

REPORT

ON THE

COTTON PRODUCTION OF THE STATE OF GEORGIA,

WITH A DESCRIPTION OF

THE GENERAL AGRICULTURAL FEATURES OF THE STATE.

BY

R. H. LOUGHRIDGE, PH. D.;

LATE ASSISTANT IN THE GEORGIA GEOLOGICAL SURVEY,

SPECIAL AGENT.

[NORTHWEST GEORGIA BY A. R. McCUTCHEN, SPECIAL AGENT.]

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LETTERS OF TRANSMITTAL.

BERKELEY, CALIFORNIA, *January 1, 1883.*

To the SUPERINTENDENT OF CENSUS, *Washington.*

DEAR SIR: I transmit herewith a report on the cotton production and agricultural features of the state of Georgia, prepared by Dr. R. H. Loughridge, in accordance with the general plan approved by you.

You will observe that the proportion of counties from which replies to schedule questions have been received is very considerable, being one hundred and twelve out of one hundred and thirty-seven. This, together with the extended personal knowledge of the state possessed by Dr. Loughridge, has made the description more complete and detailed, and of course of correspondingly greater length than that of other states from which the returns have been less complete.

It should be fully understood by the public that the agricultural descriptions of states and counties given in connection with the cotton returns of the census make no pretensions to completeness, but only to correctness as far as they go; and even in the latter respect must, of necessity, in a considerable degree, depend upon the faithfulness of the reports received from those replying to schedule questions. We have taken all reasonable pains to secure both correctness and completeness so far as means would permit, and especially in so far as our efforts were seconded by the inhabitants of the regions concerned. We are conscious of the fact that our work is but the beginning of more complete industrial descriptions of the states to be perfected hereafter with the aid of those who appreciate the importance of thus setting before the world a fair and true exposition of the resources of their respective states.

Very respectfully,

EUG. W. HILGARD,
Special Agent in charge of Cotton Production.

Professor EUGENE W. HILGARD,
Special Agent in charge of Cotton Production.

DEAR SIR: I have the honor of submitting to you the following report on cotton culture in the state of Georgia, embracing also a general description of the state and its counties, made in accordance with your instructions.

In its preparation I have been largely assisted by data obtained from the records of the late state geological survey, to which I had access through the kindness of the commissioner of agriculture and of the former state geologist, Dr. George Little. Valuable information has also been obtained from Messrs. C. A. Locke and M. T. Singleton, formerly of the survey, but now of the corps of United States engineers engaged in river improvement in Georgia. My own connection with that survey has enabled me to add many items in the state's agricultural features of which the records make no note, and in this other members of the survey (Professor D. C. Barrow, of Athens, and A. R. McCutchen, of La Fayette) have assisted me. The largest part of the state had never been examined by the survey, and hence the lines marking the limits of agricultural regions are not absolutely correct in their detail. It is but justice to the corps to say that, so far as regards agricultural features, their instructions did not include more than mere cursory observations of the country passed over.

The northwestern part of the state, or "Northwest Georgia", as it is generally called, is well described by the special agent for that region, Mr. A. R. McCutchen, whose thorough knowledge of its geological and agricultural features has especially fitted him for the work.* The descriptions of the counties of the region which appear in Part II were also prepared by him.

The schedules of questions on cotton culture prepared by you were sent to parties in each county in the state, and their answers have been made willingly, and, in most cases, fully, the writers often showing great interest in the work.

The publications of the Georgia department of agriculture have been of much service to me, and the officers of the department have freely given me any aid in their power.

To Messrs. G. R. Black, of Screven county; J. A. M. King, of Liberty county; S. M. H. Byrd, of Polk county, and C. A. Locke, then in Telfair county, I am indebted for samples of the soils of their respective regions for analysis.

This report is made after the plan of your report on Louisiana, dividing the subject-matter into the following parts, preceded by tables showing enumeration results:

Part I. A general description of the state, embracing its topographical, climatic, and agricultural features, and special descriptions of the agricultural divisions, with analyses of the chief soils.

More space is given to a general outline of the geology of the state than would seem to be justified by the leading objects of the report; but so little is known of this subject, which is of exceptional interest (because of the state's position between the Gulf and the Atlantic), that it has been thought well to dwell somewhat largely on the general formations.

A chapter on cotton production, as relating to agricultural regions and counties, the product per acre, etc., is included in this part.

Part II. Agricultural descriptions of counties, with abstracts of schedule answers from correspondents.

Part III. Details of cotton culture, and a summary of answers to questions on methods of culture, diseases and insect enemies, system of labor, etc., as given by correspondents in very many of the counties throughout the state.

In conclusion, I would express to you my deep sense of obligation for the very material aid you have given me in outlining this report, and the care and interest you have taken in its revision.

Very respectfully,

TABULATED RESULTS OF THE ENUMERATION.

TABLE I.—AREA, POPULATION, TILLED LAND, AND COTTON PRODUCTION.
TABLE II.—ACREAGE AND PRODUCTION OF LEADING CROPS.

TABULATED RESULTS OF THE ENUMERATION.

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

Counties.	Land area.	POPULATION.					TILLED LAND.			COTTON PRODUCTION.							
		Total.	Male.	Female.	White.	Color'd.	Average per square mile.	Acres.	Per cent. of area.	Per cent. of tilled land.	Acres.	Bales.	Average per acre.			Cotton acreage per square mile.	Bales per square mile.
													Bale.	Seed-cot'n.	Lint.		
The State.....	Sq. mls. 58,980	1,542,180	702,081	779,109	810,906	725,274	26	7,690,292	20.4	34.03	2,617,138	475 lbs. 814,441	0.31	444	148	44.4	13.8
NORTHWEST GEORGIA.																	
Murray.....	420	8,260	4,130	4,130	7,802	907	20	42,494	15.8	13.97	5,937	1,917	0.32	459	153	14.1	4.6
Whitfield.....	330	11,900	5,861	6,039	9,689	2,211	36	44,199	20.9	9.20	4,088	1,240	0.30	435	145	12.3	3.8
Catoosa.....	160	4,739	2,398	2,343	4,127	682	30	24,600	24.0	1.49	367	111	0.30	432	144	2.3	0.7
Walker.....	440	11,056	5,506	5,550	9,492	1,564	25	69,758	24.8	8.31	5,797	2,009	0.35	495	165	13.2	4.6
Dade.....	180	4,702	2,045	2,657	3,618	1,084	20	17,143	14.9	0.19	32	12	0.38	534	178	0.2	0.1
Chattooga.....	400	10,021	4,837	5,184	7,981	2,040	25	50,802	19.8	25.40	12,906	5,247	0.41	579	193	32.3	13.1
Gordon.....	360	11,171	5,523	5,648	9,347	1,824	31	69,467	30.2	12.48	8,608	3,301	0.38	543	181	24.1	9.2
Floyd.....	540	24,418	12,082	12,336	14,958	9,460	45	96,470	27.9	31.73	30,615	14,545	0.48	678	229	56.7	26.9
Polk.....	330	11,052	6,139	5,813	7,805	4,147	36	54,233	25.1	30.93	16,774	8,120	0.48	690	230	50.8	24.6
Bartow.....	500	18,690	9,130	9,560	12,419	6,271	37	88,231	27.6	24.90	21,969	10,311	0.46	657	219	43.9	20.9
Total.....	3,660	116,618	58,240	58,660	86,793	30,120	32	557,409	23.8	19.22	107,133	46,619	0.44	621	207	29.3	12.7
METAMORPHIC REGION.																	
<i>Blue Ridge counties.</i>																	
Rabun.....	400	4,034	2,243	2,301	4,437	197	12	18,209	7.1	0.25	45	14	0.31	444	148	0.1	.....
Towns.....	180	3,261	1,665	1,596	3,157	104	18	14,198	12.3	.....	.....	.....	.....	.....	.....	.....	.....
Union.....	330	6,431	3,211	3,220	6,321	110	19	30,347	14.4	0.04	12	5	0.42	594	198	.....	.....
Fannin.....	390	7,245	3,598	3,737	7,112	133	19	27,197	10.9	.....	.....	.....	.....	.....	.....	.....	.....
Gilmer.....	480	8,386	4,135	4,251	8,258	128	17	30,273	9.9	0.40	122	32	0.26	375	125	0.3	0.1
Pickens.....	230	6,790	3,253	3,537	6,645	145	30	26,834	18.2	8.24	2,210	784	0.39	474	158	9.6	3.2
Dawson.....	180	5,837	2,797	3,040	5,479	358	32	24,958	21.7	8.77	2,189	850	0.39	552	184	12.2	4.7
Lumpkin.....	290	6,326	3,223	3,303	6,075	451	23	21,019	11.3	1.28	260	109	0.41	570	192	0.9	0.4
Wilkes.....	180	5,341	2,655	2,686	4,791	590	30	10,889	17.3	1.15	228	68	0.30	426	142	1.3	0.4
Habersham.....	400	8,718	4,374	4,344	7,357	1,361	22	28,365	11.1	6.21	1,762	597	0.34	483	161	4.4	1.5
Total.....	3,060	63,169	31,064	32,105	59,592	8,577	21	241,289	12.3	2.83	6,837	2,400	0.35	501	167	2.2	0.8
<i>Middle Georgia counties.</i>																	
Franklin.....	330	11,453	5,738	5,735	8,906	2,547	35	61,117	28.9	27.65	16,901	5,723	0.34	489	161	51.2	17.3
Hart.....	330	9,094	4,480	4,614	6,212	2,882	28	30,750	18.8	37.53	14,923	5,094	0.34	486	162	45.2	15.4
Banks.....	320	7,337	3,624	3,713	5,830	1,507	23	31,261	15.3	26.39	8,251	2,960	0.36	510	170	25.8	9.2
Hall.....	540	15,298	7,596	7,702	13,040	2,258	28	64,981	18.3	18.84	12,245	5,133	0.42	597	199	22.7	9.5
Forsyth.....	280	10,559	5,137	5,422	9,072	1,487	42	53,042	33.2	22.85	12,121	5,044	0.42	594	198	48.5	20.2
Milton.....	110	6,261	3,090	3,171	5,484	777	57	30,629	43.5	32.61	9,080	4,490	0.45	642	214	60.8	40.8
Cherokee.....	470	14,325	7,061	7,264	12,099	1,026	30	63,289	21.0	21.71	13,739	5,015	0.41	582	194	20.2	11.9
Haralson.....	330	5,974	2,985	2,989	5,821	153	18	28,225	13.4	17.22	4,860	2,035	0.42	597	199	14.7	6.2
Paulding.....	340	10,887	5,465	5,422	9,903	984	32	52,054	24.2	30.69	10,158	7,352	0.46	648	216	47.5	21.6
Cobb.....	400	20,748	10,202	10,546	14,734	6,014	52	88,578	34.6	30.3	10,038	4,285	0.43	609	203	50.2	21.4
Fulton.....	200	49,137	23,470	25,667	38,295	20,842	246	38,735	30.3	25.94	10,038	4,285	0.43	609	203	50.2	21.4
De Kalb.....	280	14,407	7,173	7,324	9,954	4,543	52	60,023	33.5	32.18	19,318	8,008	0.41	591	197	69.0	28.6
Gwinnett.....	470	19,531	9,630	9,901	16,016	3,515	42	90,582	32.1	28.52	27,549	11,810	0.49	612	204	58.6	25.1
Jackson.....	360	16,297	8,149	8,148	11,139	5,158	45	67,109	20.1	37.07	24,874	9,482	0.38	543	181	69.1	26.3
Madison.....	300	7,078	3,885	4,093	5,392	2,586	27	51,716	26.9	25.19	18,029	4,918	0.38	537	179	43.4	16.4
Elbert.....	440	12,957	6,485	6,472	9,085	6,872	29	79,406	28.2	32.53	25,833	8,820	0.34	486	162	58.7	20.1
Oglethorpe.....	510	15,400	7,687	7,713	5,409	9,931	30	92,772	28.4	38.06	35,306	12,336	0.35	498	166	69.2	24.2
Clarke.....	180	11,702	5,465	6,237	5,313	6,389	65	23,337	20.3	34.37	8,020	3,310	0.41	588	196	44.6	18.4
Oconee.....	180	6,351	3,148	3,208	3,327	3,024	40	34,223	33.4	35.95	12,303	4,257	0.35	492	164	76.0	26.6
Walton.....	400	15,022	7,820	7,802	9,321	6,301	39	82,628	32.3	38.48	31,707	12,534	0.39	501	187	79.5	31.3
Rockdale.....	120	6,838	3,434	3,404	4,149	2,689	57	33,529	43.7	43.09	14,448	4,385	0.39	432	144	120.4	36.5
Clayton.....	140	8,027	3,957	4,070	4,938	3,089	57	39,995	44.6	43.56	17,422	6,606	0.38	540	180	124.4	47.2
Campbell.....	240	9,970	5,085	4,885	6,085	3,885	42	61,411	40.0	34.93	21,448	8,986	0.42	597	199	89.4	37.4
Douglas.....	190	6,934	3,421	3,513	5,463	1,471	36	29,330	24.1	32.46	9,520	4,099	0.43	615	205	50.1	21.6
Carroll.....	540	16,901	8,407	8,494	14,591	2,310	31	85,683	24.8	26.37	22,593	9,300	0.41	588	199	41.8	17.2
Heard.....	290	8,768	4,362	4,407	5,674	3,095	30	47,761	25.7	36.32	17,348	5,930	0.34	486	162	59.8	20.3
Coweta.....	440	21,109	10,457	10,652	9,305	11,804	48	116,950	41.5	41.16	48,494	16,282	0.34	477	159	110.2	37.0
Fayette.....	220	8,605	4,255	4,350	5,742	2,863	39	59,278	42.1	36.75	21,787	7,131	0.33	405	155	99.0	32.4
Spalding.....	220	12,585	6,166	6,419	5,439	7,146	57	53,835	37.1	49.00	22,935	7,418	0.32	402	154	104.3	33.7
Henry.....	400	14,193	7,056	7,137	7,961	6,232	35	73,553	28.7	48.56	35,730	10,930	0.34	486	162	89.3	27.3
Newton.....	260	13,023	6,760	6,863	6,740	6,833	52	65,099	30.1	42.75	27,801	7,786	0.28	399	133	106.9	30.0
Morgan.....	400	14,032	6,884	7,148	8,363	9,783	35	82,315	32.2	42.81	35,243	7,358	0.21	297	99	88.1	18.4
Greene.....	340	17,547	8,693	8,854	5,573	11,974	52	91,224	41.9	43.89	40,037	12,448	0.31	444	148	117.8	36.6

COTTON PRODUCTION IN GEORGIA.

