and about five-sevenths of whole bottom. 3. Stiff, red, lateral bayou lands—a fraction only of those tilled; about one-fourteenth of whole; one-fourteenth like bottom and bayou beds.

The *chief one* is designated as "front-lands"; proportion, one-half the cultivated, one-fourteenth of whole bottom; occurs on the whole front on the river, and a short distance down large outgoing bayous; growth: cottonwood, ash, hickory, sweet gum, red oak, and mulberry. It is a light silt and fine sandy loam, reddish gray, several feet in depth. It tills easily in wet and in dry seasons, and is early, warm, and well drained.

Crops: cotton, chiefly, and some corn. The soil is best adapted to cotton. Two-thirds of the crops planted, perhaps more, are of cotton. Usual height of cotton on old-cleared land, 3 feet; for best production higher. Cotton runs to weed in wet seasons; no remedy is used. Seed-cotton product on fresh land, 2,000 pounds per acre; for a 450-pound bale, 1,350 pounds dry, after housing a few weeks; 1,460 pounds dry from field. Staple from fresh land rates good middling in market, when clean. After six years' cultivation (unmanured), 1,700 pounds,

a Mr. Fort's intelligent report on the cotton lands of Red river bottom is given almost in full, as a matter of especial interest.

and the same amount of seed-cotton needed per bale; staple a little shorter, but seed somewhat lighter. Troublesome weeds: crab-grass, cocklebur, tie-vine, morning-glory, and cow-pea. No land of this character now lies turned out; old land taken into cultivation produces as well as new.

Soil No. 2.—Designated stiff lands or back-lands, form five-sevenths of the whole bottom, and nearly half the tilled soil; much of it is not reclaimed from overflow; it extends from Washington, St. Landry parish, to Little River, Arkansas. Timber growth: red oak, cotton-wood, ash, hackberry, cypress, pecan, and sweet gum. It is a heavy clay loam; color: brown, mahogany, blackish, and dark-brownish red. Much has no different subsoil within reasonable depth; but a considerable portion has the river deposit a foot below the surface. This subsoil is lighter than the surface soil, being a fine, black, sandy loam. The soil tills easily in wet weather and after breaking up in the spring, and can be plowed after heavy rains. Soil best adapted to cotton; proportion of cotton planted, two-thirds of crops. This is our best soil, and I believe it is the best cotton land in the world. I have it from four different witnesses, viz, R. W. Dougherty, R. T. Glinson, F. J. Smith, and James B. Pickett, that each have known 1,000 pounds of cotton lint to be raised on it to the acre, without manure. It is now being gradually reclaimed from overflow, and can all be reclaimed, within a small fraction, at no great expense per acre. It requires two mules for breaking up in the spring, but for after-cultivation one mule suffices. Tie-vines cause it to be "swept" (*a*) every two weeks till the latter part of August. This is the land for steam cultivation in the future. The most productive and usual height of cotton is 5 feet. The plant does not incline to run to weed, except on new land; no remedy to restrain it and favor bolling is used. Seed-cotton product and quality of staple, the same as from the front-lands.

The seed-cotton product, after six years' cultivation, is 2,000 pounds per acre (the land is never known to tire); same amount as above needed for a bale; staple, same as that from fresh land. The troublesome weeds are cocklebur, tie-vine, morning-glory, and cow-pea. No land lies turned out.

Soil No. 3.—Designated as bayou lands. These differ but little from No. 2, being a little stiffer and closer to the subsoil, which is often poor. Proportion of this land is small, say one-twentieth of bottom; tilled soil, perhaps one-fourteenth of the entire cultivated lands. I only know it to occur bordering Red Chute bayou, townships 16 to 18 inclusive. Growth: red and overcup oaks, bastard pecan, ash, sweet gum, locust. The soil is a heavy clay loam, brownish, mahogany, blackish, and dark reddish brown. Thickness of surface soil, 6 to 8 inches; subsoil heavier or occasionally lighter than surface soil; underlaid sometimes by white sandstone and sometimes by blue clay, and generally by poor subsoil; rather impervious to water; tills easily in dry and wet seasons after breaking in spring, but is hard to break; it takes two mules. The soil is best adapted to cotton, of which two-thirds of all crops is planted. The height usually attained by cotton is 3 feet; at 4 feet it is most productive; does not incline to run to weed. Seed-cotton, per acre, on fresh land, 1,700 pounds. Seed-cotton for a 450-pound bale, 1,350 pounds, dry from cotton-house; 1,450 pounds, when dry from field; staple rates as middling in market, when clean. Seed-cotton product, per acre, after six years' cultivation, the same as before in quantity and quality. Troublesome weeds are cocklebur and tie-vine. One-fourth or one-fifth of this land lies turned out, but is being recultivated; produces as at first, when again taken into cultivation.

Soils of the "Point country".—No. 1, gray oak and hickory land; No. 2, reddish oak land; No. 3, black-jack ridges. No. 1, designated Point lands, are peculiar to the Point; proportion, three-fourths of cultivated land, and occurs throughout the Point country. Timber: post, black, and red oaks, hickory, short-leaf pine (scattering), and black jack. It is a fine silt or fine, sandy loam; blackish, 4 inches deep; subsoil, a yellowish, sandy loam, not fertile, underlaid by sandy clay at 1½ foot; tills easily in wet and dry seasons, when broken up in the spring.

Crops.—Cotton, mainly; corn, sweet potatoes, and cow-peas; best adapted to cotton, which constitutes two-thirds of all the crops planted.

Height.—Three feet, and, generally speaking, the higher the plant, the more productive it is.

Seed-cotton on fresh land: 1,000 pounds; amount for a 450-pound bale the same as for the bottom; rates as middling in market.

Seed-cotton produced after six years' cultivation (unmanured): 700 pounds; staple shorter than on fresh land, but the seed is lighter.

Troublesome weeds.—Crab-grass, hog-weed, and occasionally cocklebur.

Land turned out, one-third; does not improve when again taken into cultivation, as cows pasture on it and tramp it too close; it is slow to grow up in trees.

Soil No. 2 has no common designation; proportion, perhaps one-fourth, and occurs scattered over the Point. Growth: black and post oaks, black jack, and an occasional short-leaf pine. It is a heavy clay loam, light brown to 2 inches depth; subsoil same as surface, but infertile; underlaid by sandy clay; tills easily, when broken up in the spring; proportion of cotton planted, two-thirds; height, 2½ feet; more productive when higher.

Seed-cotton product per acre on fresh land, 700 pounds; after six years' cultivation (unmanured), 400 pounds; staple shorter than on fresh land. No troublesome weeds.

Land turned out, one-half; serious damage done by washing. No damage done to valleys from washing of uplands.

Soil No. 3, designated as "black-jack ridges"; proportion, one-fifth or one-sixth; none cultivated, because sterile; occurs only in the Point. Growth, black jack. It is a light, fine, sandy loam; whitish gray; 1 inch deep. Subsoil sandy, leachy; underlaid by sand to some depth.

Middle and northern Bossier, on the borders of Bodeau and Cypress bayous.—Here there are three chief varieties of soil, viz, (1) gray, sandy loam of the level or undulating short-leaf pine country; (2) rocky red hills and branch bottoms adjacent; (3) flats. The chief one is gray lands or pine land; it occupies two-thirds of the region, extending from township 17 to Arkansas line, and east and west through the parish. Timber, short-leaf pine, black and red oaks, hickory, dogwood, and black gum. The soil is a fine, sandy loam, gray, blackish, and sometimes brownish, showing iron in soil; thickness, 6 inches when fresh. The subsoil is a yellowish, sandy loam, lighter than surface, and rather close, not fertile; underlaid by sandy clay at 1½ foot. It tills easily in wet and dry seasons.

Crops.—Cotton, chiefly; corn, oats, sweet potatoes, sorghum, and cow-peas. The soil is best adapted to cotton because of the climate; proportion of cotton planted, two-thirds; height attained by cotton, 3 feet, and the higher the better, unless in very wet seasons.

Seed-cotton product on fresh land, 800 pounds; staple, middling when clean; after six years' cultivation the product is 600 pounds; staple somewhat shorter and seeds lighter; the weeds are crab-grass and hog-weed. About one-third of such land once cultivated lies out; this is not thought to benefit the land until after several years' growth of small pines. The land washes readily on slopes, but being so nearly level, no damage is done to them.

Soil No. 2.—Designated "red lands"; proportion, one-sixth, and occurs from Arkansas line south to township 17, in strips. Timber: black and red oaks, black jack, scattering short-leaf pines, and hickory. It is a heavy clay loam, or clay with ironstone and broken gravel; color, brownish, mahogany, blackish, and chocolate. Thickness of surface soil, 3 inches. Subsoil same, but somewhat stiffer; some is hard-pan and nearly impervious to water; contains soft, broken ironstone gravel, underlaid by clay at one-half foot. It tills easily in wet and dry seasons, after breaking up in the spring and when well drained. The soil is best adapted to cotton, and, next, to oats. Proportion of cotton to other crops planted, two-thirds; the highest is most productive; does not incline to run to weed under any circumstances.

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a With a "sweep" plow.

Seed-cotton product per acre, when land is fresh, 800 pounds. Some small area of this red land is the finest upland in the parish, and has quite a fame. To see such splendid crops on pure red clay is astonishing. What is in the soil to produce that effect, is not known. I think these lands would succeed well in wine-grapes. A great deal of this red ironstone land, however, produces the same as gray lands. Drought hurts it worse, perhaps, than it does the gray, but wet seasons hurt less. Much iron ore overlies parts of it, but an expert stated, some time ago, that this ore would be hard to smelt. Seed-cotton needed for a bale, same as that from the other soils. Staple rates as middling in market, when clean, and from fresh land. Product, after six years' cultivation, 600 pounds per acre, and same amount needed for a bale as on fresh land, but staple is shorter. Weeds are not troublesome; crab-grass grows a little. Land turned out, about one-third. When this land is again taken into cultivation, it is worse than when turned out. It will not grow up in trees quickly. Soil does not wash on slopes.

Soil No. 3.—Flats; proportion, one-third; none cultivated, but reclaimable. This soil occurs from township 17 north, to Arkansas. Growth: post and water oaks, and short-leaf pine; sometimes small haw and sweet gum. It is a heavy, fine silt, or fine, sandy loam, crawfishy, and whitish gray. Thickness of surface soil, 1 inch; character of subsoil about same as surface. Some is hard-pan, impervious to water, and underlaid by sandy clay at 2 or 3 feet. Tillage very difficult in wet and dry seasons, or when ill-drained. A ditch will not draw, and only surface drainage can be adopted. Soil best adapted to cotton, which can, by great labor, be produced.

The report of Mr. J. W. Hayes, of Red Land, on the northern portion of Bossier parish, agrees substantially with the statements of Mr. Fort; as does that, also, of C. L. Tidwell.

WEBSTER.

Population: 10,005.—White, 4,322; colored, 5,683.

Area: 612 square miles.—Woodland, all. Oak uplands, 430 square miles; alluvial land, bayou Dorchite, 137 square miles; bayou Bodeau, 45 square miles.

Tilled land: 42,402 acres.—Area planted in cotton, 16,401 acres; in corn, 14,824 acres; in sweet potatoes, 385 acres; in sugar-cane, 120 acres.

