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MONTHLY REPORT

OF THE



DEPARTMENT OF AGRICULTURE

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*Reports*

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FOR

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## MONTHLY REPORT.

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DEPARTMENT OF AGRICULTURE,  
*Statistical Division, January 21, 1871.*

SIR: I herewith report for publication a statement of the yield and home prices of farm products, tabulated and condensed from the January statistical returns of county correspondents, with notes upon certain crops, and extracts from correspondence. I also submit a paper by the Botanist, on American Desert Flora, memoranda upon the cultivation of the Plains, and recent scientific notes bearing upon rural economy, with items from various sources, and monthly meteorological tables.

J. R. DODGE, *Statistician.*

Hon. HORACE CAPRON, *Commissioner.*

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## YIELD AND HOME PRICES OF FARM PRODUCTS.

The January circular inquires the yield per acre in each county, of the principal products of the farm, and also the average prices obtained by farmers in home markets.

## YIELD.

The most noticeable feature in the returns is the uniformly high rate of yield of corn, as compared with that of 1869, as also with the average of a series of years. The increase over 1869 in the northern half of New England appears to have been at least five bushels per acre, while the southern half, in consequence of severe drought, shows a small decrease. The Middle States present an increase of nearly five bushels per acre. Virginia and the Carolinas suffered severely from drought, and report a reduced yield. The Gulf States have a better crop than last year, the advance ranging from one to six bushels per acre. The States of the Mississippi and Ohio valleys, with the exception of Iowa, present higher figures than last year. The increase is marked in Illinois, the yield having advanced from 23.2 to 35.2, a difference of 12 bushels per acre, or fully 75,000,000 bushels; yet the difference is due less to the liberal yield of 1870 than to the poor crop of 1869. Kansas shows a reduction from the remarkable yield of the previous seasons. The production of the Pacific Coast is larger than that of 1869. The yield of the principal corn States is stated as follows:

Ohio, 39 bushels; Indiana, 39.5; Michigan, 37; Wisconsin, 38; Minnesota, 33; Iowa, 32; Illinois, 35.2; Missouri, 31.4; Kansas, 28; Nebraska, 29.9; Arkansas, 31.8; Tennessee, 25.8; Kentucky, 32.1. The largest reported yield is that of Vermont, 39.6 bushels. New York is placed at 34 bushels, New Jersey 33, and Pennsylvania 35.8. The range in the cotton States is from 8.9 in South Carolina, 26.5 in Texas, to 31.8 in Arkansas.

The yield of wheat is uniformly less than that of the previous crop. The reduction is 1 bushel in Ohio, 4.5 in Indiana, 2.4 in Illinois, 3.9 in Missouri, 2.2 in Iowa, 0.9 in Minnesota, 1.9 in Wisconsin. The average yield as reported for 1870, is 10 bushels in Kentucky, 13 in Missouri, 12 in Illinois, 11 in Indiana, 13.8 in Ohio, 14 in Michigan, 13.4 in Wisconsin, 15.2 in Minnesota, 12.5 in Iowa, 15 in Kansas, 14.4 in Nebraska, 19 in California, and 19.5 in Oregon. The New England States range from 13.8 to 17.8; New York, 13.8; and New Jersey, 12.8; Pennsylvania, 12. The Southern States, from 7 in South Carolina, to 11.7 in Texas.

The figures illustrating the yield of oats, rye, and barley, correspond with the previous reports of comparative production, and generally show a reduction in the rate of yield. The buckwheat crop is an exception among the small grains, the rate of yield having manifestly advanced, especially in the West. The decrease in the yield of potatoes is general, the rate ranging from 48 bushels in South Carolina to 148 in California. Following California in order, the list producing 100 bushels or more per acre embraces Vermont, Texas, Maine, Arkansas, Kansas, Louisiana, and Missouri.

The yield of sweet potatoes has been much greater than that of the *Solanum tuberosum*. Texas reports the highest figures, 150 bushels per acre; California, 149; Arkansas, 132; the rate declining to 75 bushels in Virginia. The average is about 110 bushels per acre.

The largest yields of tobacco of the Connecticut seed-leaf variety are in the Connecticut valley and in Pennsylvania, from 1,100 to 1,350 pounds per acre. The average in Kentucky is placed at 696 pounds, 750 in Missouri, 840 in Illinois, 850 in Indiana, 916 in Ohio, 637 in Maryland, 737 in Virginia, 186 in North Carolina, and 650 in Georgia. The comparatively high rate in the States of the Ohio Valley, north of the Ohio River, is due to the recent successful cultivation of the Connecticut seed-leaf there.

The yield of sorghum sirup is assumed to be at the rate of 121 gallons in Ohio, 117 in Nebraska, 115 in West Virginia, 106 in Missouri, 104 in Kansas, and 100 in Michigan, declining to 34 in South Carolina. The average is very nearly 100 gallons per acre.