TABLE I.—SHOWING AREA, POPULATION, TILLED LAND, AND COTTON PRODUCTION—Cont'd.

Counties.	Land area.	POPULATION.						TILLED LAND.			COTTON PRODUCTION.						
		Total.	Male.	Female.	White.	Color'd.	Average per square mile.	Area.	Per cent. of area.	Per cent. of tilled land.	Average per acre.			Cotton acreage per square mile.	Bales per square mile.		
											Bale.	Seed-cot'n.	Lint.				
METAMORPHIC REGION—cont'd.																	
Middle Georgia counties—Continued.																	
	Sq. mls												475 lbs.	Lbs.	Lbs.		
Talbot	180	7,084	3,514	3,520	2,312	4,722	30	46,016	40.5	30.16	14,058	4,758	0.34	483	101	78.1	26.4
Wilkes	460	15,985	7,958	8,027	5,173	10,812	35	88,776	30.2	34.80	30,891	11,100	0.36	513	171	67.2	24.2
Lincoln	230	6,412	3,132	3,280	2,254	4,158	23	37,813	21.1	33.85	12,798	3,861	0.30	420	143	45.7	13.8
Columbia	290	10,465	5,243	5,222	3,030	7,435	36	54,363	29.3	46.54	25,302	8,313	0.33	468	160	87.2	28.7
McDuffie	330	9,440	4,808	4,641	3,430	6,019	29	54,361	25.7	45.04	24,810	7,439	0.30	426	142	75.2	22.5
Warren	290	10,885	5,443	5,442	4,039	6,846	38	53,966	29.1	46.31	24,091	7,885	0.32	447	140	86.2	27.2
Hancock	520	10,939	5,471	5,468	3,544	11,045	33	99,397	29.9	43.03	42,773	15,010	0.35	501	167	82.3	28.6
Putnam	360	14,539	7,203	7,336	3,518	11,021	40	72,664	31.5	49.20	35,810	9,078	0.27	384	128	99.5	26.9
Baldwin	240	13,800	6,770	7,030	4,512	9,294	58	61,404	40.0	45.28	27,832	7,921	0.28	405	135	110.0	33.0
Jones	470	11,613	5,775	5,838	3,753	7,860	25	70,928	23.6	42.04	20,320	8,207	0.28	396	132	63.4	17.7
Bibb	240	27,147	12,759	14,388	11,429	15,718	113	52,179	34.0	39.72	20,724	5,858	0.28	405	135	80.4	24.4
Jasper	380	11,851	5,903	5,888	4,258	7,593	31	87,203	35.0	31.66	27,000	6,741	0.24	348	110	72.6	17.7
Butts	180	8,311	4,005	4,210	4,277	4,034	40	49,090	42.0	42.28	20,755	6,820	0.33	408	150	115.3	37.9
Monroe	470	18,808	9,372	9,436	6,693	12,115	40	106,073	35.5	42.17	44,979	13,354	0.30	423	141	95.7	28.4
Pike	290	15,849	7,832	7,997	7,780	8,069	55	93,620	50.4	41.40	38,755	12,431	0.32	456	152	133.6	42.9
Upson	310	12,400	6,115	6,285	0,133	6,267	40	72,475	36.5	42.15	30,551	8,540	0.28	390	133	98.6	27.5
Crawford	340	8,650	4,305	4,351	3,940	4,716	25	53,531	24.6	40.24	24,754	6,765	0.27	390	130	72.8	19.9
Talbot	360	14,115	7,071	7,044	4,448	6,067	39	74,037	32.1	40.04	36,310	10,325	0.28	405	135	100.0	28.7
Meriwether	490	17,651	8,754	8,897	7,797	9,854	36	124,118	39.6	40.02	49,070	15,154	0.31	435	145	101.4	30.9
Troup	430	20,565	10,187	10,378	6,595	13,970	48	129,046	46.9	51.29	60,188	18,655	0.28	402	134	153.9	43.4
Harris	470	15,758	7,797	7,961	6,450	9,308	34	91,989	30.6	46.97	43,203	12,077	0.29	417	139	91.0	27.0
Muscogee	210	10,322	5,006	10,416	8,895	10,327	92	44,718	33.3	26.00	11,025	3,268	0.28	402	134	55.4	15.6
Total	18,110	748,151	368,701	379,450	393,781	354,370	41	3,598,551	31.0	37.80	1,363,630	449,811	0.33	471	167	75.3	24.3
CENTRAL COTTON BELT.																	
Richmond	320	34,065	16,025	18,040	17,185	17,430	108	36,626	17.9	21.40	7,871	2,742	0.35	495	165	24.6	8.6
Burke	1,030	27,128	13,579	13,549	6,089	21,039	26	228,880	34.7	38.17	87,350	29,172	0.33	477	150	84.8	28.3
Jefferson	629	15,671	7,968	7,703	5,581	10,090	25	123,024	31.2	33.38	41,877	13,377	0.32	462	154	60.7	21.6
Glascoc	100	3,577	1,811	1,766	2,506	1,071	36	25,124	39.3	32.54	8,175	2,695	0.32	450	153	81.8	26.3
Washington	680	21,964	10,784	11,180	9,449	12,515	32	132,887	35.1	43.70	66,960	23,058	0.34	492	164	98.4	33.0
Laurens	740	10,053	5,065	4,988	5,702	4,351	14	89,834	19.0	23.03	20,689	6,863	0.33	474	158	28.0	9.3
Wilkinson	440	12,001	5,995	6,006	6,550	5,511	27	101,049	35.9	25.16	25,423	7,900	0.31	447	149	57.8	18.1
Twiggs	330	8,918	4,477	4,441	2,844	6,074	27	67,050	31.7	44.25	29,071	8,217	0.28	390	132	89.9	24.0
Pulaski	470	14,058	7,057	7,001	5,324	8,234	30	83,762	27.8	38.29	32,074	9,805	0.31	495	145	68.2	20.9
Houston	560	22,414	11,108	11,306	6,024	16,390	40	169,827	47.4	42.76	72,011	19,099	0.26	375	125	129.7	34.1
Taylor	400	8,597	4,266	4,331	4,770	3,827	21	44,770	17.5	40.35	18,004	4,854	0.27	384	128	45.2	12.1
Marion	360	8,598	4,310	4,288	4,284	4,304	24	77,951	33.8	27.68	21,570	6,109	0.29	408	130	59.9	17.1
Chattahoochee	220	5,670	2,821	2,849	2,130	3,540	26	38,457	27.3	40.15	15,442	4,400	0.29	411	137	70.2	20.3
Stewart	440	13,998	6,972	7,026	4,376	9,622	32	107,251	38.1	41.44	44,440	12,653	0.28	405	135	101.0	28.8
Webster	230	5,237	2,542	2,695	2,067	2,570	23	48,762	29.7	30.38	17,235	4,043	0.27	384	128	74.0	20.2
Schley	189	5,302	2,612	2,690	2,220	3,073	29	38,031	33.8	49.17	19,143	4,945	0.26	369	123	106.4	27.5
Macon	360	11,675	5,743	5,932	4,288	7,887	32	67,593	29.3	46.88	31,687	8,634	0.26	375	125	88.0	23.0
Sumter	520	18,239	8,888	9,351	6,050	12,189	35	161,604	31.4	42.22	44,100	11,451	0.26	369	123	85.0	23.0
Lee	360	10,577	5,324	5,253	1,739	8,338	29	99,440	43.2	35.89	35,004	9,143	0.26	366	122	99.2	25.4
Terrell	320	10,451	5,188	5,263	4,268	6,183	33	58,844	28.7	43.74	25,740	6,944	0.27	364	128	80.4	21.7
Randolph	400	13,341	6,431	6,910	5,545	7,796	33	91,249	35.6	37.48	34,204	8,467	0.25	354	118	85.5	21.2
Quitman	160	4,392	2,181	2,211	1,773	2,619	27	25,584	25.0	46.18	11,815	3,168	0.27	381	127	73.8	19.8
Clay	200	6,650	3,222	3,428	2,798	3,852	33	51,952	42.2	39.92	21,539	4,576	0.21	303	101	107.7	22.9
Calhoun	280	7,024	3,468	3,556	2,354	4,670	25	57,804	32.3	42.26	24,429	4,070	0.19	273	91	87.2	16.7
Dougherty	340	12,622	6,242	6,380	1,952	10,670	37	85,885	39.5	47.73	40,996	9,736	0.24	339	113	120.6	28.6
Early	519	7,611	3,749	3,862	3,015	4,596	15	42,276	18.0	48.61	20,552	4,270	0.21	297	99	40.3	8.4
Total	10,570	320,493	157,778	162,715	122,002	198,411	30	2,117,301	31.3	38.67	818,898	231,411	0.28	402	134	77.5	21.0
SOUTHERN OAK, HICKORY, AND PINE UPLANDS.																	
Decatur	1,160	19,072	9,399	9,673	8,889	10,183	16	79,219	10.7	37.25	29,599	6,896	0.22	300	103	25.4	5.5
Thomas	780	20,597	10,162	10,435	8,384	12,213	26	89,760	18.0	39.60	35,895	8,773	0.24	348	116	46.0	11.2
Brooks	530	11,727	5,822	5,905	5,670	6,057	22	75,962	22.4	27.98	21,235	6,288	0.30	423	141	40.1	11.9
Total	2,470	51,396	25,383	26,013	22,943	28,453	21	244,941	15.5	35.88	86,650	21,457	0.25	354	118	35.1	8.7

TABULATED RESULTS OF THE ENUMERATION.

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TABLE I.—SHOWING AREA, POPULATION, TILLED LAND, AND COTTON PRODUCTION—Cont'd.

Counties.	Land area.	POPULATION.						TILLED LAND.			COTTON PRODUCTION.							
		Total.	Male.	Female.	White.	Color'd.	Average per square mile.	Acres.	Per cent. of area.	Per cent. of tilled land.	Acres.	Bales.	Average per acre.			Cotton acreage per square mile.	Bales per square mile.	
													Bale.	Seed-cot'n.	Lint.			
LONG-LEAF PINE AND WIRE-GRASS REGION.																		
<i>Limesink division.</i>		<i>Sq. mls.</i>																
Screven.....	720	12,786	6,494	6,292	6,173	6,613	18	77,143	16.7	28.15	21,716	8,166	0.38	537	179	30.2	11.3	
Dodge.....	580	5,358	2,890	2,459	3,506	1,852	9	23,441	6.3	25.57	6,002	1,016	0.32	450	152	10.3	3.3	
Dooly.....	780	12,420	6,217	6,203	6,502	5,828	16	117,113	23.5	32.87	36,495	9,606	0.25	357	119	40.4	12.4	
Worth.....	710	5,892	3,038	2,859	4,068	1,824	8	37,520	8.3	32.40	12,157	2,803	0.24	339	113	17.1	4.1	
Baker.....	340	7,307	3,060	3,638	1,742	5,565	21	66,767	30.7	22.94	28,670	4,870	0.17	243	81	34.3	14.3	
Miller.....	240	3,720	1,832	1,888	2,327	1,393	16	23,527	15.3	38.17	8,983	1,905	0.21	308	101	37.4	7.9	
Mitchell.....	500	9,392	4,686	4,706	4,189	5,203	19	72,367	22.6	41.82	36,265	5,559	0.18	261	87	60.5	11.1	
Colquitt.....	550	2,527	1,240	1,287	2,422	105	5	13,906	4.0	21.27	2,958	736	0.25	354	118	5.4	1.3	
Lowndes.....	470	11,049	5,466	5,583	5,412	5,637	24	53,373	17.7	33.10	17,664	4,981	0.28	402	134	37.6	10.6	
Total.....	4,890	70,451	35,530	34,915	36,431	34,020	14	485,163	15.5	34.40	166,907	40,692	0.24	348	116	34.1	8.3	
<i>Pine barrens division.</i>																		
Johnson.....	208	4,800	2,348	2,452	3,455	1,345	18	30,762	23.0	29.44	11,705	3,323	0.28	405	135	45.0	12.8	
Montgomery.....	720	5,381	2,770	2,611	3,510	1,871	7	20,211	6.3	8.07	2,356	852	0.36	516	172	3.3	1.2	
Emanuel.....	1,040	9,750	4,982	4,777	6,000	3,099	9	46,430	7.0	23.15	10,749	3,669	0.34	486	162	10.3	3.5	
Bulloch.....	900	8,053	4,042	4,011	5,797	2,256	9	35,066	6.2	25.66	9,140	3,724	0.41	582	194	10.2	4.1	
Effingham.....	430	5,979	3,032	2,947	3,228	2,751	14	22,747	8.5	7.77	1,767	686	0.39	552	184	4.2	1.6	
Tattnall.....	1,190	6,988	3,579	3,409	5,014	1,974	6	23,166	3.3	11.30	2,018	964	0.37	525	175	2.4	0.8	
Wayne.....	740	5,980	3,284	2,696	4,060	1,920	8	8,766	1.9	3.78	331	119	0.36	513	171	0.4	0.2	
Appling.....	1,080	5,276	2,928	2,348	4,084	1,192	5	13,172	1.9	8.12	1,069	379	0.35	501	167	1.0	0.4	
Coffee.....	980	5,070	2,570	2,500	4,028	1,042	5	17,618	2.8	10.36	1,825	591	0.32	462	154	1.9	0.6	
Telfair.....	420	4,828	2,672	2,156	2,666	2,162	11	14,124	5.3	15.77	2,228	740	0.33	474	158	5.3	1.8	
Wilcox.....	500	3,109	1,549	1,560	2,411	698	6	18,229	5.7	28.95	5,278	1,331	0.25	360	120	10.6	2.7	
Irwin.....	680	2,666	1,350	1,346	2,161	535	4	11,658	2.7	15.44	1,800	595	0.33	471	157	2.6	0.9	
Berrien.....	760	6,619	3,380	3,239	5,783	836	9	26,214	5.4	21.30	5,583	2,008	0.36	513	171	7.3	2.6	
Pierce.....	540	4,538	2,475	2,063	3,065	1,473	8	9,466	2.7	10.47	994	369	0.37	528	176	1.8	0.7	
Total.....	10,140	70,076	40,981	38,115	55,922	23,154	8	346,223	4.9	18.17	57,443	19,350	0.34	480	160	5.7	1.9	
PINE FLATS AND COAST COUNTIES.																		
Ware.....	620	4,159	2,232	1,927	3,015	1,144	7	8,332	2.1	6.29	324	158	0.30	420	143	0.8	0.3	
Clinch.....	900	4,138	2,238	1,900	3,300	838	5	14,346	2.5	11.31	1,622	511	0.32	450	150	1.8	0.6	
Echols.....	400	2,553	1,266	1,287	2,053	506	6	15,785	6.2	22.87	3,578	731	0.20	294	97	8.9	1.8	
Charlton.....	1,060	2,154	1,137	1,017	1,794	360	2	5,077	6.7	5.08	258	62	0.24	342	114	0.2	0.1	
Camden.....	620	6,183	3,124	3,059	2,091	4,092	10	9,166	2.3	2.26	206	68	0.33	471	157	0.3	0.1	
Glynn.....	430	6,497	3,276	3,221	2,195	4,302	15	5,615	2.0	1.03	58	10	0.17	246	82	0.1	.....
McIntosh.....	530	6,241	3,099	3,142	1,548	4,695	12	8,898	2.6	3.81	339	104	0.31	438	146	0.6	0.2	
Liberty.....	720	10,649	5,298	5,351	3,581	7,068	15	23,047	5.0	9.04	2,084	679	0.33	465	155	2.9	0.9	
Bryan.....	400	4,929	2,641	2,283	2,368	2,561	12	15,588	6.1	4.80	764	304	0.40	567	189	1.9	0.8	
Chatham.....	400	45,023	20,908	24,025	17,494	27,529	113	23,466	9.2	1.23	289	65	0.22	321	107	0.7	0.2	
Total.....	6,080	92,526	45,309	47,217	39,437	53,089	15	120,290	3.3	7.52	9,722	2,892	0.28	396	132	1.6	0.4	