Cotton production: 6,255 bales; average cotton product per acre, 0.38 bale, 543 pounds seed-cotton, or 181 pounds cotton lint.

Webster parish, formed, since the war, from portions of Bienville and Bossier, has for its central feature the broad alluvial bottom of bayou Dorchite, which, in its southern portion, is covered by the waters of lake Bistineau, while in its northwestern portion lies the flood plain of bayou Bodeau, whose channel here divides the parish from Bossier. Black lake bayou forms the parish line on the southeast.

Between bayous Bodeau and Dorchite a long level country extends from the Arkansas line to lake Bistineau. This country is variable in quality; some is poor and sandy, covered with a growth of short-leaf pine; some white and "crawfishy", putty-like, with a growth of dogwood and post oak, and is little better than the pine lands, while other portions, where well drained (as, *e. g.*, near Cotton valley), are fine cotton and corn lands. East of the alluvial plain of bayou Dorchite the country is rolling or hilly, and partly of the "red lands" character, partly also level and occupied by the gray soil characterizing the pine flats, on which water oak and black gum are prominent. This is the case in the country adjoining lake Bistineau, and on Black lake bayou. Generally speaking, it is a country of small but well-kept farms.

(No mention is made anywhere of the alluvial plains of the two bayous, which are doubtless subject to frequent overflows.)

The communication of Webster parish with the markets is partly by land to Shreveport, partly direct, via steamers on Red river and lake Bistineau, to New Orleans.

RED RIVER.

Population: 8,573.—White, 2,507; colored, 6,066.

Area: 386 square miles.—Woodland, all. Red river bottom, 165 square miles; oak uplands, 221 square miles.

Tilled land: 33,930 acres.—Area planted in cotton, 19,200 acres; in corn, 10,566 acres; in sweet potatoes, 88 acres; in sugar-cane, 9 acres.

Cotton production: 11,512, bales; average cotton product per acre, 0.60 bale, 855 pounds seed-cotton, or 285 pounds cotton lint.

The small parish of Red River, lately formed, includes two chief varieties of lands, viz, the Red river bottom and the level or rolling uplands, forming a kind of dividing plateau between the Grand bayou of Black lake and Red river. These uplands are, in general, of the pale-yellow loam or the gray pine-flat character, the timber being short-leaf pine, with post and some Spanish oaks, and much scrubby black jack. A poor soil in the lower, ill-drained portions of the region, but fair where larger Spanish oaks appear among the timber, when the subsoil also assumes a darker yellow or reddish tint. The water of the somewhat sluggish streams is frequently dark-tinted, from the vegetable matter of the swampy areas of the district, which are characterized by the common occurrence of the wax myrtle (*Myrica cerifera*).

Red river, at ordinary stages of water, flows in a deep, narrow channel, cut 35 to 40 feet deep into solid blue and red clays; hence its overflows are always first felt in the "back-lands" traversed by the numerous bayous; and the "front-lands" on the banks of the main river are comparatively exempt from inundation. The soil of the latter is light, of a reddish tint, and is claimed to produce strictly first-class cotton. Large and flourishing plantations occupy the banks of the river for many miles above and below Coushatta chute

ABSTRACT OF THE REPORT OF B. W. MARSTON, EAST POINT.

(Refers to Red river alluvial lands, township 14, range 11 west.)

The two chief soils are sandy front-lands and stiff, black back-lands. The former constitutes three-fourths of the lands, reaching one-mile back from the river banks. Cottonwood, ash, elm, pecan, hackberry, box-elder, sweet gum, basket oak, sycamore, and cypress, form the timber. The soil is sandy loam, from orange-red through mahogany to black; depth, 1 to 10 feet; underlaid by quicksand, with chalybeate water. It is easily tilled at all times, and well drained. Cotton and corn are grown, the former being two-thirds of all crops.

It will grow as much as 10 feet in height, but is most productive at 5; runs to weed in wet weather, and sunshine only can restrain it. Fresh land will produce from 1,500 to 4,500 (?) pounds of seed-cotton per acre, of which 1,460 make a 450-pound bale. The production scarcely decreases sensibly The fresher the land the better the staple; rates as fair to good middling. Cocklebur, coffee-weed, and hog-weed are chiefly troublesome. The river banks sometimes cave badly.

Shipments are made by boat to New Orleans, from August to May; freight, per bale, $1 50, or less when there is competition.

BIENVILLE.

Population: 10,442.—White, 5,455; colored, 4,987.

Area: 856 square miles.—Woodland, all. Oak uplands, 756 square miles, of which about 10 square miles are "red lands"; long-leaf pine hills, 100 square miles.

Tilled land: 45,089 acres.—Area planted in cotton, 18,242 acres; in corn, 19,255 acres; in sweet potatoes, 305 acres; in sugar-cane, 108 acres.

Cotton production: 7,208 bales; average cotton product per acre, 0.40 bale, 570 pounds seed-cotton, or 190 pounds cotton lint.

Bienville parish is mainly gently rolling and rather sandy oak-uplands, not unfrequently almost level, especially in the western portion. Post oak and short-leaf pine are there the prevailing timber trees, intermingled more or less with other oaks and hickory, according to the quality of the land. The pale-yellow loam soil is predominant. In the level portions the gray pine-flat soil is largely developed, and then the water oak and black gum form a characteristic ingredient of the timber. Most of the flats bordering the streams are of this character, as is also the country bordering on lake Bistineau.

The red subsoil appears in spots, generally where the country becomes more rolling, and is often accompanied by rolled gravel, as well as by iron-ore (limonite) concretions. This is more especially the case in the southeastern portion, where tracts of hilly red lands occur, the ridges in the southerly portion having more or less long-leaved pine on their crests, while oak-growth, sometimes intermingled with short-leaf pine, covers the hillsides. At Brushy valley and northward, the red-land feature is quite prevalent, and excellent crops of cotton are made, both in the uplands and in the bottoms of the streams, which are here not so liable to overflow, and possess less of the pine-flats character. There is also a good deal of very sandy hill land, which washes very badly when turned out after cultivation.

Not far from Brushy valley is a salt-lick flat, known as Rayburn's lick, where much salt was made during the war. It is underlaid by gypsum and (Cretaceous) limestone, from which good lime can be burned. The use of this on the soil of the region would be very beneficial. A similar lick is "King's", near the northeast corner of Red River parish, where the limestone occurs in even greater abundance and of the best quality. A similar limy spot occurs in the northeastern portion of the parish, near Quay post-office, on the heads of Dugdemona bayou.

A good deal of fine pine timber might be obtained in this parish.

Communication with the New Orleans market is via landings on Red river and steamers on lake Bistineau.

ABSTRACT OF THE REPORT OF T. J. BUTLER, RINGGOLD.

This country has a great variety of soil and lands, some poor pine-barrens, some post-oak "hog-wallows", and then fine oak and hickory uplands, with fertile creek and branch bottoms. The latter part of the season is usually so dry as to cut off the late cotton crop. Sometimes frost in October will do the same.

The chief kinds of soil are the following: 1. Light sandy upland loam. 2. Stiff branch- and creek-bottom soils, very black. 3. Stiff red land, generally hilly.

About one-half of the lands are of the first kind for 2 or 3 miles west, 15 or 20 miles south, and a long distance east and north. The timber is short-leaf pine, oak, hickory, gum, &c. The surface soil is 6 to 12 inches deep, and is a fine sandy loam of a whitish-gray or brown tint. The subsoil is lighter. Usually at 4 inches (below the soil line?) it changes from light-yellow on the hills to a redder hue, until it reaches red clay. It contains some rounded, white gravel, tills with facility in dry seasons, is easily and well drained. Cotton, corn, peas, sweet potatoes, and sugar-cane are produced. Cotton and corn succeed best, and the former occupies about one-half of the cultivated land. The cotton grows from 4 to 7 feet in height, produces best at about 5 feet, inclines to run to weed in wet seasons like 1880. This may be remedied by topping during August. Fresh land produces from 1,000 to 1,200 pounds of seed-cotton per acre, about 1,350 being needed for a 450-pound bale. The staple rates high in market; after four years' cultivation, not quite so well, the product being then from 700 to 1,000 pounds. The only troublesome weed is crab-grass.

Perhaps three-quarters of the land cultivated in cotton before the war lies out. When taken into cultivation it will produce from 700 to 800 pounds per acre, but it often suffers serious damage from washing on slopes, and little has been done toward checking this damage Hillside ditching is successful in doing so.

2. The branch-bottom soils constitute about one-fifteenth of the lands. The timber is hickory, gum, ash, and walnut. About one-half of the crops grown on these soils is cotton, which grows to 7 feet in height. The seed-cotton product is from 1,200 to 1,500 pounds per acre, 1,500 being required for a bale of lint. The product is but little reduced in quality or quantity by four years' cultivation. Crab-grass is the most troublesome weed.

3. The red lands constitute but a small portion of the soils. It occurs in spots. The timber is oak, pine, and hickory. It is clay. loam, brown or orange-red, 5 to 6 inches deep, and then underlaid by a stiff red clay. It contains rounded and angular iron-gravel, is well drained, and easily tilled, even in wet seasons. The seed-cotton product is 1,200 pounds from fresh land, decreasing but little from year to year. Crab-grass is most troublesome.

JACKSON.

Population: 5,328.—White, 2,925; colored, 2,403.

Area: 590 square miles.—Woodland, all. Oak uplands, 340 square miles, of which about 50 square miles are "red lands"; long-leaf pine hills, 250 square miles.

Tilled land: 26,604 acres.—Area planted in cotton, 10,138 acres; in corn, 9,572 acres; in sweet potatoes, 266 acres; in sugar-cane, 52 acres.

Cotton production: 3,753 bales; average cotton product per acre, 0.37 bale, 528 pounds seed-cotton, or 176 pounds cotton lint.

The northern and greater portion of Jackson parish is rolling oak-uplands, in which the pine-flat feature is much less common than in Bienville, the soil being chiefly of the pale-yellow loam type, with more or less of the red-lands subsoil. The latter feature becomes very prominent north of Vernon, where the true red-land ridges, with their unpromising-looking but very productive and durable soil, occupy a considerable portion of the surface. Southeast of Vernon also, on the bayou Castor, there is a good farming region, rolling uplands, timbered with oaks, hickory, dogwood, and chinquapin, mixed with some short-leaf pine on the hills, and with ash, beech, elm, sweet and black gums in the bottoms.

In the southern part of Jackson parish the long-leaf pine prevails altogether on the higher ridges and on the crests of the lower ones; but, as in Bienville, the slopes are largely timbered with oaks, mixed with short-leaf pine, and are fairly productive.

A small tract of calcareous black prairie, underlaid by limestone, is said to occur near Rochester, in this parish. It is doubtless similar in its origin to the salt-lick spots in Winn and Bienville.

Communication is chiefly via landings on Red river, but also partly with the Washita country.

LINCOLN.

Population: 11,075.—White, 6,177; colored, 4,898.

Area: 485 square miles.—Woodland, all. Oak-uplands red-lands, about 240 square miles; yellow loam, &c., 245 square miles.

Tilled land: 108,084 acres.—Area planted in cotton, 22,990 acres; in corn, 21,602 acres; in sweet potatoes, 265 acres; in sugar-cane, 232 acres.