COTTON PRODUCTION IN GEORGIA.

TABLE II.—ACREAGE AND PRODUCTION OF THE LEADING CROPS OF THE STATE.

Counties.	COTTON.		INDIAN CORN.		OATS.		WHEAT.		SWEET POTATOES.	
	Acres.	Bales.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Total for the State.....	2,617,138	814,441	2,538,733	23,202,018	612,778	5,848,743	475,084	3,150,771	61,010	4,307,771
NORTHWEST GEORGIA.										
Murray.....	5,937	1,917	14,338	211,050	2,108	14,861	8,178	51,502	137	7,871
Whitfield.....	4,068	1,240	19,902	253,923	5,443	30,085	8,108	40,207	230	13,574
Catoosa.....	967	111	10,783	151,707	1,503	9,440	5,011	34,013	140	9,831
Walker.....	5,797	2,009	26,033	369,298	5,915	30,861	15,115	90,844	201	20,844
Dade.....	32	12	8,330	140,264	2,209	20,084	3,006	24,712	85	6,802
Chattooga.....	12,900	5,247	20,078	287,011	6,044	48,111	7,930	40,969	89	7,174
Gordon.....	8,608	3,301	22,061	345,800	6,069	48,434	14,230	113,222	160	10,181
Floyd.....	30,615	14,545	29,872	405,290	8,413	69,435	9,251	63,700	234	17,007
Polk.....	16,774	8,120	16,331	241,382	6,114	67,515	6,538	50,010	90	6,028
Bartow.....	21,909	10,111	26,874	358,161	9,852	81,801	15,205	131,935	208	13,106
Total.....	107,133	46,610	195,298	2,704,555	53,820	432,127	94,501	655,940	1,748	113,416
METAMORPHIC REGION.										
<i>Blue Ridge counties.</i>										
Rabun.....	45	14	8,810	115,456	455	2,823	457	1,870	122	8,312
Towns.....			7,601	87,893	830	4,465	2,055	8,559	108	6,153
Union.....	12	5	14,347	198,531	2,130	12,697	4,612	20,743	210	10,104
Fannin.....			14,220	189,655	1,005	6,281	3,640	15,363	234	10,778
Gilmer.....	122	32	16,178	233,348	582	3,950	5,903	25,200	60	4,200
Pickens.....	2,210	734	12,774	189,245	1,619	12,542	5,922	33,990	175	10,544
Dawson.....	2,189	850	14,900	191,006	882	7,068	4,640	20,554	193	13,087
Lumpkin.....	209	109	11,232	134,747	1,554	12,059	2,781	13,229	209	12,540
White.....	228	68	11,007	148,120	2,228	19,225	2,319	12,843	135	12,238
Habersham.....	1,762	597	14,797	172,806	1,921	15,036	2,458	12,923	207	11,192
Total.....	6,837	2,409	125,362	1,660,809	13,215	96,140	34,875	171,292	1,671	90,263
<i>Middle Georgia counties.</i>										
Franklin.....	16,901	5,723	20,528	229,779	4,627	31,634	6,520	30,434	386	23,208
Hart.....	14,923	5,094	14,312	120,938	4,876	28,453	4,616	24,077	250	19,617
Banks.....	8,251	2,960	11,789	147,981	2,022	18,038	3,030	21,935	63	4,055
Hall.....	12,245	5,133	26,032	354,329	4,798	35,424	8,771	54,870	375	23,518
Forsyth.....	13,121	5,044	20,324	285,610	6,040	47,925	7,797	50,805	307	20,236
Milton.....	9,989	4,490	13,089	197,188	3,025	25,430	4,187	31,100	234	6,108
Cherokee.....	13,739	5,615	26,390	398,018	5,172	35,998	10,283	65,939	210	17,264
Haralson.....	4,860	2,035	13,048	174,011	2,736	25,144	4,900	34,103	83	3,303
Paulding.....	16,158	7,332	21,953	318,520	6,101	53,613	6,372	48,240	330	21,548
Cobb.....	27,250	13,022	29,600	406,730	6,780	57,021	10,147	80,617	229	15,013
Fulton.....	10,038	4,285	13,988	184,630	3,060	32,784	2,836	24,014	404	32,888
De Kalb.....	19,318	8,808	21,034	293,448	5,074	52,842	5,860	40,570	547	32,438
Gwinnett.....	27,549	11,810	30,568	470,400	8,526	61,814	11,138	74,795	632	43,693
Jackson.....	24,874	9,482	27,075	295,041	7,355	54,640	7,485	50,350	370	20,022
Madison.....	13,029	4,918	14,471	145,422	4,631	32,423	6,108	42,150	153	8,444
Elbert.....	25,833	8,826	29,369	212,058	5,552	40,883	7,088	48,883	265	13,530
Oglethorpe.....	35,306	12,336	22,019	200,584	6,310	59,832	7,184	57,713	414	25,071
Clarke.....	8,020	3,310	7,394	67,940	1,755	10,098	1,887	11,104	144	7,320
Oconee.....	12,303	4,257	9,930	97,560	2,215	18,454	2,130	17,415	104	10,062
Walton.....	31,797	12,534	26,769	288,761	6,454	50,633	9,418	65,385	449	27,071
Rockdale.....	14,448	4,385	9,951	91,552	2,401	23,349	3,268	27,123	181	9,732
Clayton.....	17,422	6,606	11,458	132,446	3,496	32,355	3,849	29,161	121	8,303
Campbell.....	21,448	8,986	14,656	209,780	5,269	44,707	5,774	40,315	687	17,718
Douglas.....	9,520	4,099	10,586	140,960	3,189	20,630	3,521	27,754	153	10,050
Carroll.....	22,393	9,300	28,964	370,892	7,729	78,735	10,414	74,826	278	18,057
Heard.....	17,348	5,900	17,209	195,161	3,002	25,315	4,900	35,439	317	21,500
Coweta.....	48,494	16,232	28,980	336,342	10,385	106,331	9,392	77,075	555	37,505
Fayette.....	21,787	7,131	14,195	137,545	3,477	29,730	4,250	31,705	240	18,779
Spalding.....	22,935	7,418	15,560	140,142	3,132	22,555	4,084	20,574	254	10,215
Henry.....	35,730	10,930	21,903	199,132	5,321	39,861	7,406	50,513	236	13,400
Newton.....	27,801	7,796	17,112	140,308	4,999	40,465	4,802	40,057	239	10,096
Morgan.....	35,243	7,358	22,510	195,358	4,017	32,198	4,980	30,884	207	14,671
Greene.....	40,037	12,448	25,827	188,900	6,674	77,209	6,473	44,581	660	33,077
Taliaferro.....	14,058	4,758	9,901	83,239	4,305	38,709	3,080	20,647	290	17,409
Wilkes.....	30,891	11,169	21,493	191,218	4,855	133,277	4,287	32,732	354	24,902
Lincoln.....	12,798	3,861	11,029	87,317	7,035	73,380	2,125	15,431	196	12,895
Columbia.....	25,302	8,313	15,632	93,191	3,804	59,105	1,095	7,151	318	22,730
McDuffie.....	24,819	7,439	13,935	87,614	5,616	57,804	2,770	17,307	703	37,016
Warren.....	24,991	7,885	16,450	89,770	4,885	48,015	3,649	19,229	508	37,160

TABULATED RESULTS OF THE ENUMERATION.

TABLE II.—ACREAGE AND PRODUCTION OF THE LEADING CROPS OF THE STATE—Continued.

Counties.	COTTON.		INDIAN CORN.		OATS.		WHEAT.		SWEET POTATOES.	
	Acres.	Bales.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
METAMORPHIC REGION—continued.										
<i>Middle Georgia counties—Continued.</i>										
Hancock	42,773	15,010	33,328	233,608	6,503	74,810	5,913	34,142	909	60,701
Putnam	35,819	9,678	23,176	141,172	2,881	35,234	2,855	24,591	446	21,413
Baldwin	27,832	7,921	17,599	125,572	1,858	23,954	1,607	10,160	482	30,869
Jones	29,820	8,207	22,464	181,777	3,010	31,392	2,685	17,374	429	31,519
Bibb	20,724	5,858	14,325	137,720	4,101	52,588	748	4,974	585	41,301
Jasper	27,606	6,741	23,203	163,152	2,637	30,122	4,640	37,760	305	18,776
Butts	20,755	6,829	15,880	140,838	2,254	18,876	4,135	30,133	79	4,758
Monroe	44,970	13,354	29,884	238,776	0,765	70,543	6,742	54,938	566	42,215
Pike	38,755	12,481	29,243	244,074	5,596	48,976	7,510	52,880	571	41,540
Upson	30,551	8,540	23,143	193,694	3,205	30,140	6,751	52,258	369	23,077
Crawford	24,754	6,705	16,737	144,351	2,688	26,028	2,040	13,060	865	28,848
Talbot	36,310	10,325	25,096	234,545	3,052	36,834	3,882	26,411	1,462	41,672
Meriwether	49,076	15,154	35,842	310,428	7,340	57,913	8,026	53,965	684	50,485
Troup	66,188	18,655	38,077	341,968	6,975	69,672	7,342	55,572	1,025	81,937
Harris	43,203	12,677	26,371	233,452	5,498	48,220	5,549	32,563	692	51,603
Muscogee	11,625	3,268	8,293	69,059	2,071	22,640	310	1,577	394	25,449
Total	1,363,539	449,811	1,100,047	11,035,755	265,732	2,465,085	283,951	2,076,025	22,074	1,304,701
CENTRAL COTTON BELT.										
Richmond	7,871	2,742	11,793	102,610	4,209	73,155	1,549	13,553	714	47,213
Burke	37,359	20,172	68,131	565,290	4,457	52,869	406	1,778	763	65,010
Jefferson	41,367	13,377	42,335	296,551	6,146	59,037	5,783	23,767	462	61,036
Glascock	8,175	2,635	10,742	64,701	1,076	15,851	4,257	14,197	143	11,819
Washington	66,900	23,058	58,653	411,499	7,566	83,184	7,464	30,460	1,260	99,552
Laurens	20,689	6,863	25,563	196,480	4,745	40,123	478	1,624	345	40,103
Wilkinson	25,423	7,968	32,394	224,305	4,907	37,685	4,872	19,805	533	39,971
Twiggs	29,671	8,217	23,782	168,044	1,176	9,202	374	1,876	294	24,835
Pulaski	32,074	9,805	28,565	242,814	3,370	29,604	203	1,328	1,112	51,698
Houston	72,611	19,099	49,785	354,229	10,570	121,261	3,289	19,009	736	70,792
Taylor	18,064	4,854	16,426	115,400	2,108	19,177	3,079	14,739	336	30,696
Marion	21,579	6,169	21,053	141,145	1,889	16,800	3,481	13,132	566	43,598
Chattahoochee	15,442	4,460	11,618	75,441	1,774	15,020	740	2,482	320	21,285
Stewart	44,449	12,653	31,970	182,948	5,284	61,370	2,652	12,022	1,107	69,930
Webster	17,235	4,642	16,121	96,105	2,809	20,039	2,236	8,334	260	22,930
Schley	19,143	4,945	15,845	99,188	1,447	12,403	1,944	7,986	325	25,999
Macon	31,687	8,334	23,910	154,238	4,313	40,712	2,702	11,165	464	42,077
Sumter	44,190	11,451	37,495	272,238	8,742	83,868	1,984	9,650	737	70,273
Lee	35,004	9,143	24,045	161,574	6,721	56,912	367	2,660	438	33,693
Terrill	25,740	6,944	21,719	137,882	6,210	42,830	1,028	9,710	828	39,919
Randolph	34,204	8,467	27,484	130,258	6,770	46,612	2,790	12,653	672	51,697
Quitman	11,815	3,163	7,596	40,220	2,202	22,398	560	2,419	189	11,964
Clay	21,539	4,576	14,898	73,467	2,844	25,163	156	928	347	23,248
Calhoun	24,429	4,670	19,642	91,323	5,526	41,968	108	1,035	380	23,094
Dougherty	40,996	9,736	23,263	141,029	6,052	48,797	116	995	640	31,130
Early	20,552	4,270	17,624	110,632	4,750	39,604	39	230	459	36,382
Total	815,898	231,411	681,351	4,539,676	117,723	1,120,643	53,652	239,475	14,540	1,091,293
SOUTHERN OAK, HICKORY, AND PINE UPLANDS.										
Decatur	29,509	6,366	30,847	201,372	9,282	84,482	22	146	1,860	82,171
Thomas	35,895	8,773	35,839	245,531	18,231	158,467	34	160	2,009	96,727
Brooks	21,255	6,288	23,027	173,530	14,087	168,362	40	315	733	72,362
Total	86,659	21,427	89,713	620,933	41,650	406,311	102	621	4,602	251,260
LONG-LEAF PINE AND WIRE-GRASS REGION.										
<i>Limestone division.</i>										
Screven	21,716	8,166	24,154	180,215	3,502	35,847	69	452	1,002	44,186
Dodge	6,002	1,916	9,132	72,038	2,054	15,581	23	48	203	20,100
Doyle	38,495	9,666	40,334	302,649	9,622	87,669	1,569	7,838	1,203	90,437
Worth	12,167	2,893	13,671	86,222	4,687	33,466	101	607	519	46,059
Baker	28,670	4,870	20,606	100,591	5,614	39,345	68	440	440	38,811
Miller	8,980	1,905	9,229	55,809	4,188	33,647	.....	.....	265	26,538
Mitchell	30,265	5,559	23,806	127,161	8,721	67,835	51	373	517	40,761
Colquitt	2,958	736	4,375	24,110	2,138	18,080	8	36	313	41,804
Lowndes	17,664	4,931	20,016	138,671	9,945	102,276	64	488	758	58,793
Total	166,907	40,692	185,323	1,037,466	50,431	433,276	1,053	10,232	5,220	413,539

COTTON PRODUCTION IN GEORGIA.

TABLE II.—ACREAGE AND PRODUCTION OF THE LEADING CROPS OF THE STATE—Continued.

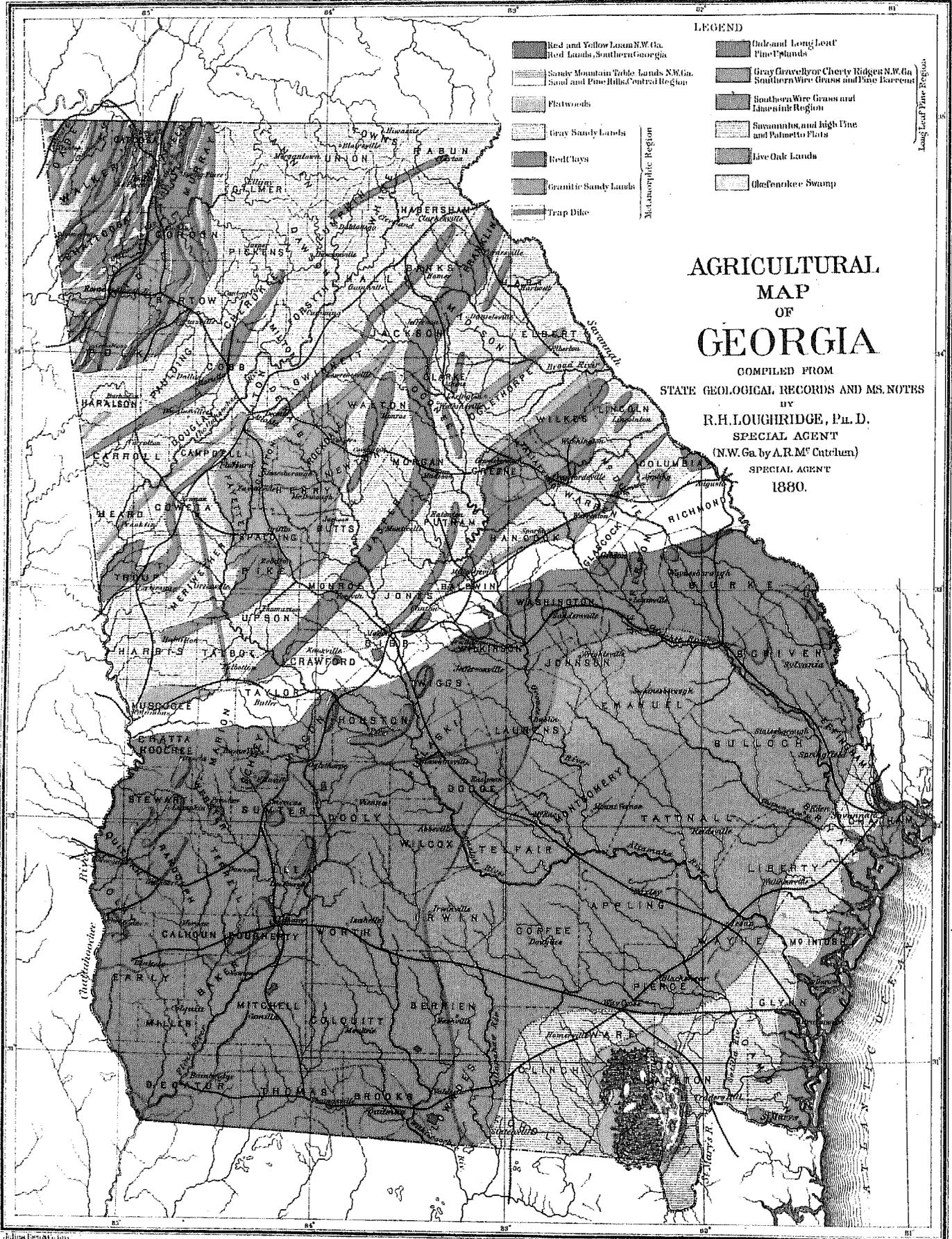
Counties.	COTTON.		INDIAN CORN.		OATS.		WHEAT.		SWEET POTATOES.	
	Acres.	Bales.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
LONG LEAF PINE AND WIRE-GRASS REGION—cont'd.										
<i>Pine barrens division.</i>										
Johnson	11,705	3,323	14,288	87,413	1,826	15,084	404	1,610	359	28,300
Montgomery	2,856	852	10,231	84,375	4,904	36,218	142	495	347	42,080
Emanuel	10,749	3,609	24,300	195,694	3,957	32,110	950	4,033	539	63,037
Bulloch	9,140	3,724	15,394	134,222	7,661	71,880	15	65	507	64,473
Effingham	1,767	686	6,337	72,619	2,096	18,930			393	28,756
Tattnall	2,618	964	10,991	96,189	4,802	36,954	8	67	722	68,147
Wayne	331	119	4,243	39,112	2,188	15,566			437	52,010
Appling	1,069	379	6,816	56,573	4,097	31,594			379	36,042
Coffee	1,325	591	6,925	58,408	5,450	44,760			648	71,400
Telfair	2,228	740	6,802	49,942	2,032	15,658			240	27,826
Wilcox	5,278	1,331	7,804	61,511	3,086	20,711	0	32	377	33,071
Irwin	1,800	595	4,049	38,391	3,319	29,114			473	50,706
Berrien	5,583	2,008	8,429	80,081	8,199	89,166	15	123	567	84,080
Pierce	994	369	4,105	39,026	2,209	21,786			480	45,770
Total	57,443	19,350	133,214	1,094,156	55,826	479,471	1,540	6,490	7,008	705,304
PINE FLATS AND COAST COUNTIES.										
Ware	524	153	3,388	29,134	1,953	14,376			343	33,682
Clinch	1,622	511	5,524	48,995	3,359	26,623			302	30,550
Echols	3,578	781	5,159	30,373	1,650	11,913			156	13,209
Charlton	258	62	1,980	16,763	634	3,597			179	10,968
Camden	206	68	3,195	29,792	138	1,343			370	38,733
Glynn	53	10	1,565	17,546	241	2,415			200	28,808
McIntosh	339	104	2,325	34,463	354	4,197			514	40,060
Liberty	2,084	679	8,565	74,041	3,597	27,178			962	74,038
Bryan	704	304	5,000	38,248	1,786	14,409			273	26,987
Chattham	289	65	2,224	26,763	619	9,123	20	300	758	49,777
Total	9,722	2,692	39,425	346,668	14,381	115,184	20	300	4,147	353,952

PART I.

PHYSICO-GEOGRAPHICAL AND AGRICULTURAL FEATURES

OF THE

STATE OF GEORGIA.



GENERAL DESCRIPTION OF THE STATE OF GEORGIA.

The state of Georgia lies between longitude $3^{\circ} 47' 21''$ and $8^{\circ} 42'$ west from Washington, and between latitude $30^{\circ} 21' 39''$ and 35° north, embracing in its area 59,475 square miles, of which 495 square miles is water surface, embracing 150 square miles of coast waters (bays, gulfs, sounds, etc.), 300 square miles consist of rivers and smaller streams, and 45 square miles of lakes and ponds. The land area is therefore 58,980 square miles. There are 137 counties in the state.

TOPOGRAPHY.—The northwestern corner of the state is crossed from Tennessee to Alabama by several ranges of mountains that rise in altitude from 500 to 1,000 feet above the intervening broad and rich valleys. Sand and Lookout mountains are broad-backed, while the other ranges are mostly narrow or "backbone" ridges. In the northeastern portion of the state is the Blue Ridge chain, with other isolated points, rising high above the surrounding country. The Chattahoochee ridge, an offshoot from this, and forming the Atlantic and Gulf water-divide, passes south of the Chattahoochee river, soon losing its prominence as a ridge and falling in elevation to Atlanta. Southward the country is more generally level or rolling, sometimes hilly, with but few low mountains until the pine lands are reached; thence to the coast the fall is very gradual and the lands very level. These features are described more in detail under each agricultural region.

CLIMATE.—The state, with its southern boundary resting against Florida and in part washed by the Atlantic ocean on the southeast, its northern boundary 320 miles to the north among the mountains of the Blue Ridge and the Cumberland range, and nearly 5,000 feet above sea-level, presents an average temperature of 68° F. on the coast, 52° to 56° in middle Georgia, and 52° in the Blue Ridge region, or an annual average of about 65° for the entire state.

The average rainfall for the state is from 46 to 50 inches, the steady rains being usually brought by southeastern winds.

The coast region, with its sea breezes and "salty atmosphere", has a mean winter temperature of about 48° , the lowest being rarely below 32° . Its summer maximum is 90° and the mean 79° . Its rainfall is about 57 inches, December and January being the driest months.

So genial is the climate of the coast counties that oranges, bananas, and other semi-tropical fruits are produced in abundance. The markets of colder states are supplied with very early vegetables and garden luxuries from the farms of this region.

In middle Georgia the rainfall is less (41 inches), the driest months being June and September. The yearly temperature ranges from 6° to 96° , with an average of 44° in winter and 73° in summer. During the hottest summer days the temperature often rises to 100° , but the nights are cool, pleasant, and invigorating.

In northeastern Georgia the extremes of temperature are 6° and 90° , with an average of 43° for the winter months and 75° for the summer. The rainfall for this section is about 57 inches, heavy rains occurring in the fall and winter months. The amount of rain that annually falls in each section and in the wet and the dry months varies greatly.

Snow falls in northern Georgia every winter, but only to depths of from 2 to 4 inches, and remains but a short time. In middle Georgia it frequently falls, but melts almost as rapidly as it touches the ground. Occasionally, on ridges, it reaches a depth of an inch or two. In southern Georgia snow is rarely seen.

High winds, mostly accompanied by thunder storms, prevail chiefly in the spring and early summer, and come from the southwest, occasionally becoming tornadoes.

Planting in the low or southern country begins as early as March 15, and fall frosts do not appear earlier than December 1, and it often happens that there is no frost during the winter.

In northern Georgia planting is not done until about the last of April, because of continued cold and frosty weather.

GEOLOGICAL FEATURES.—The geological formations represented in Georgia embrace the Metamorphic, the Palaeozoic, the Triassic, Cretaceous, Tertiary, and Quaternary. Their full and detailed examination had not been

made when the state geological survey (from the records of which this description is taken) was suspended, and hence the data are not sufficient for a full outlining of each group. This is especially the case in the southern counties. The description of the Palæozoic, by Mr. McCutchen, appears under the head of "Northwest Georgia", page 19.