Cotton production: 9,723 bales; average cotton product per acre, 0.42 bale, 600 pounds seed-cotton, or 200 pounds cotton lint.

Lincoln parish, formed lately from portions of adjoining parishes, is, *par excellence*, the red-land parish of the state. It may be estimated that quite half of its surface is occupied by the red soils, and is often quite hilly and almost too broken for cultivation. This is especially the case in the northwestern portion, where rough red rocks are strewn all over the country; but wherever cultivatable, these rocky lands have proved very productive and durable. The rest of the parish is more gently rolling, and has a yellow loam soil with more or less of the red subsoil. The timber is oak and hickory, mingled more or less with short-leaf pine. The degree of this admixture, and the size of the trees, form very good indications of the relative productiveness of the several varieties of soil. Cotton, corn, and sweet potatoes are largely produced; the farms are small, but well kept, and many small villages are scattered through the country.

Communication with markets is mainly with the Washita country. The projected line of the Northern Louisiana and Texas railroad traverses this parish.

CLAIBORNE.

Population: 18,837.—White, 8,541; colored, 10,296.

Area: 796 square miles.—Woodland, all. Oak uplands, of which 60 square miles are "red lands".

Tilled land: 126,000 acres.—Area planted in cotton, 46,567 acres; in corn, 42,920 acres; in sweet potatoes, 471 acres; in sugar-cane, 99 acres.

Cotton production: 19,568 bales; average cotton product per acre, 0.42 bale, 600 pounds seed-cotton, or 200 pounds cotton lint.

The entire parish of Claiborne consists of oak uplands, which, south of the bayou D'Arbonne, are sometimes quite hilly and broken (just south of Homer, the dividing ridge between the D'Arbonne and Black lake waters, is almost mountainous), and largely interspersed with "red-land" ridges; the more gently rolling lands having a gray sandy soil, underlaid by the red subsoil. North of the main (or south) fork of the D'Arbonne, there are slightly rolling or almost level plateaus between the streams, near which alone the country becomes at times somewhat broken. The gray surface soil, underlaid by a yellow or reddish subsoil, prevails here altogether; the timber growth being upland oaks, intermingled more or less with the short-leaf pine and hickory, and ash, beech, elm, &c., in the bottoms. It is a good upland farming region, resembling in many respects northern Sabine; the farms are usually small and well cultivated, with many small villages, in these respects the exact reverse of the state of things in the southern part of the state.

ABSTRACT OF THE REPORT OF J. Y. DAVIDSON, HOMER.

The surface is generally rolling enough to carry off water readily; some land is level, some hilly.

The soil most prevalent here (township 21, range 6) is a deep sandy one, of a gray color. Its timber growth in uplands is oak, pine, gum, beech, hickory, and ash. Its depth is from 18 to 24 inches; its subsoil is sometimes clay, sometimes gravel and sand; at 10 feet often "black dirt". It is free from all stones, tills easily at all times, and is generally well drained. Cotton forms about one-half of all crops; corn, oats, potatoes, and peas are also grown. The usual height of the cotton-stalk is 3½ to 4 feet; it sometimes runs to weed with too much rain; plowing helps this—topping is questionable. Fresh land will produce 1,200 pounds of seed-cotton, of which about 1,350 pounds make a 450-pound bale. The staple rates middling in market. After twenty years' cultivation the yield is 800 pounds; on a well-manured plot 2,000 pounds were grown last year. About the same amount of seed-cotton is required from old, as well as from fresh land, to make a bale of lint, but the staple of that from old land is not quite so good. The most notable weeds are hog-weed, rag-weed, and crab-grass. Perhaps one-tenth of such land, once cultivated, lies out for want of labor. When taken into cultivation again, it will produce 1,000 pounds of seed-cotton per acre. Little if any damage is done by washing on slopes of this soil.

The red lands form about 10 per cent. of the lands of the region. Their timber is the same as that of the gray soil. The soil is an orange-red clay loam or clay to the depth of about one foot, where a stiff clay, rather impervious to water, underlies. This contains some hard, black gravel, both rounded and angular. Tillage somewhat difficult in dry seasons; drainage good. Seems best adapted to grain. One-half of it is planted in cotton: the stalk is about 5 feet high; too much rain makes it run to weed, but deep plowing will remedy this. Fresh land yields 1,000 pounds of seed-cotton per acre, of which 1,350 are required for a 450-pound bale; after ten years' cultivation, the yield is 700 pounds. Staple rates middling from fresh; not quite so good from old land. Crab-grass, hog-weed, and rag-weed are the most

troublesome weeds. About 10 per cent. of such land, once cultivated, lies out for want of laborers. When taken into cultivation it produces nearly as well as fresh land. It washes readily on slopes, but by horizontalizing and hillside ditching, much land has been saved.

There is another soil, called gravelly, thin, or "cowhide" land, forming about 10 per cent. of the lands in the region. It is timbered with oak, pine, gum, and beech. The soil is a coarse, sandy or gravely clay, whitish gray, about 6 inches deep; subsoil mostly heavier than surface soil, but sometimes sandy, often impervious, with flinty, white gravel; is well adopted to cotton, producing 800 pounds of seed-cotton per acre, rating middling. After ten years' cultivation the product is 500 pounds.

Crab-grass is most troublesome on this soil; about 20 per cent. of such land, once cultivated, now lies out; it does not produce well when again cultivated; is badly damaged by washing, and nothing has been done to check the injury.

Cotton shipments are made from November to March to New Orleans, by steamboat, at $1 50 per bale.

UNION.

Population: 13,526.—White, 8,014; colored, 5,512.

Area: 910 square miles.—Woodland, all. Oak uplands, 840 square miles (one-fifth red and "mulatto" land); alluvial land (Washita), 70 square miles.

Tilled land: 62,661 acres.—Area planted in cotton, 28,308 acres; in corn, 25,551 acres; in sweet potatoes, 229 acres; in sugar-cane, 60 acres.

Cotton production: 11,692 bales; average cotton product per acre, 0.41 bale, 585 pounds seed-cotton, or 195 pounds cotton lint.

Union parish resembles, generally, that of Claiborne, though on the whole there is perhaps more poor or uncultivatable land.

The country between the forks of the D'Arbonne consists of high, level, dividing ridges, broken only near the streams, as in Claiborne, the soils also being similar. The best farming districts lie on the smaller tributaries.

The northwestern part, between the D'Arbonne waters and bayou L'Outre, is more hilly; much of the hills, however, being of the red-lands character. Farmersville is on a red-land ridge, and the road thence to Sperrysville leads over a continual succession of hills and valleys, with much ironstone, underlaid by pebbly beds. The region is pretty well settled, with small, but thriving, farms.

The northeastern portion is rather hilly, and the soil largely red, but rather sandy and thin; the region more thinly settled. A small area of the Washita bottom is here included within the parish.

Southeast of Farmersville, toward Trenton, in Ouachita parish, there is, for five miles, a broken, hilly country too broken for cultivation; thence southward the country is more level and a better farming region.

The forest growth, in uplands as well as in bottoms, is the same as in Jackson and Claiborne parishes.

ARSTRACT OF THE REPORT OF J. E. TRIMBLE, FARMERSVILLE.

The uplands are hilly or rolling, and there is a little prairie. There are two chief varieties of upland soil, viz, sandy loam and red, stiff land. The former comprehends fully three-fourths of the lands in the parish. Its timber growth is short-leaf pine, oak, hickory, dogwood, in the uplands; sweet gum, bay, mulberry, ash, &c., in the lowlands. The soil, to the depth of 10 to 12 inches, is fine, sandy clay loam, of a yellow, brown, or mahogany tint. The subsoil is heavier, and frequently contains small, dull red, angular sandstone gravel and rocks. The soil tills easily at all times, and is warm and early. The crops grown are corn, cotton, sweet potatoes, peas, small grain, sugar-cane, tobacco; the two last, with cotton, seem to be best adapted to the soil. Cotton forms about one-half of the crops planted; usual height of stalk, 4 feet. In rainy seasons and on fresh land it sometimes runs to weed; this is remedied by topping. The seed-cotton product on fresh land is 1,000 to 1,500 pounds per acre, of which about 1,350 are needed for a 450-pound bale. The lint, when clean, rates in market as middling to fair middling. After five years' cultivation the product is 500 to 800 pounds, about 1,460 being then needed for a 450-pound bale; the staple is shorter, and not so strong; will class as good ordinary or low middling. The most troublesome weeds are rag-weed, cocklebur, hog-weed, and butter-weed.

About 10 per cent. of this upland is turned out for want of laborers; when again taken up it will yield from 750 to 1,000 pounds of seed-cotton per acre. The soil washes or gullies readily on slopes, but the injury done is not generally serious; the valleys are benefited by the washings. Horizontalizing has been practiced with good effect.

The red or "mulatto" lands occur most frequently in the southwestern part of the parish, but more or less in all, forming about one-fifth of the land. Timber: short-leaf pine, oaks, gum, mulberry, hickory, sumach. It is mostly a gravelly clay loam, very sticky, of a brown or mahogany tint. The subsoil is red clay, containing flinty, white, rounded gravel, underlaid by gravel or rock at 3 to 10 feet. It tills easily in dry seasons, and with difficulty when wet; is rather cold, and late in spring. It is apparently best adapted to corn and grain; about half is planted in cotton; the stalk is about 4 feet high; the seed-cotton product, 800 to 1,200 pounds; rates as middling in market; no material difference after five years' cultivation. The same weeds prevail as on the other soil. None of this land lies turned out; it washes readily on slopes, with serious damage; the lowlands are not injured thereby.

In the lowlands, on the streams and bayous, the natural growth is oak, hickory, and swamp pine. The soil is black clay loam, several feet in depth; subsoil lighter than surface. About two-thirds of the crops on these lands is cotton. The seed-cotton product on fresh land is from 2,000 to 3,000 pounds, the stalk attaining a height of 6 to 8 feet; the staple rates as good middling. No change in quantity or quality of product has as yet been noticed after years of cultivation.

Cotton is shipped during the fall by rail and steamboat to New Orleans; rates of freight per bale vary from 75 cents to $3.

OUACHITA.

(See "Alluvial region".)

MOREHOUSE.

(See "Alluvial region".)

RICHLAND.

(See "Alluvial region".)

FRANKLIN.

(See "Alluvial region".)

PART III.

CULTURAL AND ECONOMIC DETAILS

OF

COTTON PRODUCTION.

REFERENCE TABLE

OF

REPORTS RECEIVED FROM LOUISIANA PARISHES.

ALLUVIAL REGION.

Morehouse.—A. S. KELLER, Bastrop, November 14, 1880. Location, township 20 north, range 6 east. Describes the lands of the parish, upland and lowland.

Caldwell.—W. B. GRAYSON, Columbia. Refers to Washita bottom, ranges 3 and 4, township 12.

Catahoula.—MICHAEL DEMPSEY, Jena, November 9, 1880. Refers to townships 7, 8, 9, and 10 north, in ranges 2 and 3 east; pine uplands of southeastern part of parish.

Madison.—A. C. GIBSON, Waverly station, October 19, 1880. Refers to the entire parish; Mississippi alluvium.

1. *Concordia.*—W. D. SHAW, Black Hawk, January, 1880. Refers to townships 2 and 3 north, range 8 east; Mississippi alluvium.
2. *Concordia.*—GEO. S. WALTON, Bougères, October 21, 1880. Refers to the entire parish; Mississippi alluvium.

1. *Rapides.*—C. J. BARSTOW and GEORGE S. HAYGOOD, Cheneyville, January 8, 1880. Refer to townships 1 and 2 south, ranges 2 and 3 east; alluvium of Red river.
2. *Rapides.*—P. H. HYNSON, Alexandria, December 1, 1880. Refers to uplands north of Red river.

BLUFF REGION.

West Feliciana.—R. H. RYLAND, Bayou Sara, August 9, 1880. Refers to the entire parish; "bluff upland" or cane hills.

ATTAKAPAS PRAIRIE REGION.

St. Landry.—ELBERT GANTT, Washington, December 20, 1879. Refers to the alluvial lands of the Red and Mississippi river bottoms.

LONG-LEAF PINE REGION.

Vernon.—R. T. WRIGHT, Anacoco, November 15, 1880. Refers to township 3 north, range 10 west; Anacoco prairie region.

Natchitoches.—JOSEPH HENRY, Willow P. O., February 19, 1881.

Winn.—W. T. JONES, Winfield, November 25, 1880.

St. Helena.—H. C. NEWSOM, Greensburg, March 2, 1881.

1. *Tangipahoa.*—WILLIAM H. GARLAND and B. D. GULLETT, Amite City, December 1, 1880. Refer to the entire parish.
2. *Tangipahoa.*—ROBERT LYNNE, Independence, April 15, 1880. Refers to the entire parish.

St. Tammany.—MILTON BURNS, Covington, November 13, 1880. Refers to the entire parish.

OAK-UPLANDS REGION.

De Soto.—A. V. ROBERTS, M. D., Mansfield, November 5, 1880. Refers mainly to township 13 north, range 13 west.

1. *Bossier.*—B. F. FORT, Bellevue, January 12, 1880. Refers to townships 15 to 23 (inclusive) north, ranges 11 to 14 (inclusive) west, or all of Red river bottom in Bossier and Caddo parishes.
2. *Bossier (and part of Webster).*—B. F. FORT, Bellevue, January 12, 1880. Refers to townships 16 and 17 north, ranges 10, 11, and 12 west; being Bossier Point, or country between lake Bistineau and Red river bottom.
3. *Bossier.*—B. F. FORT and C. L. TIDWELL, Bellevue, January 10, 1880. Refer to uplands in townships 18, 19, and 20 north, ranges 11, 12, and 13 west, or central Bossier.
4. *Bossier.*—B. F. FORT, Bellevue, January 12, 1880. Refers to townships 21, 22, and 23 north, ranges 11 and 12.
5. *Bossier.*—J. W. HAYES, Red Land. Embraces about the same territory as the preceding, and is substantially identical in tenor.

Red River.—B. W. MARSTON, East Point. Refers to Red river bottom, township 14, range 11 west.

Sabine.—D. W. SELF, Mill Creek, February 8, 1881.

Bienville.—T. J. BUTLER, Ringgold, February 4, 1881. Refers to the whole parish.

Claiborne.—J. T. DAVIDSON, Homer, May 10, 1880. Refers mainly to townsip 21 north, range 6 west.

Union.—J. E. TRIMBLE, Farmersville, November 28, 1879. Location, township 21 north, range 1 east. Refers to the entire parish.

Franklin.—A. F. OSBORN, Winnsboro, January 16, 1880. Refers to the entire parish.

SUMMARY OF ANSWERS TO SCHEDULE QUESTIONS ON DETAILS OF COTTON CULTURE.

TILLAGE, IMPROVEMENTS, ETC.

1. Usual depth of tillage (measured on land-side of furrow)?

Saint Landry and *Vernon:* 6 to 12 inches; spring plowing is deep. *Concordia:* 4 to 6 inches on sandy lands and 2 to 3 on black lands. *Morehouse, Catahoula, Winn, Saint Helena, Tangipahoa, De Soto, Sabine, Claiborne,* and *Union:* 4 inches. *Rapides:* usually 3; successful farmers plow 8 inches deep. *Other parishes:* 2½ and 3 inches; sometimes more.

2. What draft is employed in breaking up?

Caldwell: 2 mules on river-bottom land, 1 on creek bottoms. *Winn, Saint Helena, Saint Tammany, Bossier, Bienville, Claiborne,* and *Union:* 1 mule or horse. *Other counties:* Usually 2.

3. Is subsoiling practiced? If so, with what implements, and with what results?

Union: But little; with one plow following another. In corn the experiment has been successful, but not so in cotton. *Tangipahoa:* To a small extent; with Murphy's subsoil plow good results. *Rapides:* Very little; with common subsoil plow, good results. *Other parishes:* It is not practiced.

4. Is fall plowing practiced? With what results?

In 18 parishes very little or not at all. *Saint Landry* and *Vernon:* Yes, with good results. 2. *Rapides:* It does not pay in this soil with hired labor. *Claiborne:* It has not resulted beneficially where tried.

5. Is fallowing practiced? Is the land tilled while lying fallow, or only "turned out"? With what results in either case?

Morehouse: Occasionally; the land is allowed to rest until rebedded for planting again. Among the results the production is increased one-fourth and after-cultivation is made easier. *Other parishes:* It is not practiced at all. Lands are by some "turned out". *Rapides, De Soto,* and *Franklin:* Land is improved by being "turned out" for rest, if stock be kept off; if grazed and trodden continually it is less benefited.

2. *Bossier:* No; land is only "turned out", but is not improved thereby.

3. *Bossier:* No; but some land is "turned out"; it is not tilled while lying fallow, because the labor is engaged in the care of the growing crops.

4. *Bossier:* No; the land is only "turned out", and does not improve short of twenty years, or until covered by a growth of pines. If pastured and tramped by cattle and horses the land is not improved, but is often injured.

6. Is rotation of crops practiced? If so, of how many years' course, in what order of crops, and with what results?

Morehouse: Yes; with corn, sweet potatoes, and oats; but chiefly with cotton and corn; as a result both crops are increased one-fifth at least.

Caldwell: Yes; with corn, cotton, sweet potatoes, and oats. Cotton is planted about two seasons successively before changing to other crops; rotation improves all crops in the course.

Catahoula: Yes; with cotton, corn, sweet potatoes, sugar-cane, oats, and tobacco (for home consumption); the land is relieved of cotton only one year at a time, other crops vary as the farmer chooses; as a result, the soil lasts much longer.

Madison and *Bossier:*

Concordia: Yes; with corn, sweet potatoes, oats and cow-pease. Pease are generally planted on corn land when the after-cultivation of the corn is completed, or they follow oats in the same season; in either case cotton is planted on such land the year following. As a result, the cotton crop is increased fully one-fourth.

1. *Rapides:* To some extent; cotton is relieved every third year by corn and cow-pease with very good results.

2. *Rapides:* Yes; with cotton, corn, sweet potatoes, and oats. Farmers aim to vary their crops every year; results are good.

Saint Landry: Yes; with, and in the order of, sugar-cane, pease, corn and peas, sugar-cane, etc.; with good results.

Vernon: Yes; with cotton, corn, oats, and sweet potatoes; usually corn two years, cotton two years, and oats one year. As a result, the soil is improved and cultivation becomes easier.

Natchitoches: Yes; with corn, cotton, and sweet potatoes.

Winn: A crop is not planted more than three times on the same land.

Saint Helena, West Feliciana: Yes; with corn and cotton alternately; with good results.

1. *Tangipahoa:* Yes; usually cotton two seasons, followed by oats in January; when these are harvested, cow-pease are immediately sown, a part of which crop is cut for hay and the balance is plowed under. The next season corn is planted, and this is again followed by cotton.

Saint Tammany: Yes; with corn, oats, and sweet potatoes, one year in each, with good results.

De Soto: Yes; chiefly to the extent of alternating cotton and corn; on the bottom lands, oats and potatoes are raised only in "patches".

Red River: Yes; cotton is alternated with corn, sweet potatoes, oats, or with anything; or, by some cotton is planted successively on the same land indefinitely; results are good in all cases.

Sabine: Yes; a course of rotation consists of about three crops of cotton, two of corn, and one of oats. As a result cotton increases in yield on worn lands.

Bienville: Very little; with cotton, corn, and oats; results are good where it is practiced.

Claiborne: Yes; generally with cotton, corn, oats, and peas, and a rest; in four-years' courses. With such rotation, the return of cotton-seed to the soil and some manure, good results are obtained.

Union: Yes; with corn, cotton, grain (oats, barley, or rye), and pease, in the order given; always with beneficial results.

Franklin: To some extent; chiefly with corn, considerably with oats, and a little with sweet potatoes. Cotton is planted two or three years successively, then corn, pease, oats, and potatoes for the same length of time, then cotton again. Cotton yields more when it follows corn, oats, or potatoes, and *vice versa*.

7. What fertilizers, or other direct means of improving the soil, are used by you, or in your region? With what results? Is green-manuring practiced? With what results?

Natchitoches, Morehouse, Winn, and *Bienville:* Cotton-seed and some stable manure is used. Results good, increasing the yield in Morehouse one-fourth. Green-manuring is not practiced in these parishes, or in Saint Helena, Bossier, and Franklin.

Caldwell: Cotton-seed and stable-manure are used; always with good results. Green-manuring is not practiced; but cow-pease are raised and plowed under after they are dead.

Catahoula: Recently cotton-seed, stable, and barn-yard manures have been applied; where this has been properly done the crops have been nearly doubled. Manures are rarely applied for growing cotton, but cotton is greatly benefited by manures previously applied for other crops. Cow-pease are planted to shelter the soil from the sun and prevent its washing by rains, and to serve as forage for stock, for which purposes they are very good.

Madison: Planters try to use cotton-seed as manure, but as a rule the renter is a negro, who sells his seed. Lands here are wonderfully improved by manuring. Green-manuring with cow-peas is practiced to a small extent with the most favorable results.

Saint Landry Concordia: Very little of any kind is used at all. A *few* planters return all their cotton-seed to the soil; the practice produces good results. Green-manuring is practiced with cow-pease; with good results.

Rapides: Barn-yard manure and cotton-seed to some extent; always with good results. Green-manuring is practiced with cow-pease; as a result, the product of the following season is increased by one-third. Some think it best to let the pea mature and rot with the vine.

West Feliciana: None are used on land near the Mississippi river or shipping points. On other lands cotton-seed is used; it greatly improves any crop for which it may be applied. Green-manuring with cow-pease is practiced very little, but with good results.

Vernon: The chief means are stable-manure, cotton-seed, and muck from the swamps; they increase the yield by one-third. Green-manuring is practiced by drilling cow-pease closely in rows, and turning under the crop while it is ripening; the production is thus increased and the cultivation of the soil is made much easier.

Saint Helena: Stern's superphosphate and bone-meal are used by some with very satisfactory results.

1. *Tangipahoa:* Stern's fertilizer is used to a considerable extent, but the best farmers regard it as a stimulant rather than a fertilizer; it increases production, but its benefits are doubtful. A sloping plain of pine land bordering a creek bottom, which produced three-fourths of a bale per acre this year (1880), has received, during the past seven or eight years, nothing but 500 pounds per acre each year of Mr. B. D. Gullet's compost, which is a mixture of a moderate quantity of cotton-seed, 36 bushels of earth, 18 of stable manure, 12 of saltpeter, 4 of lime, and 2 of salt. Green-manuring is also practiced; cow-pease are used with good results.