Metamorphic.—The metamorphic region embraces the broad area of crystalline rocks in the middle and northern part of Georgia. This is claimed by many eminent geologists to be the oldest formation of the state (Archæan), while others contend that the series of strata are but the changed Silurian groups (chiefly Quebec and Cincinnati), and therefore newer than the northwestern Palæozoic region.

The commonly-occurring rocks of the series are the well known feldspathic granites and gneisses, hornblende gneisses and schists, mica-schists, sandstones, soapstones, etc., of the Appalachian region. These form strata of varying thickness, but seldom of uniform character, and are intercepted and crossed by quartz veins, large and small, and by numerous trap dikes, which are greatly disintegrated and form the local soils. They inclose a large variety of minerals (gold being the most prominent ore), especially in the counties of Habersham, White, Cherokee, Cobb, and Carroll. The following are the principal features of the region:

Adjoining the Palæozoic region (northwest Georgia) is a nearly continuous series of short mountain ranges, the more prominent of which present bold fronts toward that region. These are composed of metamorphic and semi-metamorphic rocks, and have a southerly trend from the Tennessee line through Murray into Bartow county, and thence westerly through the southern part of Polk into Alabama, *across the strike of the Palæozoic formations*. Their relation to the latter is given by Mr. McCutchen in his report on that section of the state.

The Blue Ridge mountains, on the northeast, are formed most generally of gray feldspathic gneisses, some of their offshoots being hornblende. The rocks of the section present a greater variety than in any other portion of the metamorphic, aluminous and magnesian minerals being very prevalent and entering largely into their composition. Their strike is very generally to the southwest. Tallulah mountain, one of the offshoots forming the boundary-line between Habersham and Rabun counties, is composed principally of sandstone of great thickness, which extends over a part of Habersham, and is found also in Gilmer and in other counties.

Southward from the Blue Ridge and sandstone regions to the Chattahoochee river are broad belts of very generally disintegrated gneisses and gold-bearing mica-schists having multitudinous quartz veins and a general strike southwest across the state to Alabama. This is "the gold belt" of Georgia.

On the northeast a series of magnesian rocks, embracing stratum of limestone, apparently overlies these schists. The limestone has an irregular thickness of from a few inches to several feet, is non-fossiliferous in character, and contains small deposits of galena. It passes from South Carolina through Habersham and Hall counties, its last known outcrop being near Buford, in Gwinnett county. These strata dip to the southeast.

While the various strata enter the state from South Carolina with very regular southwesterly strikes, and those that pass into Alabama on the west have also the same regularity, this is not preserved through Georgia, deflections occurring on both sides of a large central granite region, which deflections are greatest on the east, where the belts pass south nearly to the sand-hills before resuming their southwesterly strike. The line connecting the points where these deflections begin on the east would pass from the mountains of Fannin and Gilmer counties (which have a southeasterly trend at right angles to the Blue Ridge) southeast to Hancock county, on the southern edge of the metamorphic. This line is parallel with the Savannah river, the various trap dikes, the greater part of the main water-divide of the state, and the Florida peninsula, and also marks the eastern edge of the Oconee and Ocmulgee basin.

On the eastern side of the state the gray gneisses prevail with belts of granitic outcrops, all having southwestern trends. In Franklin county hornblende gneiss covers nearly the entire county, but afterward, in its southern deflection through Jackson, Clarke, Oconee, Morgan, and other counties, its width is much contracted, and biotite gneiss, with some mica-schists, are intermingled with it.

In the western part of the state gray gneisses and mica-schists again predominate, the hornblendes occurring only in very narrow belts, except in the counties of Carroll and Troup, where their width is great enough to make definite areas of red land.

The agricultural divisions of the metamorphic, as marked out on the map, show very well the general outline of the strikes of the rocks, except in the northwest, where the general prevalence of "gray sandy lands", without intermixture of the "red belts", prevents the representation of the southerly strikes that occur along the eastern border of the Palæozoic of northwestern Georgia.

The Chattahoochee river, in its course through the metamorphic region, has also marked the general strike of the rocks of the section through which it flows, for it lies between the strata throughout almost all of its length, bending around with them to West Point, on the west of the granite region, but afterward cutting across them to Columbus. Occasionally it has been turned across some stratum that offers but little resistance, but it soon again resumes its course with them.

The central granite region, above alluded to, is a prominent feature of the metamorphic division of the state. Its area is narrow on the northeast, becomes very wide on the south of Atlanta, again narrow on the southwest, and continues thence southward to Thomaston, in Upson county, and how much farther is not definitely known.

Pine mountain, which forms a part of the southern boundary of Meriwether county, is a high ridge, composed mainly of heavy-bedded sandstone, dipping north 15° west. It is overlaid on the north by talcose slates and a stratum of itacolumite (very flexible at Warm Springs), which branches off to the northeast in the eastern part of the county. The anticlinal of this sandstone ridge is found a few miles to the south, forming Oak mountain (which terminates abruptly on the west near Hamilton, in Harris county), while between the two ridges there is a broad valley, in which are outcrops of granites and quartz masses. The trends of these ridges present but little irregularity to the eastward until Flint river is crossed, when Pine mountain turns abruptly northward and seems to be broken up into a number of sandstone hills with no regularity of position, while Oak mountain is lost in a rough and broken country.

On the east of the state, as well as along the southern border of the metamorphic, are other granitic areas, terminating, so far as known, near the Oconee river, the large belt of stratified gneisses and schists passing southward between them and the central granite region. The granites along the southern border of the metamorphic differ from those mentioned in having coarse crystals of a pink feldspar and in being more highly siliceous, and hence less subject to disintegration.

Triassic.—This formation probably includes the trap dikes of the metamorphic region, and also the clay slates that occur along its border. The trap dikes are most numerous on the east of the central granite region, but beyond the fact that they are apparently the same in character throughout and have the same general strike of north 15° west are not deserving of special mention, being with one or two exceptions small and not continuous. On the west of the granite region there occurs the largest dike in the state. Beginning in the northern part of Coweta county, it passes slightly east of south through Meriwether, and, cutting its way barely through the top of Pine and Oak mountains, continues, via Talbotton, to the sand-hills near Geneva, in the southern part of Talbot county. Its width is several hundred feet, and its outcrop is continuous and accompanied by occasional granite bowlders. Its course, as well as that of nearly all the other dikes, is parallel with the main Atlantic and Gulf water-divide from Atlanta southward.

Along the lower line of the metamorphic *clay slates* are occasionally found resting directly upon the gneisses, and are unconformable to them both in strike and dip, the latter being almost vertical. So far as known, they cover but a small area in the state.

The border region of the metamorphic.—This region is characterized on the surface by sand-hills, which overlie clays and sands, the accumulation of the disintegrated material of the metamorphic rocks, as shown by the beds of kaolin, associated with mica and occasional pieces of feldspar, hornblende, and other minerals, and also by the pink clays found just below the falls of Chattahoochee river at Columbus. These pink clays also underlie the town of Gerard, on the Alabama side. The metamorphic strata suddenly disappear along almost the entire line, and wells dug 75 or 100 feet deep, in valleys whose level is below that of the metamorphic and not a great distance from it, fail to strike them.

The region is from 10 to 15 miles wide, lying between the metamorphic on the one side and the Cretaceous and Tertiary hills on the other. Its altitude is from 400 to 600 feet above tide (highest between Macon and Milledgeville) and from 200 to 400 feet above the river. The sand-hills are most prominent along the line of the metamorphic—often much higher than the adjoining portions of that region—and fall in elevation to the foot of the Cretaceous and Tertiary hills on the south. Ferruginous sandstone caps the hills, but water-worn drift pebbles are found only along the streams, the beds gradually thinning out as they recede from them. The belt is mostly a long- and short-leaf pine region with scrub undergrowth, though there are occasional isolated spots of red lands of the Tertiary found mostly along its northern limit, which are apparently but the remnants of what were once continuous beds. Thick beds of a conglomerate of coarse grit, mica, clay, kaolin, and the very friable “recomposed granite” of Lyell occur all along the belt, outcropping either on hillsides or in the beds of streams and underneath the sands.

In brief, it would seem that the Cretaceous and Tertiary beds that probably once occupied the western and eastern portions, respectively, had been simultaneously washed away by drift floods, leaving here and there a few isolated high points (as at Rich Hill, Houston county), and that in the trough thus formed there had subsequently been deposited these great beds of clays and sands, with thickness and height greatest along the immediate metamorphic border. Yet this view is not without its difficulties, for in many localities we find the sand-hills rising suddenly high above the metamorphic border, and either sloping gradually southward to the general surface of the Tertiary, oak, hickory, and pine region (as in Taylor county), or to the foot of a bluff (75 or 100 feet high) of exposed strata of Tertiary limestone marls and clays.

Cretaceous.—This formation covers but a comparatively small area in Georgia on the west, and is the eastern termination of that broad belt which forms so prominent an agricultural feature of middle Alabama and northeastern Mississippi. On the Chattahoochee river it reaches from Columbus southward to a point one mile south of the mouth of Pataula creek, in Clay county. From this point the eastern limit of exposure is along that creek northeastward to the mouth of Hodchodkee creek, and thence northward into Stewart county, 6 miles west of Lumpkin, the county-seat; thence it bends around eastward, passing 7 miles north of Lumpkin and 5 miles north of Ellaville, to the northeast corner of Schley county, where the formation disappears.

In its surface features it differs from the region in the other states in a total absence of the black prairies and of any outcrop of the rotten limestone. The beds are covered almost throughout by red clays and deep white sand, forming a rolling and well-timbered country. Passing southward along the river, from the metamorphic rocks at Columbus, we find, at first, beds of plastic and purple clays (exposed only for a short distance). Near the mouth of Upatoi creek, 8 miles south of Columbus, blue micaceous sands and clays form abrupt bluffs along the river for a number of miles, and, dipping to the southwest at a slight angle, are overlaid by heavy and yellow clays more or less fossiliferous, and probably the representatives of the rotten limestone group. At Georgetown, Quitman county, and thence to the border of the Tertiary, the highly fossiliferous beds of blue marl and thin ledges of limestone of the Ripley group are exposed along the river bank and preserve the same slight southwest dip. Their most interesting point of exposure is at the "narrows" of Pataula creek, in Clay county. The most valuable feature of the Cretaceous marls is the bed of greensand clays which outcrops in the bluff of the river, 25 feet thick, for a distance of 15 or 20 miles from Rood's bluff, in the southwestern corner of Stewart county. The marls of the formation are not rich in lime, though some contain many fragments of bone, and especially of the large fossil turtle, *Emys*, the shells of two of which, almost entire, were found near Chimney bluff, Stewart county.

Tertiary.—The Tertiary beds underlie the rest of southern Georgia, and are covered largely by the Quaternary deposits of sands and clays on the south and east. The geological group most largely represented is the Eocene; but the Miocene and Pliocene also occur on the southeast. The Claiborne, Jackson, and Vicksburg groups of the Eocene are all present, but their different areas have not been fully defined as yet.

Eocene: The rock found directly overlying the Cretaceous marls on the Chattahoochee river is the white limestone of the Claiborne group, which outcrops along the banks of the river for many miles south of Fort Gaines, and has a slight dip to the southwest. The rock is at first hard and compact, but in the upper portion is very friable, and is composed largely of fine corals. Over it, as seen in the bluff at Fort Gaines, are blue and yellow fossiliferous clays, with some lignite, and finally a deposit of red clayey loam 50 feet thick, containing in places siliceous fossils. The age of both clay and loam is unknown.

Section of bluff at Fort Gaines, Clay county.

Red loam	feet..	50
Layer of <i>Ostrea compressirostra</i> (?)	inches..	18
Light yellow-clay marl, with a few broken fossils	feet..	15
Blue, compact, pyritous clay	do..	8
The same with casts of fossils	do..	2
Blue fossiliferous and compact clay marl	do..	25
Clay, with nodules	do..	4
Yellowish shell marl	do..	3
White friable limestone or marl, with ledges of hard limestone, disappearing below the water	do..	15

This lower bed of limestone extends across the state, outcropping probably with the Vicksburg beds at Silver and Shell bluffs, on the Savannah river, as well as on the banks of all the larger streams and in exposed bluffs. Its northern limit is marked by that of the oak, hickory, and pine division on the agricultural map.

The following section of strata at Shell bluff, on the Savannah river, near the Boggy Gut creek, Burke county, was taken by Mr. M. T. Singleton, formerly of the state survey:

Section at Shell bluff, Burke county.

1. Red-loam hill-tops	feet..	15 to 25
2. White sandy marl, coarse sand, and oysters, <i>O. Georgiana</i>	feet..	10
3. Coarse drift and shell fragments	feet..	2
4. Shell bed, <i>O. Georgiana</i>	feet..	13
5. White sandy marl	feet..	60
6. Indurate marl, with casts of small shells	feet..	2
7. White sandy marl	feet..	6
8. Indurate marl, with casts of shells and few <i>Ostrea selliformis</i>	feet..	3
9. Hard yellowish white marl	feet..	4
10. Oyster bed, <i>O. selliformis</i>	feet..	1
11. Hard marl	feet..	5
12. Oyster bed, <i>O. selliformis</i>	inches..	6
13. Hard yellowish-white marl	feet..	10
14. Fine yellowish sandy marl	feet..	6
15. Yellowish-white clay marl	feet..	2
16. Indurate marl, with shells	feet..	2
17. Whitish-gray clay marl (to water)	feet..	15

The upper portion of this bluff, which contains the *Ostrea Georgiana* beds, is of the Vicksburg group, while the lower portion, including perhaps stratum No. 5, is of the Cleburne. The intermediate Jackson has not been recognized.