2. *Tangipahoa:* Cow-pen manure, bone-dust, superphosphates, cottonseed-meal, and cotton-seed; with beneficial and profitable results. Green-manuring is not practiced, but a few efforts have been made with cow-pease and with success.

Saint Tammany: Stable and cow-pen manures, cotton-seed, raw bones, and superphosphate of lime. They double the yield of cotton. Green-manuring is practiced a little; cow-pease are used; the results are nearly equal to those of the fertilizers mentioned.

De Soto: None are used on bottom lands.

1. *Bossier:* Occasionally corn is manured with cotton-seed, and the crop increased three-fold.

2. *Bossier:* What cotton-seed not fed and what manure not wasted are put on the land; with very good results.

3, 4. *Bossier:* Cotton-seed and barn-yard manure are used with good results; but they are insufficient in quantity.

Red River: Cotton-seed and stable-manure are used with good results. Green-manuring with cow-pease is also practiced with good results.

Sabine: The land usually receives nothing more than the return of its cotton stalks.

Claiborne: Cotton-seed and barn-yard manure are used; by practicing, in addition, rotation of crops and resting, the fertility of the soil can be maintained. Green-manuring is not practiced, but cow-pease are raised and fed off by stock.

Union: Stable-manure, cotton-seed, and occasionally some commercial fertilizers are used with benefit to crops planted. Green-manuring is practiced with cow-pease sometimes; the results are excellent for corn.

Franklin: Cotton-seed is sown broadcast, or sometimes a small quantity is thrown upon each hill of corn at planting time; crops are increased one-fourth as a result.

8. How is cotton-seed disposed of? If sold, on what terms, or at what price?

Morehouse: Along the navigable streams it is sold; elsewhere it is fed to stock, and to some extent returned to the soil; its price is $9 (cash) per ton.

Caldwell: A great deal is fed to cattle, and sold at $10 to $12 per ton.

Catahoula: It is fed to cattle and sheep, and used as manure; the price is 10 cents per bushel. There are usually 37 bushels of cotton-seed for each 450-pound bale of lint. By applying 50 bushels of seed to an acre of poor land that will not produce 8 bushels of corn, it will cause such land to yield 25 bushels of corn. The same amount improves rich land, but not in the same ratio. Cotton exhausts land less than any other crop, while the seed, applied in the quantities mentioned, restores fertility better than any other fertilizer. When used for this purpose, the seed should be sown in furrows and covered in January, so that all that comes up may be killed by frosts. Its effect is not so great on a cotton crop the first year, but its good results are apparent for many years. Some share-laborers sell their seed, to the disadvantage of the farm. A ton of seed is sometimes sold for $6; while, if put on 2 acres of poor land, for producing corn, sugar-cane, tobacco, or Irish potatoes, it is worth more than $25.

Madison: It is sold to the country merchant, who ships it to New Orleans; price $2 to $7 per ton.

Concordia: It is sold for cash at $7 to $10 per ton.

Rapides: It is sold, and to some extent used as manure; the price is from $4 50 to $6 per ton.

West Feliciana: It is generally sold to corn-growers at $8 to $10 per ton.

Saint Landry: It is sometimes sold to oil-factories in New Orleans for $10 per ton; at other times it is returned to the soil.
Vernon: It is returned to the soil; when sold, the price is $7 per ton.
Natchitoches: It is used as manure, and some is sold to oil-mills at $5 per ton.
Winn: It is used as manure and feed; price 10 cents per bushel.
Saint Helena: It is generally used as manure for growing corn; price $3 to $6 per ton.
Tangipahoa: It is fed to cows in winter; what is left is returned to the soil in spring, for growing corn; when sold, the price is $10 per ton.
Saint Tammany: It is returned to the soil.
De Soto: Along the river it is sold to oil-factories; where it is not conveniently near shipping points it is fed to stock, returned to the soil, or *wasted.*
1. *Bossier:* It is generally sold to oil-factories for $8 per ton; some is fed.
2, 3, 4. *Bossier:* It is fed and returned to the soil; none is sold except for planting, and at about 10 cents per bushel of 25 pounds.
Red River: It is used as manure and sold, generally at a low price, which is attributable to a combination of steamboat men and oil-companies.
Union, Sabine, Bienville, and *Claiborne:* It is usually fed to stock, or applied to corn land as manure; it is never shipped, but occasionally changes hands at 10 cents per bushel.
Franklin: The surplus is sometimes fed to stock in winter, but it is generally sold for $6 to $7 per ton (cash).

9. Is cottonseed-cake used with you for feed? Is it used for manure, alone or composted, and for what crops?

Concordia: Very little is used for manure: those who have tried it find it a very effective fertilizer. 2 *Rapides:* As manure, either drilled in rows or scattered broadcast. *Saint Landry:* Sometimes fed to cows and used as manure.
Tangipahoa: No; but cottonseed-meal in connection with other food is used for dairy cows by one farmer. Cottonseed-cake is used for manure, alone and mixed with bone-dust for growing corn, cotton, cane, and strawberries; best for sugar-cane. *Other parishes:* Not used for any purpose.

PLANTING AND CULTIVATION OF COTTON.

10. What preparation is usually given to cotton-land before bedding up?

None in *Morehouse, Natchitoches, Winn, Saint Helena, Bossier, Red River, Sabine, Bienville, Claiborne, Union,* and *Franklin.* Spring-plowing in other parishes. *Rapides* and *Saint Landry:* Sometimes fall-plowing. *Vernon:* Fall-plowing and solid, flat, breaking, and spring-plowing.

11. Do you plant in ridges, and how far apart?

This is the custom in all of the parishes. *Madison* and *Concordia:* 5 to 7 feet. *Other counties:* Usually 4 to 6 feet; sometimes 3 feet.

12. What is your usual planting time?

Rapides, Saint Landry, and *Concordia:* March 15 or 20 to April 30. *Caldwell:* March 25 to April 30. In eight parishes as early as April 1. In *Morehouse, West Feliciana, Bossier, Claiborne, Union, Franklin, Catahoula:* From 5th to 10th of April. In *Tangipahoa, Saint Tammany,* and *Bienville,* 20th and 15th of April.

13. What variety of seed do you prefer? How much seed is used per acre?

Many varieties are named, usually two or more in a parish. The following are the varieties with number of times mentioned: Dixon, 9 times, Hurlong 8, Peeler 4, Boyd Prolific 4, Petit Gulf 3, African 1, McClenden 1, China 1, Pine 1, "Javy" 1, Early Simpson 1, Golden Prolific 1, South American 1, and Chambers' Improved Prolific 1.
Catahoula: The McClenden Prolific, received from the Department of Agriculture at Washington. The Peeler seed produces our best staple, but does not yield enough per acre. The Hurlong, or green seed ranks next. The Dixon yields well, but is deficient in quality. The old Petit Gulf, or Mexican, holds its own, while the improved varieties (of which we have many) degenerate after two or three years.
One to three bushels of seed, sometimes 4 or 5, are used per acre. *Catahoula:* 4 are not too many on poor land. *Vernon:* 1, if drilled, or one-half if planted in hills. *Tangipahoa:* 1 with careful planting. *De Soto:* 2½ to 4 with the "planter".

14. What implements do you use in planting?

A scooter or bull-tongue plow for opening and a harrow for covering, in all of the parishes. Planting is done by hand usually.

15. Are "cottonseed-planters" used in your region? What opinion is held of their efficacy or convenience?

They are used only in *Morehouse, Concordia, Rapides, Tangipahoa, De Soto, Red River,* and to some extent in *Saint Landry, Claiborne,* and *Natchitoches.*
Where used opinions are favorable. *Catahoula:* On old stumpless lands they save half the labor of man and beast. *Concordia:* Good only on smooth, level land. *Tangipahoa:* They plant more economically and uniformly than by hand. *De Soto:* Liked on sandy and light soils. *Red River:* Good when the soil is in good condition, and that depends on seasons.
On the other hand, they are not liked in some parishes. *Caldwell:* Profitable only on very large plantations. *West Feliciana:* Not considered economical. *Bossier:* Negroes stick to old methods. *Claiborne:* Not considered as being worth the trouble to operate them. *Franklin:* They will not pay on our rough lands.

16. How long, usually, before your seed comes up?

Catahoula and *Natchitoches:* 3 or 4 days if soil is warm and moist. *Madison* and *Franklin:* Early planting, 10 days; late planting, 5 days. *Bossier:* Early planting, 15 days; late planting, 8 days. *Concordia* and *Bienville:* 10 to 14 days. *Claiborne, Winn, West Feliciana:* 7 or 8 days. *Other parishes:* Time is indefinite and dependent on the weather.

17. At what stage of growth do you thin out your "stand", and how far apart?

In most of the parishes thinning out is begun when the plant attains a height of 2 or 3 inches, or when the third or fourth leaf appears. It is then from 10 to 18 days old and is "chopped out" with hoes, leaving at first several plants in a bunch, a hoe's width apart. When after-cultivation begins, it is further thinned to single plants, at distances of 10 to 15 or 24 inches, according to character of land.

18. Is your cotton liable to suffer from "sore shin"?

Very little in *Saint Landry, Winn, Saint Tammany, De Soto, Claiborne* and *Union*. It is in other parishes. *Madison, West Feliciana*, and *Catahoula:* If bruised with the hoe. *Other parishes:* In cool springs, if planted too early.

19. What after-cultivation do you give, and with what implements?

Morehouse: The sweep and hoe are used as long as grass and weeds continue to grow, and as long as the laborers will work.

Caldwell: Deep plowing, with the turning plow until buds ("forms") are well formed, then shallow cultivation with small sweeps.

Catahoula: Four workings, with plows, hoes, harrows, sweeps, cultivators, and every conceivable implement that will kill grass and keep the soil in good order until August 1.

Concordia: Plowing and hoeing; at first the beds are kept as high as possible, and are gradually worked down as the season advances.

Rapides: Scrape, bar off, thin to bunches, plow the dirt *to* the row and plow out the middles. Repeat this as often as necessary. Some use cultivators and harrows.

Winn: Bar off, partially thin out, throw dirt to the row with a bull-tongue or small sweep, plow out the middles, and lastly, plow out all the soil between the rows.

Tangipahoa: Usually the small solid sweep, buzzard wing, and five-toothed cultivator are used; the kind of cultivation depends upon the kind of soil, and the progress the grass may have made.

De Soto: The turn plow, sweep, and hoe are used; weeds and grass are kept out of the row with the hoe. The final plowing is with the sweep and as shallow as it can be done.

Bossier: The row is first barred off with a turn plow or scraper, then thinned out, then dirted by the shovel plow, and again plowed and hoed, and finally the solid sweep is used until August to keep down weeds, especially tie-vines, in the bottom.

Red River: First, hoe, sweep, and plow; second, plow, sweep, and hoe; third, sweep, hoe, and plow; and pull out tie-vines in August with the hands, and again when picking.

Sabine: Throw dirt to the row with the turning plow; hoe once and use an 18-inch sweep generally twice.

Franklin: The row is barred off, scraped, and partially thinned, and should then have a shallow furrow thrown to it from each side, for a support to the plants, and to cover what little grass may have been left by the hoes, etc.

Other parishes also use these methods of cultivation.

20. What is the height usually attained by your cotton before blooming?

Caldwell, Catahoula, and *Franklin:* 10 to 14 inches. *Morehouse, Madison, Concordia, Sabine,* and *Bienville:* 24 to 36 inches. *Other parishes:* 18 to 24 inches.

21. When do you usually see the first blooms?

1 *Rapides* and *Saint Landry:* May 20 to June. *Concordia, Vernon, Natchitoches, Winn, Saint Helena, De Soto, Red River,* and *Union:* June 1 to 5. *Seven parishes:* June 5 to 10. *Morehouse,* 2 *Rapides, Saint Tammany, Claiborne:* June 10 to 15. *Bossier:* June 20. *Bienville:* June 30. *Union:* July 1 to 10.

22. When do the bolls first open?

De Soto: 40 to 60 days after the first blooms open. 1 *Rapides, Caldwell:* July 1 to 4. *Catahoula, Madison, Saint Landry, Natchitoches, Sabine:* July 10 to 20. *Concordia,* 2 *Rapides, Claiborne, Franklin:* Late in July. *West Feliciana, Winn, Saint Helena, Tangipahoa, Saint Tammany, Bossier, Red River:* August 1 to 10. *Morehouse,* 3 *Bossier, Bienville, Union:* August 15 to 20. *Vernon:* Late in August.

23. When do you begin your first picking?

Caldwell, Catahoula, Madison, Concordia, 1 *Rapides, Saint Landry, Natchitoches, Sabine:* August 1 to 10. 2 *Rapides, West Feliciana, Tangipahoa, Saint Tammany, De Soto, Red River, Claiborne,* and *Franklin:* August 15 to 20. *Morehouse, Bossier:* Late in August. *Other parishes:* September 1 to 15.

24. How many pickings do you usually make, and when?

Morehouse, Madison, Bienville: Two, in September and November. *Saint Helena, Saint Tammany, Union:* Four, in August, September, October, and November. *Other parishes:* Three, in September, October, and November, or as fast as it can be picked over. *Bossier, Red River:* Picking is continuous, without regard to number of times. *Claiborne:* Beginning as soon as a hand can pick 100 pounds.

25. Do you ordinarily pick all your cotton? At what date does picking ordinarily close?

Cotton is all, or nearly all, picked in all of the parishes except Red River. The season usually closes December 25 or January 1, or, in De Soto, as late as February. In Caldwell, Saint Landry, Winn, Tangipohoa, Vernon, and Claiborne, early in December or last of November.

26. At what time do you expect the first "black frost"?

Morehouse, September 15; *Concordia,* 1 *Tangipahoa,* October 28 and 26; in most of the parishes, from November 1 to 15; 2 *Tangipahoa,* December 25.

27. Do you pen your seed-cotton in the field, or gin as picking progresses?

It is usually ginned as picking progresses. *Catahoula:* Small farmers house it until enough for several bales are picked. *Morehouse, Vernon, Winn, Claiborne, Saint Tammany:* Pen in the field. *Red River:* Pen it, and let much of it rot, in wet weather. *Bienville:* If crop is heavy, pen in the field; if light, gin as picked. *Bossier:* Both; generally each tenant has a pen near his house, or sometimes uses a division of the gin-house; when he has gathered enough for several bales he gins. Men who have no gins pen it near their houses. *De Soto* and *Franklin:* The best planters gin as picking progresses, or put in a good cotton-house; others sometimes leave it on the ground in the field or in rail pens exposed to the weather.

GINNING, BALING, AND SHIPPING.

28. What gin do you prefer? How many saws? What motive power? If draft animals, which mechanical "power" arrangement do you prefer? How much clean lint do you make in a day's run of 10 hours?

Brown's gin is mentioned in four parishes:
With 50 saws, run by 4 mules, it makes from 1,700 to 2,200 pounds lint.
With 60 saws, run by 4 mules, it makes 4,000 pounds of lint.
With 80 saws, run by steam-engines, it makes from 3,000 to 4,500 pounds of lint.

Gullett's gin, in eight parishes:
With 60 saws, run by steam-engines or 4 mules, it makes 2,700 to 3,000 pounds.
With 70 saws, run by water-power, 2,500 pounds.
With 60 saws, run by water-power, 2,250 pounds.

The *Eagle gin*, in five parishes:
With 70 saws, run by steam-engine, makes 2,500 pounds.
With 60 saws, run by steam-engine, makes 1,000 pounds.

Pratt's gin, in seven parishes:
With 60 saws, run by 10 to 15 horse-power steam-engine, about 3,000 pounds.
With 75 saws, run by 20 horse-power steam engine, about 4,000 pounds.
With 75 saws, run by 10 horse-power steam-engine, about 4,000 pounds.
Revolving-head gin, 80 saws, run by 12 horse-power steam-engine or 4 mules, about 6,500 pounds.
With 50 saws, run by water-power, 1,660 pounds.

McCurdy gin, in one parish:
With 40 saws, run by mules, 600 to 1,000 pounds.

The *Griswold gin*, in one parish:
With 50 saws, run by horses or mules, 1,660 pounds.

The *Carver gin*, in one parish:
45 to 80 saws, run by 4 mules, 2,500 to 3,000 pounds.

Catahoula: Brown's stand is the lightest. *Saint Helena:* Farms in this county are mostly small, and a few Gullett gins gin the crop of the community for one-fifteenth of the amount ginned. *Sabine:* Water-power is most generally used. *West Feliciana, Bossier, Red River:* The old-fashioned big wheel, with iron segments and pinion and band-wheel, is preferred.

29. How much seed-cotton is required for a 475-pound bale of lint?

Saint Landry, Vernon, Saint Tammany, Bienville, Union: 1,425 pounds. *Winn:* 1,450 pounds. *Morehouse:* 1,425 to 1,775. *West Feliciana:* 1,425 to 1,660 pounds. *Caldwell, Natchitoches, Tangipahoa, De Soto, Red River:* 1,540 pounds. *Bossier:* 1,540 pounds when first picked, 1,425 after being housed some weeks. *Concordia:* 1,540 to 1,720 pounds. *Madison, Franklin:* 1,600 pounds. *Catahoula:* 1,660 pounds. *Rapides:* 1,630 to 1,720 pounds. *Saint Helena, Sabine:* 1,485 pounds.

30. What press do you use for baling? What press is generally used in your region? What is its capacity?

Southern standard press, in one parish.
With 5 men and 2 mules, capacity is 20 bales per day.

Brooks press, in three parishes:
With 5 men and 2 mules, 20 bales per day or 3 bales per hour.

Lewis press, in one county:
"Has a capacity of 40 bales per day if properly worked" (*Madison*).

Coleman's press, in three parishes.
With horses, 15 bales per day.

Newell press, in four parishes:
25 to 30 bales per day.

McComb press, in one parish:
25 to 30 bales per day.

Reynolds press, in two parishes:
3 bales per hour.

Ingersoll press, in one parish.

Gullett's press, in two parishes:
By steam- or horse-power, 20 bales per day.

Albertson press or "Compass lever", in two parishes:
10 to 15 bales per day; "30 bales have been packed here in a day with it" (*Union*).

Wooden screw-press, in seven parishes:
Mostly home-made, and make from 10 to 25 bales per day. *Bossier:* The home-made wooden screw-press is used almost exclusively; it will easily pack a 500-pound bale in half an hour—often in twenty minutes—when run by four men and a horse or mule. There is here an abundance of fine post oak and pine, of which good presses can cheaply be made; when housed they last twenty years, and are more efficient than any patent press. With these, one little mule presses a 500-pound bale with ease. The big river planters send as far as fifteen miles to the hills to obtain timber for such presses.

31. Do you use rope or iron ties for baling? If the latter, what fastening do you prefer? What kind of bagging is used?

Iron ties are used exclusively throughout the state. The arrow fastening also is in general use; the buckle and alligator or lightning fastening in one parish each. Jute bagging is very generally used with some gunny bagging and hemp.

32. What weight do you aim to give your bales? Have transportation companies imposed any conditions in this respect?

400 pounds in Franklin; 450 pounds in four parishes; 500 pounds in eight parishes; 550 pounds in Natchitoches and Red River parishes. In other parishes the weight varies from 450 to 500 pounds. No conditions are imposed except in Bossier, where bales of less than 450 pounds are subject to some extra charges. Cotton is mostly carried per bale regardless of weight.

DISEASES, INSECT ENEMIES, ETC.

33. By what accidents of weather, diseases, or insect pests is your cotton crop most liable to be injured—caterpillar, boll-worm, shedding, rot of bolls, rust, blight? At what dates do these several pests or diseases usually make their appearance, and to what cause is the trouble attributed by your farmers?

Morehouse: Too much rain at fruiting time causes shedding, running to weed, rot of bolls, and rust; the caterpillar is troublesome, and appears late in July, and the boll-worm seems to be an annual visitor to the plant; no cause for it is offered.

Caldwell: By very wet springs, or very dry summers; a very wet July is generally followed by the caterpillar, the forerunners of which usually appear about July 15; by rust, which generally appears on old lands, and by boll-worm, boll-rot, and shedding.

Catahoula: Cold, wet weather causes "sore shin" and aphides; moles run under the plants, and locusts or cut-worms cut off the plant just below the leaves; some caterpillars appear

annually, and the boll-worm is very destructive; morning rains cause shedding, and continued rains cause rot of bolls; any soil is liable to rust. The plant is never, at any stage, entirely free from some pest. Farmers attribute these things to seasons less favorable to cotton than to its enemies. The worms are attributed to too much rain late in June or July.

Madison: Extremely wet or dry weather; the evil effects of the first are attributed, in some degree, to lack of drainage; both occur in July and August. In this region the overflows of the Mississippi river are dreaded more than all else.

1. *Concordia:* Storms, aphides, caterpillars, boll-worms, shedding, rot of bolls, rust, and blight; they are assigned to many different causes.
2. *Concordia:* Storms, very dry weather, excessive rains in spring or fall are bad, worms in July and August, shedding in August; some attribute worms, rust, and blight to excessively hot weather and rains, others believe them to be due to some deficiency of soil ingredients.
1. *Rapides:* By too much wind and rain, the caterpillar, boll-worm, shedding, rot of bolls, and blight; they appear from June 15 to the end of the season.
2. *Rapides:* By frosts, "sore shin," rust, blight, locusts, and shedding, when the plant is young; and later, by caterpillar, boll-worm, and boll-rot. They are chiefly attributed to wet weather.

Saint Landry: By the caterpillar in some seasons; very little by boll-worm or rust, some shedding and rot of bolls; these appear August 1 to September 15, and none can tell the cause.

Vernon and West Feliciana: By the caterpillar in August and September.

Natchitoches: By wet weather, caterpillar, boll-worm, shedding, boll-rot, and rust. They appear about July 1, and are all attributed to an excess of rain.

Winn: By excessively wet weather, and by the caterpillar about September 1; also by boll-warm, shedding, rot of bolls, rust, and blight; they are attributed to succession of cotton on the same land.

Saint Helena: By extremes of wet and hot weather, caterpillar, boll-worm, boll-rot, shedding, and rust, in July and August. They are attributed to warm winters and wet springs.