The red loams, sometimes with siliceous fossils, cap the hills along the upper line throughout the region, while the white limestone mentioned is always found at their base. Between the two (limestone and siliceous fossiliferous loams), in the central counties, are found beds of greensand clays 2 and 3 feet thick and well-preserved Eocene fossils (not determined). Throughout the region the relative position of the beds is about as follows:

1. Red-clay loams from 15 to 25 feet thick, with siliceous fossils and buhr-stone sometimes capping the hills.
2. Bluish and yellow marls, greensand clays in beds from 2 to 3 feet thick, or sometimes pipe-clay.
3. White friable limestone (Claiborne), with small corals, Pecten, and large numbers of clypeasters.
4. Cretaceous (only on the west) or metamorphic beds, or beds of white clays and sands.

The area occupied by these Eocene beds is very wide on the west, extending into Florida, and including the agricultural divisions of "lime-sink" and "southern oak and hickory lands". Limestone of the Vicksburg group underlies the latter.

Siliceous: The buhr-stones, opals, and siliceous shell rocks of the Tertiary seem to belong to no particular group, but extend over almost the entire Eocene formation, and present one of the most prominent features of the region. On the Savannah river, in Burke county, they form beds at Stony bluff, near the Screven county line, where they are found on the edges of large ponds in beds from 8 to 10 feet thick, or in scattered fragments on the surface of the country. The siliceous shells are found embedded only in the red clays that border the upper part of the oak and hickory upland division.

In Washington county opal (common and fire) is found in the clay stones. On the east of Macon, Bibb county, on the line of the metamorphic, the siliceous rocks form high and thick beds, with great numbers of opalized fossils, including *Venericardia planicosta*, in an excellent state of preservation. These beds overlie white limestone.

In Sumter and counties on the southwest the rocks are in great abundance. It is noteworthy that along the northern limit of the region they are in the form of flint, and are often studded with crystals of quartz, while southward, in the wire-grass region, the rock is softer and more fossiliferous, decomposing to a soft powdery silica, either red or white in color, still overlying the white limestone. (This variety of the rock is also found on the east, in Burke county, where Lyell found it to be full of silicified corals, fine shells, and sponges.)

Still southward, in the southern oak and hickory uplands along the Florida line, in Decatur county, the rock does not appear; but in Thomas county, to the eastward, there are quantities of silicified coral columnar in form and compact. On the Withlacoochee river are found claystones and beautiful chalcedonic forms, and under them the still soft siliceous material, which hardens after long exposure.

This, in brief, gives the general features and changes in the siliceous rocks of the Eocene. The fossils they contain have not yet been determined, as but few have been found, except at Artopee's quarry, near Macon, where the variety is great, comprising the well-known *Venericardias*, *Oliva*, *Dentalium*, etc.

The region covered by these siliceous rocks is widest in the western part of the state, extending from the Florida line northward to Americus, in Sumter county. Its eastern and southern limits are marked by the line which forms the limit also of the lime-sink agricultural division and of the southern boundary of the oak and hickory uplands on the northeast to Screven county, which it also includes, and passes thence into South Carolina. In the central counties the rock is not very abundant.

Miocene, or Grand Gulf: Included between the Savannah river and the Atlantic and Gulf water-divide there seems to have been once formed a large, shallow basin, which is now filled with a sandstone composed for the most part of coarse angular grit and clay partly cemented with silica and resembling in character the Grand Gulf sandstone of the Gulf states. The area is marked on the map by the deep-green color of the pine barrens region, whose soils overlie the formation. The rocks have a slight dip to the southeast, and have been traced by Captain M. T. Singleton (now of the United States engineer corps, engaged in river improvement) for 60 miles along Oconee river, and he estimates the thickness to be 200 feet. Outcrops have been observed in Irwin, Dodge, Ware, and other counties. Paramore's hill, in the western part of Screven county, is of this sandstone, which here has a thickness of 50 feet or more. Its grains of quartz are partly clear and translucent and partly white and opaque, and the rock is highly aluminous.

The southern limit of the sandstone is apparently at the edge of the second terrace, near the coast and along the Satilla river north of Okefenokee swamp, but the formation (represented by blue clays underlying the sandy lands) extends probably still southward, including in its area the country near the Florida line between Allapaha river east to the ridge on the eastern side of the swamp—a part of the main Atlantic and Gulf water-divide of the state.

That the swamp is underlaid by these impervious blue clays there is but little doubt (for they occur in the adjoining country), though its immediate bottom is of white sands. There is no visible water supply except the heavy rains, yet water remains over its surface the year round with a depth of from 4 to 6 feet. Drainage is to the west and south, but the streams are very slow in movement and effect but little. To all appearances this swamp, situated as it is on the uplands, 120 feet above tide-water, is but a basin formed at the time of the uplift that produced the Atlantic and Gulf water-divide, which incloses it on the north, east, and south. This basin has been slowly filled with water, its evaporation being prevented by the dense growth of moss, which is yearly increasing and as rapidly decaying below, and the formation of muck or peat, whose retentive power for water is very great

Pliocene: The savanna region along the coast, which occupies the first terrace at an elevation of from 10 to 15 feet above tide-water, is assigned to the Pliocene formation. Marls or shell beds of this age are found on the Savannah river near the Effingham and Chatham county-lines.

On Satilla river a white marl bed outcrops at Burnt Fort, the head of tide-water, which is mostly devoid of fossils.

In the sand and clay beds of this coast region, in Glynn, Chatham, and other counties, have been dug up the remains of extinct gigantic quadrupeds, such as the mastodon, and along its borders are the buried stumps of cypress and other trees still standing upright. Live oak is a prominent growth of the region adjoining the marshes.

Quaternary or southern drift.—This formation consists of irregular deposits of sands and clays and ferruginous sandstones over the older strata. In Georgia they are confined exclusively to the southern half of the state, the belt of sand-hills or metamorphic border region being the most northerly deposit as well as the main representative body of drift in the state. Exclusive of this belt, they are heaviest on the western side of the state, especially over Clay, the upper parts of Randolph, Webster, Sumter, and counties north of these. The sands are white and deep, and overlie variegated clays, mostly plastic. To the south these beds occur now and then, but are not so prominent.

On the east of the water-divide the drift beds are confined almost entirely to the oak, hickory, and pine division, or Eocene territory. There are a few isolated sand and pebble beds in the pine barrens, and beds of white sand, with a scrub growth, have been observed on the eastern side of some of the streams in the region. One of these, two miles wide, occurs on the eastern side of Alligator creek, in Montgomery county, about 25 feet above the stream, and lying parallel with it.

DRAINAGE.—It will be seen by a glance at the map that all of the rivers of the southern three-fourths of the state flow south or southeastward, while across their headwaters the Chattahoochee river has a course at right angles to them southwestward from near the North Carolina line, on the northeast, to Alabama. North of the Chattahoochee basin the course of the stream is generally westward.

Two general divisions are recognized, viz, the Atlantic and the Gulf, with their respective tributaries. The divide between these two is formed at first by the Blue Ridge as it enters the northeastern corner of the state; then, as it turns south and southwestward, it follows Tallulah mountain and Chattahoochee ridge along the south side of the Chattahoochee river to Atlanta; thence it turns southeastward across the granitic area between the tributaries of the Flint and Ocmulgee rivers to Irwin county, and thence between the headwaters of the Satilla and Withlacoochee rivers (here near each other), in Irwin county, to the region of the Okefenokee swamp, in Clinch, where the country is very level. All the streams that enter this swamp on the north unite and form the Suwanee river, which flows out on the western side. The divide proper extends thence eastward along the north of the swamp, then turns abruptly south, forming a low sand ridge along its eastern side, and then again bends southwestward around the headwaters of the Saint Mary's river into Florida (to "Trail's ridge"), thus forming the north, east, and south rims to the swamp basin.

The courses of the two streams, the Satilla and Saint Mary's, are peculiar. They flow in nearly parallel eastward directions for a short distance on the north and south of the swamp, then suddenly turn and approach each other on the same line to within a few miles, and as suddenly and abruptly turn to the ocean.

This Atlantic and Gulf water-divide is not properly a ridge throughout its length, but as a general rule is only a slightly elevated region with a somewhat rolling surface, whose ascent is so gradual that its importance in the drainage system of the state would not be suspected. The area occupied by the Gulf shed is the larger, covering about three-fifths of the state.

The streams of the Atlantic water-shed are very regular in their parallel courses southeastward, each having its own system of tributaries and emptying independently into the ocean, excepting the Oconee and Ocmulgee, which unite to form the Altamaha. The Savannah basin is very narrow, especially on the south.

The Gulf water-shed comprises a number of different river systems. The *Tennessee basin*, included between the Blue Ridge on the southeast and the mountains of Fannin and Gilmer counties, comprises an area of 850 square miles. On the southern slope of the Blue Ridge the two distinct basins of the Chattahoochee and Etowah rivers have their heads side by side with but a narrow ridge between, the former trending southward for a short distance and suddenly turning westward, while the latter lies along the foot of the ridge westward to Rome, where it unites with the Coosawattee basin, from which it has been separated by the continuation of the Blue Ridge. These two streams form the head of the *Coosa basin*, whose area in Georgia comprises 6,020 square miles. This includes the Tallapoosa River division, which in Georgia is distinct and separated from the main basin by the Dug Down, Kenesaw, and Sweat mountains and intervening uplands.

The *Chattahoochee basin* has a greater length than any other in the state—nearly 450 miles. Its head is in the corner formed by the Blue Ridge and the Tallulah mountains, and thence it extends across the metamorphic region in a southwesterly course to West Point, with a width very narrow, sometimes only 15 miles, thence southward to the Gulf. The ridge separating it from the Etowah and the Tallapoosa basins is so low as to be almost imperceptible, and the tributaries of each basin interlock very generally. On the south it is separated from the Atlantic water-shed by the main water-divide, which approaches very near the river, until it turns southward from Atlanta. Here, however, the Chattahoochee ridge, which to this point is the chief divide, continues in the same southwestward course to Newnan, in Coweta county, and thence, turning southeastward and parallel to the former,

forms the western rim to the Flint River basin as far south as the sand-hills. Thence southward the basin of the Chattahoochee is very narrow, while that of the Flint is wide, draining the largest part of the territory of the southwest.

NAVIGATION.—The Savannah river has long been open to light-draught steamboat navigation as far north as the shoals near Augusta. A canal 9 miles in length connects with the river above the shoals, and flat-boats laden with cotton and other produce are thus enabled to reach the city from the counties northward as far as the mouth of Broad river, a distance of 100 miles, or 350 miles from Savannah.

The Ogeechee river is navigable but for a short distance from the coast. The Altamaha is the largest river of the state; steamers run regularly as far northward as the Central railroad bridge on the Oconee, in Washington county, and to Hawkinsville, Pulaski county, on the Ocmulgee, each about 340 miles from Darien.

The Chattahoochee river is navigable to the falls at Columbus, Muscogee county. The channel is being deepened and improved in the removal of the marl beds and other obstructions north of Eufaula by United States engineers. Steamboats ascend Flint river as high as Albany, Dougherty county.

Saint Mary's river is navigable as far as Traders' Hill, and the Satilla to Burnt Fort, the heads of tide-water. Lumber, rosin, and turpentine are the chief exports by sloops from stations along these streams.

The Coosa, in Georgia, is all navigable, and boats ascend the Oostanaula, its tributary, 105 miles from Rome.

The islands along the coast afford safe and good coasting facilities between Savannah and Florida ports.

Tide-water reaches inland along the various streams from 20 to 40 miles, and large vessels easily reach the city of Savannah.

LAND DIVISIONS.—The proprietary land divisions of Georgia, being different from those of other states, the following, from the *Hand-Book of Georgia*, is given as a matter of interest:

Head-rights.—Originally in Georgia land was held in what was called in law "tail male", but this policy was changed at an early period. An act was passed in 1777 for opening a land-office and to encourage immigration, granting to every free white (the head of a family) 200 acres of land, and 50 acres for each member of the family (including negroes), not exceeding ten in number. This was the first *head-right* law; but the war of the Revolution being then in progress, it failed of its purposes.

In 1780 it was renewed, and the land-office was located in Augusta. After the war much of the legislation had reference to thus settling the state.

The head-right country includes all the territory south of Franklin, Banks, and Jackson counties and east of the Oconee river, and was all acquired from the Indians before the Declaration of Independence.

Indian treaties.—After the revolutionary war the remaining portions of the state were acquired by successive treaties made by the federal government with the Indians, the northwestern part being finally acquired in 1819. The land thus acquired was distributed by successive lotteries among the free white male citizens of the state over eighteen years of age. Every such citizen who had not previously drawn, was entitled to one ticket; if a husband or father, to two tickets; and certain officers and soldiers, to two. Widows and orphans were included in the distribution.

The lands taken up by head-rights were wholly irregular in form, each man pursuing his own taste in shaping the land selected and varying the lines to include the best lands. The remaining portions of the state distributed under the lottery system were regularly surveyed and divided into sections and subdivisions of districts and lots.

The details of the division of lands under successive lotteries from 1805 to 1833, and in different districts, varied considerably. The lots for each ticket had 202½ acres more frequently than any other number. Some districts were divided into lots of 490 acres each, while still others were divided into lots of 250 acres each. In the seventh lottery, in 1833, the lots were 160 acres each; and in the eighth, known as the Gold lottery, in which lands in the mineral region were distributed, the lots were 40 acres each.

AGRICULTURAL FEATURES.—The state is naturally divided into the following agricultural regions and their respective subdivisions, which will be separately described in detail:

- I. Northwest Georgia:
 1. Gray sandy lands of the metamorphic border.
 2. Flatwoods.
 3. Red-clay lands.
 4. Gray siliceous soils of the ridges.
 5. Brown and red loams.
 6. Yellow-clay lands.
 7. Sandy table or mountain lands.
 8. Alluvial lands.
- II. Metamorphic or mineral region (Blue Ridge or northern, middle and southern):
 1. Gray sandy lands.
 2. Red lands.
 3. Gray granitic lands.
 4. Flatwoods.