Tangipahoa: By rust, by shedding when wet weather is followed by dry weather, by rot of bolls when rains are excessive; not often by caterpillar or boll-worm. They appear in July. Shedding is attributed to shallow tillage, excessive rains, and poverty of soil. Low-lying fields are damaged first and most by the caterpillar.

Saint Tammany: By storms and excessive rains; by caterpillar and boll-worm in August.

De Soto: Chiefly by caterpillar, boll-worn, and shedding; also by rust and blight. The boll-worm appears in July; the caterpillar is injurious late in August and early in September. Shedding is attributed to extreme states of wet or dry weather; cause of rust and blight is not known.

1. *Bossier:* By wet weather (dry weather has never been injurious); by caterpillar, August 20 to September 30; very little by rust and blight; by boll-worm, boll-rot, and shedding in July and August. Wet weather causes the worms; very wet weather causes boll-rot, and wet following dry weather causes shedding.
2. *Bossier:* By caterpillar, August 25 to September 30; drought in June; rust in September; and boll-worm and shedding in July and August. Shedding is attributed to wet following dry weather; rot of bolls is attributed to wet weather; causes of other things are not known. In dry seasons the caterpillar, boll-worm, or boll-rot do not appear; in wet seasons there is no shedding. Not more than half the crop is ever lost by all these things combined.
3. *Bossier:* By rust in the middle of July, caterpillar late in August, boll-worm all along, shedding in dry weather, or wet after dry weather; causes are not known; a total failure of a cotton crop has never been known here.
4. *Bossier:* By extremely wet or dry weather, late and early frosts; by the caterpillar, August 20 to September 30; boll-worm all along; shedding in July and August, and caused by wet following dry weather; rot of bolls in August and September, attributed to too much wet weather; rust in September, and blight all along.

Red River: By wet weather, "sore shin" in spring, yellow rust in summer, boll-worm in August, rot of bolls in wet weather, blight, shedding, and the caterpillar.

Close observation for fifteen years has led the writer to believe that the caterpillar will damage the crop every year in which there is a scarcity of ants. In wet seasons the ants cannot become sufficiently great in numbers to destroy the caterpillar; hence the abundance of the latter in such seasons, of which 1880 was an example. In 1879 there were in his field of 1,000 acres as many caterpillars as cotton plants; and on the 15th of August each plant had on it about thirty ants per leaf, and the writer is most positively certain that these little ants saved his crop from the most determined onset of caterpillars he ever saw. The caterpillars were routed, killed, and eaten by the ants. The latter were so thick that the hoers could not stand still without getting their feet covered with them.

It appears that the moth of the cotton-caterpillar remains in hiding places all winter, coming out occasionally in warm weather. Writer captured one attracted by the light on the night of February 7, 1881.

Sabine: By aphides in wet, late springs, about May 1; by the caterpillar about August 1; by rust in September, and by shedding. Aphides are attributed to cold weather, shedding and rust to wet weather; cause of caterpillar is not known.

Bienville: By drought, caterpillar, boll-worm, and shedding; from July 1 to September 30. They are not accounted for, and frequently come when least expected.

Claiborne: By the boll-worm in July and caterpillar in August, and by wet weather, shedding, and blight. The farmers do not know their causes.

Union: By caterpillars in July, and by the boll-worm, and occasionally rust; their causes are not known.

Franklin: By cold, damp springs; dry, hot summers; cut-worms; by "sore shin" in early spring, which seems to be caused by cold, damp atmosphere; by rust in July or August; by caterpillar, boll-worm, and boll-rot about September 1; their causes are undetermined.

34. What efforts have been made to obviate the trouble? With what success?

None in most of the parishes.

Caldwell: The best remedy against the caterpillar is to plant as early as possible; two-thirds of the crop will then mature before it destroys the plant. 1. *Bossier:* None; in the necessary late sweepings for tearing out tie-vines, many limbs are broken, allowing better circulation of air and access of sunlight; rot of bolls is thus prevented. 2, 4. *Bossier:* Rank cotton rots sometimes; mules are then driven between rows, breaking off limbs and allowing a better circulation of air, which stops the rot. During the past twenty-seven years there has not been a failure of the cotton crop, even from all causes combined. *Sabine:* None so far as known, except that, against the caterpillar, some farmers top their cotton to hasten its maturity. Paris green is also used when the caterpillar appears.

35. Is rust or blight prevalent chiefly on heavy or ill-drained soils? Do they prevail chiefly in wet or dry, cool or hot seasons? On which soil described by you are they most common?

Usually on ill-drained soils in most of the parishes.

Morehouse: In wet, hot seasons; most common on the gum and prairie lands, especially on the latter. *Caldwell:* Chiefly on old lands, in dry seasons, and most common on the sandy soils. *Catahoula:* Rust is not a respecter of soils; it prevails chiefly in wet and cool seasons; if the weather is favorable to it, the richest soil of the Mississippi bottom, and the poorest soil of the pine hills, are alike subject to rust. *Madison:* In wet seasons, and most common on the sandy loam. Since the war not one plantation in this region has been well ditched. *Concordia:* To some extent both on heavy and ill-drained soils, in wet, or dry, hot seasons, and most common on the sandy soils. *Rapides:* In wet and cool seasons. *West Feliciana:* On ill-drained soils, in wet, hot seasons. *Saint Landry:* There is very little rust in this region; it occurs on various soils, most common on the sandy soil. *Vernon:* In wet and hot seasons; most common on the bottom lands. *Natchitoches:* Chiefly in wet seasons. *Winn:* Chiefly on old soils, in wet and cool seasons; most common on the sandy upland. *Saint Helena:* Chiefly on heavy soils, in wet and hot seasons; most common on the heavy, clayey loam. *Tangipahoa:* Chiefly on heavy soils, in wet seasons, most common on table-lands. *De Soto:* On heavy soils, in wet seasons, and most common on bottom lands. *Bossier:* Chiefly on dry and light soils. *Red River:* Chiefly on heavy soils, in wet and cool seasons; most common on the wet sandy land. *Sabine:* Chiefly on heavy calcareous (?) soils, in wet and hot seasons; all the lands here are more or less subject to them, but chiefly the calcareous (?) soils of the low bottoms. *Union:* Both on light and heavy soils; worse, as a rule, in wet than in dry seasons, and most common on light, sandy knolls. *Franklin:* On any kind of soil, without any perceptible preference.

36. Is Paris green used as a remedy against the caterpillar? If so, how; and with what effect?

It is not used in *Morehouse, Caldwell, Madison, West Feliciana, Saint Helena, Tangipahoa, Saint Tammany, Bienville, Claiborne,* and *Franklin.* To some extent in other counties.

Catahoula: The trouble is, the worms come too suddenly; by the time Paris green is applied, the plant is already much damaged; it is a question whether the crop is damaged or not by Paris green itself. *Rapides:* With flour and water; with moderate success; in solution of one pound in thirty gallons of water; with good effect, as some believe. *De Soto:* A little; dissolved in water and sprinkled, or mixed with flour and dusted on the plants; some claim success, others condemn the poison. *Bossier:* It was used a little years ago; results do not pay the cost, risk, and trouble. How to get the worm to eat it is the question; it would doubtless kill him if he ate it. *Red River:* Yes; with only tolerable success. If an early rain comes, it is washed off; if not, it kills the worm. *Sabine:* Occasionally; dissolved in water and sprinkled on the plant; it usually kills the caterpillar. *Union:* Yes; it has been used mixed with flour and plaster; it killed the worm, and, in some instances, also the plant.

LABOR AND SYSTEM OF FARMING.

37. What is the average size of farms or plantations in your region?

Twenty to 50 acres in *Catahoula, West Feliciana, Winn, Tangipahoa, Saint Tammany,* and *Franklin,* 100 acres and less in *Vernon, Saint Helena, Sabine,* and *Bienville,* 30 to 300 acres in *Caldwell,* 320 in *Union,* 150 to 400 in *Madison, Bossier,* and *Rapides,* as high as 500 in *Morehouse, Saint Landry, Natchitoches, De Soto,* and *Claiborne,* 500 to 800 in *Concordia,* and 50 to 2,000 in *Red River.*

38. Is the prevalent practice "mixed farming" or "planting"?

Planting in *West Feliciana, Natchitoches, Bossier, Claiborne,* and *Franklin;* "mixed farming" in other parishes.

39. Are supplies raised at home or imported; and if the latter, where from? Is the tendency toward the raising of home supplies increasing or decreasing?

Supplies are generally raised at home in *Vernon, Winn, Catahoula, Saint Tammany,* and *Sabine.* Corn and some meat are generally raised at home in *Caldwell, Natchitoches, Claiborne,* and *Union.* In other parishes much, especially corn, is raised at home, but the markets of Saint Louis and New Orleans are depended upon for a large part of the supplies.

The tendency toward raising home supplies is decreasing in *Morehouse* and *Madison,* on account of the practice among the negroes of stealing swine; unvarying in *West Feliciana* and *Franklin,* and increasing in all other parishes.

40. Who are your laborers chiefly; whites (of what nationality), negroes, or Chinese? How are their wages paid; by the year, month, or day? At what rates? When payable?

Chiefly whites in *Catahoula, Vernon, Winn, Saint Tammany,* and *Sabine;* whites and negroes in *Saint Helena, De Soto, Bossier, Red River, Claiborne, Union,* and *Franklin.* Chiefly negroes in all other parishes.

Wages are from $6 to $10 per month in *Saint Helena, De Soto, Bossier,* and *Union,* and from $10 to $15 in other parishes. Daily wages are usually 50 cents, with board, or 75 cents to $1 without board.

In *Catahoula* yearly wages are $140 to $200; in other parishes the laborer usually takes a part of the crop when working by the year.

Wages are paid according to contract, either monthly, or sometimes one-half monthly. Daily wages are paid at the end of the day or week.

Supplies are furnished at the expense of the laborer; in *Tangipahoa,* at about 35 per cent. profit to the employer.

41. Are cotton farms worked on shares? On what terms? Are any supplies furnished by the owners?

The share system prevails in all of the parishes except Saint Tammany, and to some extent only in Bienville and Franklin.

When the owner furnishes land, teams, and implements the crop is evenly divided between laborer and owner. For the land alone the owner receives usually one-fourth of the crop.

Should board also be furnished with implements and land, the owner receives two-thirds of the crop. Supplies furnished laborers are usually charged against them and deducted from their share of the crop at the end of the year.

42. Does your system give satisfaction? How does it affect the quality of the staple? Does the soil deteriorate or improve under it?

The share system gives satisfaction only in Concordia, West Feliciana, Vernon, Natchitoches, Winn, Saint Helena, Bossier, Sabine, and Bienville. In others it does not; "prices and seasons are too uncertain," and "on account of the indolence of the negro".

The quality of the staple is not affected except in Saint Helena, Red River, and probably in Franklin.

The soil deteriorates, except in Saint Landry, 2 Rapides, 1 Tangipahoa, and Saint Tammany (by wages).

43. Which system (wages or share) is the better for the laborer, and why?

The share system in ten parishes, and for the following reasons:

Morehouse: The negro likes it best, because it allows him more time for idleness and to enjoy his freedom. *Caldwell, Saint Helena,* and *Rapides:* He spends wages as fast as earned. *Concordia:* They are interested in the work; wages are best for the improvident. *Natchitoches:* It keeps him busy for only half of his time. *Winn:* Is more encouraging to the laborer. *Tangipahoa:* Can make more if industrious, though makes no progress under either system. *Saint Tammany:* Encourages him to be careful. *Bossier:* Money he spends; his share of corn he keeps, or is apt to do so; out of his cotton share he may buy a mule, and in the following year become a tenant farmer.