III. Central cotton belt.

1. Sand and pine hills, or border region.
2. Oak, hickory, and pine uplands.
3. Red-clay hills.

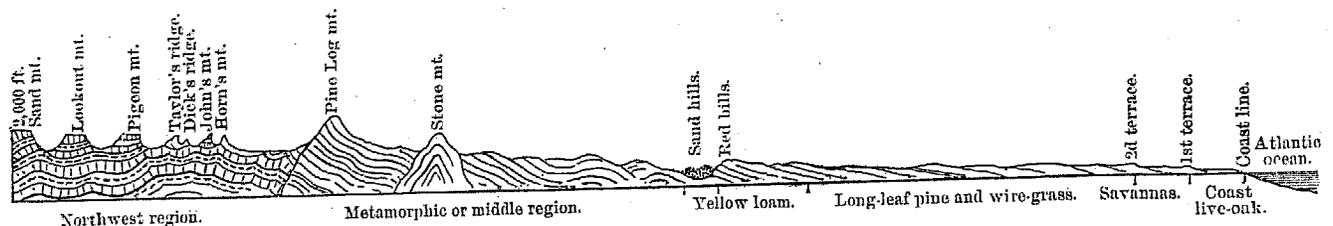
IV. Long-leaf pine and wire-grass region.

1. Limesink or clay lands.
2. Sandy pine barrens.
3. Pine and palmetto flats.

V. Coast region.

1. Savanna lands.
2. Live-oak and coast lands.

To give a general idea of the state in brief, before entering upon the detailed descriptions, the following section is given from the coast to the northwestern corner, accompanied by a short description of the country passed over:



Section showing elevation from the northwestern corner of Georgia to the Atlantic ocean. Distance about 375 miles. Altitude of Pine Log mountain, 2,347 feet.

GENERAL VIEW OF THE STATE.—The islands cover a width of 10 or 12 miles, with sand-hills seaward and marshes and live-oak lands inland. On the mainland the marshes, with live-oak lands, extend back for a few miles to the open savanna belt, which occupies the first terrace above the coast marshes and is a level plain, covered with palmetto and long-leaf pine, and interspersed with bay and gum swamps. Uniformity in character exists for 10 or 15 miles to the foot of the second terrace. This rises from 15 to 25 feet, and with it the wire-grass region begins. Its surface, at first undulating, has an open growth of long-leaf pine, with little or no undergrowth, except wire-grass. These pine barrens extend northwestward about 100 miles, and gradually rise to the altitude of 365 feet. As we pass northward over this region the loamy soils become perhaps more sandy, though still firm, and the country becomes somewhat more rolling, the monotony being varied only by cypress ponds, gallberry flats, and occasionally by a stream with its annually overflowed bottoms.

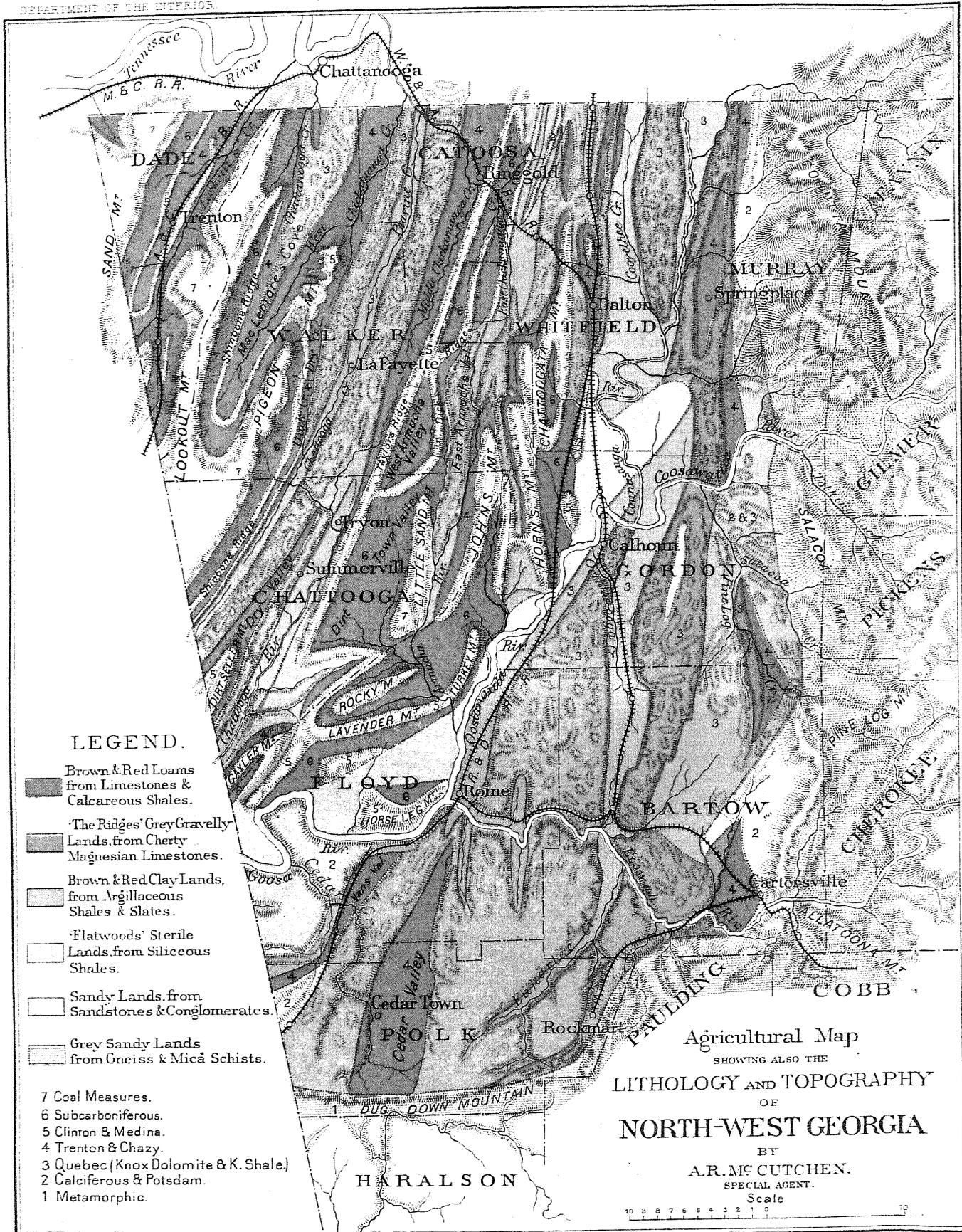
The central cotton belt, or yellow loam region, is to the northward. Long-leaf pine is at first most prominent, but gradually thins out to the north, being replaced by the short-leaf variety. The surface of the country, level at first, becomes more and more rolling, and boulderstone lies in fragments on the ground, limestone crops out in the streams, and wire-grass disappears entirely. Oak and hickory are prominent.

The soil, sandy at first, with yellow clay subsoil, becomes more clayey northward; the country also rises to an elevation of 500 feet, and in some places to 600 feet, to the summits of the red clay hills (150 miles from the coast), a rise of over 150 feet in 30 miles. Still northward from this yellow loam and oak uplands belt the sand and pine hills, with their pine and black-jack, are crossed. At first the land is lower than that of the red hills, but rises to a line of hills from 500 to 600 feet above the sea. Red clay lands, isolated, and similar to those on the south, are found on the northern edge of the belt, which here is only from 12 to 15 miles wide. The three divisions form parallel belts, and extend from the Savannah to the Chattahoochee river diagonally across the state.

With the northern edge of the belt last described the metamorphic or mineral division of the state begins, and presents a rolling, broken, and often hilly surface. Soils varying from gray sandy to red clayey, gravelly and rocky, occur in belts of every width, and rocks peculiar to the section, hornblendic and gray gneiss, outcrop in place or are found in fragments on the surface.

The growth is of great variety, the chief trees being oaks, hickory, chestnut, poplar, and pine. The elevation gradually increases toward the broad central granite region and beyond to Atlanta, where the altitude is 1,050 feet above the sea, and on Stone mountain 1,686 feet. Thence the country falls to 760 feet at the Chattahoochee river; but from there the altitude increases, until it reaches a maximum of 2,347 feet on Pine Log mountain, on the eastern side of Bartow county, and at the northwestern border of the metamorphic region, in all about 125 miles from the sand-hills. On the northeast the rise from the Chattahoochee river is still greater to the top of the Blue Ridge, a maximum of 4,796 feet, and thence falls to the Tennessee line, a distance of about 150 miles from Macon, on the southern border.

Bordering the metamorphic on its northwestern limit are ranges of hills having various names and a general trend southward from the Tennessee line to the Etowah river and the southeastern corner of Bartow county, and thence westward to the Alabama line. These ranges are metamorphic in character, and are higher than the northwestern



LEGEND.

-  Brown & Red Loams from Limestones & Calcareous Shales.
-  The Ridges' Grey Gravelly Lands from Cherty Magnesian Limestones.
-  Brown & Red Clay Lands from Argillaceous Shales & Slates.
-  Flatwoods' Sterile Lands from Siliceous Shales.
-  Sandy Lands from Sandstones & Conglomerates.
-  Grey Sandy Lands from Gneiss & Micà Schists.

- 7 Coal Measures.
- 6 Subcarboniferous.
- 5 Clinton & Medina.
- 4 Trenton & Chazy.
- 3 Quebec (Knox Dolomite & K. Shale.)
- 2 Califerous & Potsdam.
- 1 Metamorphic.

Agricultural Map
 SHOWING ALSO THE
 LITHOLOGY AND TOPOGRAPHY
 OF
 NORTH-WEST GEORGIA

BY
 A. R. MC CUTCHEN,
 SPECIAL AGENT.

Scale
 10 9 8 7 6 5 4 3 2 1 0

Georgia region, not excepting its mountains. From the tops of these ranges we overlook the region popularly known as "Northwest Georgia", whose surface is prevalently characterized by abrupt ridges (mostly synclinal), consisting of folded Palæozoic rocks, varying from sandstones, shales, and cherts to limestones, with a general trend south-southwest and with broad agricultural valleys.

NORTHWEST GEORGIA. (a)

The region of northwest Georgia extends from the Cohutta, Pine Log, Allatoona, and Dug Down mountains to the Alabama and Tennessee state lines, and embraces an area of 3,360 square miles, including the counties of Dade, Walker, Catoosa, Whitfield, Murray, Gordon, Chattooga, Floyd, Bartow, and Polk. The lands, usually well characterized by the geological formations to which they belong, are found to change and alternate at every few miles in crossing the trend of mountains and valleys, and these changes are usually quite apparent in the natural growth of the country and in the color, relative fertility, and adaptation of soils. The great variety of soils, together with a diversity of climate, due to the varying altitudes of this country, render it suitable for the successful culture of perhaps every agricultural product of the temperate climate.

TOPOGRAPHY.—The country is banded by a number of mountains, ridges, and valleys, extending with a general parallelism in an approximate northeast and southwest direction, approaching nearest to north and south in the eastern part of the division, and with divergent mountains running nearer to east and west in the southern and central portions. Sand, Lookout, and Pigeon mountains, in the northwestern corner of the state, are synclinal table-lands belonging to the Alleghany coal-field. These vary in altitude from 800 to 1,200 feet above the adjacent valleys, and are usually trough-shaped on the top, having somewhat elevated borders along their brows and precipitous sides, marked by perpendicular sandstone bluffs. These mountains have an area on the top of rolling and often nearly level sandy lands amounting in the aggregate to 200 square miles. Lookout mountain is separated from Sand mountain on the northwest by Lookout valley, which has a width of 3 or 4 miles, and extends from Alabama across this part of the state into Tennessee. Pigeon mountain is an easterly spur of Lookout mountain, giving rise to a V-shaped valley, which widens out toward the north, and is known as McLemore's cove. These mountains are bordered throughout most of their extent by steep sandstone ridges of from 100 to 300 feet in height, giving rise to narrow valleys around their bases. These ridges are a constant feature of the table-land mountains, and occur everywhere in this relation to them, except where they have disappeared by erosion. About the central portion of Pigeon mountain, where the table-land feature is lost with the disappearance of the sandstones and conglomerates from its summit, the ridges on each side merge into the main mountain, and with it form the broken and knobby region terminating the range. These are known in Walker and Chattooga counties as shinbone ridges, and in Dade county as pudding ridges.

East of Lookout and Pigeon mountains, at distances of from 10 to 20 miles, is another series of mountains extending nearly centrally across this division of the state. These are mostly sharp topped, and have altitudes of from 500 to 1,000 feet above the surrounding valleys. White Oak mountain, Taylor's ridge, and Gaylor mountain extend in a direct line across this part of the state, only separated from each other by narrow gaps. To the east of these mountains, either in interrupted parallel ranges or divergent spurs belonging to the same system of elevations, are Dick's ridge, Rocky Face, Chattoogata, Horn's, John's, Little Sand, Rocky, Lavender, and Horse Leg mountains. Little Sand mountain and Rocky mountain are table-lands of small extent belonging to the Coosa coal-field. The surrounding sharp-crested mountains here bear the lithological relation to these table-lands that the shinbone and pudding ridges, before described, bear to Sand, Lookout, and Pigeon mountains on the northwest.

Next on the east are the Cohutta, Salicoa, Pine Log, Allatoona, and Dug Down mountains, constituting a single range, and extending around the eastern and southern boundary of this division of the state, being, in fact, the eroded escarpment of an elevated plateau that lies to the southeast of this region. This feature of the range is quite apparent in Polk county, where the brow of the escarpment is but 500 or 600 feet above the valleys on the northwest and corresponds to the general level of the country to the south; but in the northern part, especially in the Cohutta mountains, where the altitude is much greater, it is cut up by coves and ravines, so that mountains are encountered in all directions for a distance of 10 or 15 miles between the base and the summit of the escarpment.