Wages system in other parishes. *Catahoula:* The planter's instruction makes work easier, and the laborer is sure of his pay. *Madison:* He cannot go in debt at the country stores. *Sabine:* No risks; knows what he is going to get. *Claiborne:* Rations are furnished. *Union:* Labor can be more successfully controlled by it. *Bienville:* Because under the share system he makes calculations and obtains property which he can neither carry nor pay for unless he has a heavy crop, which, of course, is uncertain. *Franklin:* Wages; they receive rations with wages, and not with shares; deduct from the value of the share the cost of rations, and it will fall far short of the wages the laborer might receive.

44. What is the condition of the laborers?

Good and comfortable and prosperous in all of the parishes except Red River, where it is "bad". *Claiborne:* They have good clothes, cabins, and food. *Franklin:* Fair, when they are industrious and economical; the reverse when indolent and improvident. *Vernon:* They are dependent on their employers.

45. What proportion of negro laborers own land or the houses in which they live?

Saint Landry, Winn, 1 *Tangipahoa:* About one-half. *Catahoula* and *Sabine:* One in three. 2 *Tangipahoa, Saint Helena, Saint Tammany,* and *Bienville:* One in ten or fifteen. *De Soto, Union,* and *Franklin:* One in twenty. *Bossier* and *Claiborne:* One in twenty-five or fifty heads of families. *Other parishes:* Very few.

46. What is the market value of the land described in your region? What rent is paid for such land?

Morehouse: Per acre, $10 for unimproved, or $30 for improved lands; rents, $5 to $8.

Caldwell: Per acre, $5 to $10; rents, $3 to $5.

Catahoula: Per acre, for public lands, $1 25; for improved lands, $15 to $20; rents, $3 to $5.

Madison: Per acre, cultivated land, $25; rents, $6 to $10.

Concordia: Per acre, cultivated lands, $35 to $50; rents, $5 to $7.

1. *Rapides:* Per acre, $20 to $50; rents, $3 to $5.

2. *Rapides:* Per acre, $15; rents, $3 to $5.

West Feliciana: It has hardly any value; rent, a bale of cotton for 10 to 12 acres.

Saint Landry: Per acre, $8 to $15; rents, $2 to $4.

Vernon: Per acre, $2 50; rents consist of shares of crops.

Natchitoches: Per acre, $20; rents, $5 to $10.

Winn: Per acre, $2 50; rents, $3 to $5.

Saint Helena: Per acre, $3 to $8; rent, one-fourth the crops.

Tangipahoa: Per acre, $5 to $10 to $20; rent, about $4, tenant being furnished cabin to live in.

Saint Tammany: Per acre, improved land, $1 to $5; rent, one-fourth the crop.

De Soto: Per acre, improved and unimproved together, $2 to $20; rents, $2 to $5.

1. *Bossier:* Per acre, $30 for whole plantations; rents, $8 to $10. Per acre, $3 to $5 for tracts including improved, unimproved, and wastes; rent, $2 per acre.

Red River: Per acre, $1 to $100; rents, all the way to $10.

Sabine: Per acre, $5 to $8; rent, $4.

Bienville: Per acre, 10 cents to $10; rents, one-third or one-fourth of the crop.

Claiborne: Per acre, $10; rents consist of shares of crops.

Union: Per acre, $1 50 to $10; rents, if shares, one-third of corn and one-fourth of the cotton raised.

Franklin: Per acre, $2 50 for unimproved, $5 for cultivated lands; rents, $2 to $3.

47. How many acres, or 450-pound bales "per hand", is your customary estimate?

Morehouse, Caldwell, Catahoula, Madison, Concordia, 1 *Tangipahoa, Bossier, Sabine, Union:* 5 or 6 bales, or 10 acres. *Rapides, Saint Landry:* 7 or 8 bales. *Winn:* 10 bales, or 15 acres. *De Soto:* 10 acres in cotton, or 3 to 6 bales. *Other counties:* 3 to 5 bales, with corn.

2, 3, 4. *Bossier:* 4 bales raised on 8 acres; each man generally has three hands—himself, wife, and two half-hands; these produce what one good slave formerly did.

Red River: 1½ bales in 1880, and 5 bales in 1879; it is very uncertain and various.

Sabine: 5 bales, or 14 acres, 6 of which are in cotton, the balance in corn, etc.

48. To what extent does the system of credits or advances upon the growing cotton crop prevail in your region?

The system prevails very generally throughout the state.

Rapides: To a considerable extent. The merchants (the chief of which are Jews) have heretofore got about all the negro made, whether that was one bale or ten. *Catahoula:* Country merchants furnish small farmers or new beginners a reasonable amount of goods for themselves and families for the year, taking a mortgage on the crop, which must be delivered to the merchant at the end of the year. Four-fifths of the farmers deal in this way. *De Soto:* It is almost universal; very few planters pay cash for everything, and almost no laborers do. *Bossier:* It is universal, and is our greatest evil. The law giving privilege for supplies has done more injury to agriculture, both before and since the war, than could well be calculated, yet all classes favor it. *Red River:* To an alarming extent after a good season; but a bad season checks the system.

49. At what stage of its production is the cotton crop usually covered by insurance? Is such practice general?

Concordia, Rapides, Vernon, Bossier: Not until in the gin-house. *Morehouse:* Not until ginning commences, and then only a small part of the cotton in addition to the house and gin; the practice is not general.

Other counties: Cotton is not insured until shipped.

50. What are the merchants' commissions and charges for storing, handling, shipping, insurance, etc, to which your crop is subject? What is the total amount of these charges against the farmer per pound or bale?

Morehouse: 25 cents per bale for shipping, 2½ per cent. for selling, ¼ per cent. for river and fire insurance, and 1 per cent. for drayage and storage. A great deal of the crop is bought by country merchants in the little town of Bastrop, and some is taken to Monroe, about twenty-five miles distant, and sold. Total charges are about $4 50 per bale.

Caldwell: The total for shipping, selling, etc., amounts to about $3 50 per bale.

Catahoula: Freight varies from $1 to $2; other charges amount to $4 per bale; total, $5 to $6.

Madison: Total charges are about 1 cent per pound, or $4 50 per bale.

1. *Concordia:* 2½ per cent. commission; 75 cents per bale for storing, handling, and shipping, and ⅛ per cent. for insurance; total about ⅛ to ¼ of a cent. per pound.

2. *Concordia:* Total charges amount to about $3 50 per bale.

1. *Rapides:* Freight, $1 50 per bale; commission, 2½ per cent.; storing and handling, 75 cents per bale; insurance, ½ per cent. The total amounts to 1 to 1¼ cent per pound.

2. *Rapides:* The total is about $7 per bale.

West Feliciana: 2½ per cent. commission; 75 cents per bale for weighing, drayage, and labor. The total amounts to about ⅞ of a cent per pound.

Saint Landry: Regular New Orleans rates are charged; freight charges depend upon the stage of water.

Natchitoches: About $3 50 per bale.

Winn: Not more than $2 per bale.

Saint Helena: About $4 25 per bale.

1. *Tangipahoa:* About $4 per bale, including freights. The crop is generally sold to local merchants.

2. *Tangipahoa:* Freight, $1 50; insurance, 30 cents; storage, weighing, and labor, 75 cents; brokerage, 12 cents per bale; commission, 2½ per cent. Total charges amount to $3 85 per bale.

Saint Tammany: No charges; ship direct.

De Soto: Warehouse charges are 50 to 75 cents per bale; insurance, 1 per cent.; commission, 2½ per cent.

1. *Bossier:* Insurance—river, 50 cents per bale; fire, ⅝ per cent.; freight, $1 50 per bale; storage in New Orleans, 75 cents; brokerage, 35 cents; commission, 2½ per cent. Total charges, $3 50 per bale.

2, 3, 4. *Bossier:* In Shreveport, per bale, storage, 50 cents; fire insurance, 35 cents per month; drayage, 10 cents. If shipped to New Orleans, river insurance, 50 cents; freight, $1 50; storage, 75 cents; brokerage, 35 cents per bale; fire insurance, ⅝ per cent.; commission for selling, 2½ per cent. Total, $5 42½ per bale.

Red River: 2½ per cent. for commission, 75 cents per bale for handling, and $1 for insurance; total, including freight, $4 per bale.

Sabine: The hauling to the shipping point included, it usually costs 1¼ cents per pound to sell cotton in New Orleans.

Bienville: About $5 per bale.

Claiborne: The cost of shipping from here and selling cotton in New Orleans is about 2 cents per pound, or $9 per 450-pound bale.

Union: Commission, 2½ per cent.; storing and shipping, 25 cents per bale; insurance, 1¼ per cent.; storage after shipping, per month, about ½ per cent. Total charges vary from $4 to $10 per bale.

Franklin: Charges for freight, drayage, storage, labor, weighing, river and fire insurance, and commission, amount to about $4 25 per bale.

51. What is your estimate of the cost of production in your region, exclusive of such charges, and with fair soil and management?

2 *Concordia, Saint Tammany, Saint Helena, Sabine,* 2 *Rapides:* 5 or 6 cents per pound. *Madison, Franklin,* and *Natchitoches:* 7 cents. *Caldwell,* 1 *Rapides, Saint Landry, Winn, Tangipahoa, De Soto,* and *Claiborne:* 8 cents per pound. *Morehouse,* 8 to 10 cents. 1 *Concordia:* 7½ to 8½ cents. *Catahoula:* 10 cents, when raised alone; 9 cents if raised as a surplus crop. *Union:* Under close management, 6 to 8 cents per pound. *Red River:* 5 cents per pound in good seasons; in bad seasons, 25 cents per pound.

Bossier: Under the share system, 4½ cents per pound to the owner for his half, and 7 cents to the laborer for his half. There has been no greater error than the general understanding of the cost of producing cotton. Time and again have I seen the cost put nearly equal to the selling price. Under the share system the planter always makes a profit, and the laborer, if he gets his dues, always gets due pay for labor. Since the war the whole cotton country has become pessimistic and has forgotten how to reason. If cotton be low, rent, labor, stock, and implements are low, or ought to be. So, when cotton is at 6 cents, we ought to calculate by lower prices for rents, labor, etc. *This is my calculation on* 30 *acres of upland:*

Rent	$60	Produce:	
Rent of mule	25	Pounds clean cotton	6,000
Wear and tear of tools	10	Pounds, planter's half	3,000
Cost of ginning	10		
Pro rata for overseer	25	Value at gin, @ 10 cts. per lb	$300
Total cost	130	Cost of production	130
		Profit to planter	170

Planter's outlay divided by the pounds of cotton he makes, gives 4½ cents as the cost to him of his cotton per pound. Beyond this, he makes a profit on the cotton he takes, a profit on the advances to the laborer, and has the seed besides, worth $16. The baling is got back in the sale as cotton. The ginning and packing is done by the laborers, and so hire of gin only is counted. Because in slavery times he made three times this amount of money on the same land, the planter is dissatisfied, forgetting always that *then* he had three times the capital invested.

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