To recapitulate: The ranges in this division of the state may be designated by the most prominent mountains of each, as (1) the Lookout range, on the west; (2) the Chattoogata range of the central portion of this region; and (3) the Cohutta range, on the eastern and southern border. Intermediate between these mountains are a number of chert and sometimes sandstone ridges, rarely exceeding 200 or 300 feet in height. The sandstone ridges are generally narrow, while the cherty ones form knobby belts of from 1 mile to 10 miles in width. These alternate with shale and limestone valleys, thus subdividing the areas between the mountains into somewhat narrow belts, with topographical and agricultural features varying with these lithological characters. The valleys range in altitude from 500 or 600 to 1,000 feet above the sea, the elevation being greatest about the divide between the waters of the Tennessee river on the north and the Coosa river on the south.

^a The description of Northwest Georgia, from pages 19 to 29, is by A. R. McCutchen, of La Fayette, Walker county, special agent, formerly assistant state geologist.

WATER-DIVIDE.—The water-divide extends in a zigzag line across both mountains and valleys from about the southeastern corner of Dade across the county of Walker, and to the northern line of Whitfield, where it passes into the state of Tennessee. There is a general depression in the level of the country toward the southwest from this divide corresponding in direction with the trend of the mountains, while the fall in the direction of drainage toward the north to the Tennessee is confined to the valleys in which the streams flow, the mountains in general maintaining about the same elevation above the sea. The streams near the water-divide have a fall of from 20 to 40 feet per mile, but this decreases rapidly as they approach the Tennessee and the Coosa rivers.

Most of the valleys, and generally those of greatest width, belong to anticlinal folds, and owe their present dimensions, if not their existence as valleys, to extensive erosion that has followed the folding and elevation of the strata. Along some of these folds the existing rocks indicate the removal of at least 10,000 feet of strata; but the erosion in synclinal valleys has not gone to so great an extent, and in some of these there is evidence of the disappearance over considerable areas of about 1,500 feet of strata.

CLIMATE.—The annual mean temperature in this part of the state varies, according to locality, from about 50° to 60° F. The regions of lowest temperature are about the Cohutta mountains, in the northeast, and on the table-lands in the northwest, where the altitudes range from 1,800 to 3,000 feet above the sea, and that of the highest temperature in the valleys of the southern and central portions. This difference of climate is due, in part, to a difference of about one degree of latitude between the northern and the southern limits of the region, but in a much greater degree to the general features of the country, mainly to the difference of altitude, and again to the general direction of the slope, which is toward the south in the central and most of the southern portions, and toward the north in the northwestern and northeastern portions. These influences all combine to give a warmer climate to most of the valleys drained by the Coosa river and its immediate tributaries.

In the extremes of temperature the thermometer seldom rises above 90° F. in the summer or falls below 20° in the winter. Vegetation usually starts some time in March, and there is a difference of about a week in this respect between the more northern and the more southern counties, giving to the latter an earlier time for planting and a somewhat longer crop season. Severe frosts rarely occur after the first of April, and about six months usually elapse between the latest frosts in the spring and the earliest in autumn. Ridges and mountain slopes of 100 feet or more in altitude above the valleys are free to a greater or less extent from spring frosts, and are less subject to cold dews in spring and summer. For this reason the fruit crop seldom fails in such situations.

The climate of the table-lands differs in several particulars from that of the valleys, being much more uniform and having a lower mean temperature. From the following table a comparison may be made for the month of July, 1880. The observations were made at stations about four miles distant from each other:

	Height above the sea.	THERMOMETER.							
		Mean.	Range.			Mean of —			
			Maximum.	Minimum.	Difference.	7 a. m.	2 p. m.	8 p. m.	Daily range.
	Feet.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.
Dry Creek valley	987	77½	65	61	34	71	87	75	16
Pigeon mountain	1,988	74½	88	63	25	70	80½	73	10½
Difference	1,001	3	7	2	9	1	6½	2	5½

The Smithsonian rain charts indicate for this part of the state a mean precipitation of rain amounting for the summer to 10 inches and about the same for the winter months, with 40 inches for the entire year. The amount of rain, however, varies very much in different seasons, and also to some extent with the local features of the country, the heavier precipitations, as well as the greater number of rainfalls, occurring usually in the vicinity of the larger mountains.

During the fall, winter, and spring months continued southeast winds are usually accompanied within a few hours by clouds, and are commonly followed within thirty-six hours by a fall of rain. These rain spells often continue through two or three days of cloudy weather, with either occasional showers, or else slow and constant or drizzling rains. Rain clouds from this direction are generally dispersed by westerly or northwesterly winds, and the clearing off is usually preceded by brisk showers, accompanied by gusts of wind. Snow clouds, unlike the rain clouds in winter, come from a northwest direction. Snows, however, are comparatively unusual, and the winter season very often passes without a snowfall that lies on the ground. A snow of six inches depth, or one that covers the ground for more than two or three days in the valleys, is unusual; but on the mountains snows are somewhat more frequent.

Southeasterly winds in the summer season are not so commonly accompanied by rain clouds as in the cooler portions of the year, but the vapor with which the atmosphere is charged, mainly from this source, is condensed

into clouds usually by cold winds approaching from the northwest. Thus the summer rains, and particularly the thunder-storms, come with clouds drifting in a direction almost the opposite of that of the winter rains. Severe wind-storms in the warm season are almost uniformly from the west.

GEOLOGY.—The geological formations embrace all of the *Palæozoic rocks* of the state, together with a part of the *metamorphic series*, bordering the former on the east and south.

The most highly crystalline of the *metamorphic rocks* in this part of the state are the hydromica and hornblende schists and gneisses, abounding in quartz veins, that constitute the gold-bearing rocks of the southeastern part of the county of Bartow. These beds are more or less pyritous throughout, and are often deeply decomposed. The country is generally broken, though rarely mountainous, and the surface is commonly covered with loose quartz rocks. These gold-bearing beds are followed on the northwest by rocks that constitute the bulk of the Cohutta range of mountains, principally graphitic hydromica schists, conglomerates, and argillites, associated in the southeastern part of the range with heavy beds of chloritic schists and porphyritic gneisses, all dipping to the east, southeast, or south.

Palæozoic series.—The metamorphic series is followed on the northwest by the Palæozoic, from the primordial to the Coal Measures, inclusive. The aggregate thickness of the groups, estimating the primordial at 8,000 feet and taking the maximum thickness of each of the higher groups, amounts to about 20,000 feet. These strata are made up principally of sandstones, shales, and limestones. The siliceous rocks, including the sandstones, the siliceous shales, and the cherty beds associated with some of the limestones, are greatly in excess of the other materials, making up perhaps one-half of the entire thickness, while the argillaceous beds, or such as are composed largely of clay, are somewhat in excess of the limestones; but in the upper half of the series these materials are more nearly equal.

Silurian.—The Lower Silurian begins with a prevalence of sandstone and conglomerates, graduating upward into argillaceous shales and limestones, so that toward the top the limestones are greatly in excess of the shales and the sandstones are found only in the Chattoogata range at the close of the Trenton. The primordial and calciferous consist of sandstones and conglomerates, argillites, siliceous shales, and siliceous limestones. These are followed by rocks referred to the Quebec group: first by about 2,400 feet of shales, and then by 5,000 feet of cherty limestones, and this again by the comparatively pure limestones of the Chazy and Trenton periods, of from 600 to 1,000 feet in thickness.

The shales of the Lower Quebec are more or less calcareous throughout, and are generally of a light-green color at the depth of the constant water-level, but at the weathered surfaces these shales are banded with various shades of color, from white to red, blue, green, and brown to black, but most commonly some shade of brown. The strata generally dip at steep angles, and always abound in closed folds and contorted laminae.

The limestone and chert of the Upper Quebec alternate in beds of irregular or rugged outline and of constantly varying thickness, the strata of one kind often including the other in great lenticular masses, but each retaining independently the traces of its own bedding. The limestone is generally dolomitic, though not always so in all its layers. The chert, which is of a dark blue color, weathers to a light gray, and more rarely to a dark gray, brown, or red. It breaks easily with an irregular fracture, and occurs on the surface in usually porous angular fragments of various sizes, rarely exceeding, or even equaling, one foot in diameter. Some of the upper beds of chert are of oolitic structure. This formation gives rise to ridges or knobby belts of country. The Chazy and Trenton groups consist of thin-bedded blue limestones, interstratified with calcareous shales, and contain some thin layers of flint or a cherty material that in some localities give a gravelly character to the soil. In Poik, Floyd, and Murray counties the character is similar, with a more uniform distribution of the cherty materials. In the Chattoogata range of the mountains east of Dick's ridge a marked change in the lithological character is observed. The rocks are found outcropping around these mountains as *red* and *dove-colored rotten limestone*, with rarely an admixture of the chert noticed as occurring elsewhere. This change may be seen in all its grades along a single outcrop at the western base of Taylor's ridge from Ringgold, where the blue limestone is found, to Cathy's Gap, in Chattooga county, in a distance of forty miles, the limestones becoming more and more argillaceous and ferruginous. The fossils that abound in the blue limestone at the same time disappear, until nearly all resemblance in character is lost. In Red Clay valley, and around Dalton, in Whitfield county, some heavy bedded fossiliferous red limestones or variegated marbles are associated with the rotten limestones.

The Upper Silurian in the Chattoogata range of mountains consists of the heavy-bedded Medina sandstone of 400 feet thickness, the Clinton sandstones and shales of 350 feet, and the Oriskany of from 1 foot to 15 feet. West of Taylor's ridge the Clinton only, with a thickness of from 200 to 400 feet, has been recognized. The Clinton group has three beds of fossiliferous red iron ore, varying in thickness from a few inches to 15 feet.

Devonian.—The Devonian rocks are, first, a black bituminous shale of from 10 to 50 feet thickness, followed by a blue shale that graduates above either into a hard siliceous limestone or into siliceous shales with characteristic geodes. The total thickness is about 200 feet.

Carboniferous.—The sub-Carboniferous is made up of two lithological groups: the lower a siliceous and cherty limestone of 200 feet, and the upper a heavy-bedded blue limestone of 400 feet thickness in some localities. The latter is generally fetid and bituminous in some of its layers. The shales, which are most abundant in the

middle portion of the series, are sandy and calcareous, and, with the loss of a portion of the lime in weathering, become porous and friable. The lower portion consists of siliceous limestones with cherty layers, and abounds in rounded flint nodules from a few inches to a foot or more in diameter. Porous cherty fragments, the result of a decomposition of these flints, are found abundantly in some of the soils. The decomposition sometimes discloses an oolitic structure not observable in the flint.

The *Coal Measures*, with a thickness of about 800 feet, consist of shales, sandstones, and conglomerates, with five beds of coal, the lowest of which is below the first conglomerate.

Dips.—As a rule, on the easterly side of the anticlinal folds the dip of the rocks is observed to be steeper than on the opposite side, so that the westerly dips approach nearer to the horizontal and the easterly dips nearer to the perpendicular, and are not infrequently overturned. In connection with this fact of the greater disturbance on the easterly side of the synclinals it is worthy to note that when the outcropping rocks give rise to a ridge or mountain that on the west is almost invariably the more prominent. Thus the Upper Silurian sandstones forming Taylor's ridge, on the west side of a synclinal trough, are on the east side exposed in a comparatively low ridge, known as Dick's ridge, and for some distance in Catoosa and Chattooga counties are swallowed up in a fault. In the next and most easterly occurrence of these sandstones, in the mountains of Whitfield, Gordon, and Floyd counties, the eastern side is faulted for their whole extent, bringing the overlying sub-Carboniferous, by a dislocation of 8,000 feet, in contact with some of the lowest groups of the Lower Silurian.

The increasing impurities in the limestones and the coarser constitution of the shales and sandstones are observed in following these from west to east. They are seen in the more argillaceous and ferruginous character of the Chazy limestones, and to a greater degree in the Trenton limestones (from which at the same time the fossils to a great extent disappear), and again in the Clinton, in which heavy-bedded sandstones and conglomerates take the place of calcareous shales and fine sandstones, with a great thickening of the beds.

These changes in the character of these sediments take place from Lookout to Chattoogata mountain, a distance of 25 miles. (a)

The table on page 23 gives the geological divisions that are represented in this region, and also the thickness of each group. The lithological features of each and of the same group vary somewhat in the eastern and western sections of the northwestern region, and it is of sufficient interest to represent this in the list by making Taylor's ridge (a prominent and sharp-topped mountain chain in the middle of the region) a dividing line and in the two columns showing the features of each group.

a There appear to be two horizons of unconformity in this part of the state. The first of these is strikingly indicated at Dug Down mountain between some of the Silurian groups and the metamorphic. The direction of this mountain is nearly east and west, and its rocks, consisting of gneiss and mica-schists, dip to the south or southeast, while the Quebec and Trenton groups approach the mountain on the north with folds trending north and south and with east and west dips. The Potsdam sandstones in Indian mountain, standing off to the northwest, show an approximate correspondence in the strike of its rocks with that of Dug Down mountain, and a like discordance with that of newer groups, which appear to cross its folds without marked evidence of disturbance. It is a remarkable fact, not corroborative, however, of the hypothesis of nonconformity, that the rocks of Dug Down mountain appear to show no flexures in correspondence with the folds in these newer rocks. This is most likely due to a great lateral dislocation here at the time of this disturbance.

The next horizon of unconformity is at the top of the Quebec group, evidenced in the relation of overlying groups to this in a number of localities, but more particularly in Dry valley, in Walker county. Here the Trenton and Clinton rocks, in an anticlinal valley or cove between Mission ridge and one of its westerly spurs, dip toward the east against the ridge, and also toward the west against this spur, passing around its terminal point, where, with the same angle of dip, it is covered by the sub-Carboniferous, also abutting against the ridge.