The yield of hay is decreased in Maine, New Hampshire, Vermont, New York, Pennsylvania, Ohio, all of the Western States, and most of the Southern. The average reduction in yield as compared with the crop of 1869 appears to be about 15 per cent., equivalent to more than four millions of tons.

The area sown in winter wheat the past autumn appears to be slightly increased, though the enlargement is a percentage scarcely greater than the annual increase of population. The States reporting a decrease are Vermont, Delaware, Maryland, Virginia, Mississippi, Tennessee, Indiana. The largest percentage of increase is in Kansas and Nebraska. Minnesota is increasing her area; most of the Western States make a slight advance. A considerable enlargement of the breadth sown is reported for the Pacific Coast.

#### PRICES.

Returns of prices in home markets indicate a decline from last January in corn and oats, and an advance in wheat, rye, barley, hay, and potatoes. The small flint corn of New England bears a higher price than the dent corn of the West, and the deficient supply of the cotton States keeps prices high in that region. As these figures are averages of county prices for each State, the distance to market, and variable loca<sub>1</sub>

demand, as well as quality and kind, have an influence in fixing the rate, and preventing uniformity. The lowest average for corn is that of Nebraska, 36 cents per bushel; the highest in Florida. The averages in New England range from 98 cents in Massachusetts to \$1 14 in Maine, and the highest in the South are, Florida \$1 35, \$1 10 in Louisiana, \$1 06 in South Carolina and Texas.

In January, 1869, the price in the States from North Carolina to Louisiana ranged from \$1 in North Carolina to \$1 45 in Florida. The comparison is as follows in some of the principal corn-growing States:

States.	January, 1870.	January, 1871.
Kentucky.....	\$0 66	\$0 48
Missouri.....	60	44
Illinois.....	57	35
Indiana.....	70	38
Ohio.....	72	48
Michigan.....	74	55
Wisconsin.....	65	52
Minnesota.....	63	51
Iowa.....	50	34
Kansas.....	44	58
Nebraska.....	37	36

The returns of reduced yield in Kansas account for the high average in price.

The averages for the Middle States compare as follows:

States.	January, 1870.	January, 1871.
New York.....	\$1 03	\$0 87
New Jersey.....	95	80
Pennsylvania.....	92	75

The price of wheat in Maine and New Hampshire is lower than in January of last year; elsewhere it is generally higher. The prices of the small amount of native wheat for sale in county markets of the extreme East had not at that date responded to the declining rates ruling in the West for the large crop of 1869. The average has advanced in New York from \$1 37 to \$1 41, and from \$1 34 to \$1 43 in New Jersey. In some of the Southern States, where the supply of native wheat was entirely inadequate to the demand, and less than at present, the average has declined; but in the wheat-growing States the price has advanced in some degree of proportion to the reduction of the crop. The following is a comparison of the averages:

States.	January, 1870.	January, 1871.
Kentucky.....	\$1 10	\$1 00
Missouri.....	80	91
Illinois.....	76	94
Indiana.....	93	1 00
Ohio.....	1 03	1 09
Michigan.....	97	1 08
Wisconsin.....	68	90
Minnesota.....	59	83
Iowa.....	52	78
Kansas.....	79	86
Nebraska.....	51	64
California.....	93	1 10

The emigration to Kansas and the Territories has for years kept up prices for the products of the region west of the Missouri.

The averages for oats have followed the decline noticed in corn, which exhibit a greater reduction in the West than in the East, as is the case with corn. The decline in the Western States is 12 per cent.

A material reduction is noted in the averages for barley and rye, for details of which see the tables.

The averages for potatoes have materially advanced: from 52 to 66 cents in Maine; 45 to 79 in New Hampshire; 38 to 51 in Vermont; 68 to 96 in Massachusetts; 51 to 65 in New York; 62 to 94 in New Jersey. Last year the western averages ranged from 37 cents in Michigan to 72 in Minnesota, only Wisconsin, Iowa, and Kentucky being above 50; now the range is from 52 in Iowa to 95 in Minnesota, three other States having averages above 70, viz: Wisconsin, 74; Ohio, 81; Indiana, 83. The prices in different sections of the South are always variable, depending upon local supply, which is small in the cotton States, and mainly for use in the spring or early summer as a table rarity, or, in the autumn, for seed.

The averages for hay have advanced slightly in the West, and largely in New York and New England. In Pennsylvania and New Jersey there is a small decline, as in the Southern Atlantic States. The drought of this portion of the Atlantic Coast set in too late to injure the hay crop, which was, in some sections, unusually large from the large amount of rain-fall in the spring.

The prices of sorghum sirup are uniformly lower than in January of last year; Ohio, as a fair example, averaging 73 cents per gallon then, and 66 cents now.

The tables will furnish opportunities for comparison which cannot be improved in further detail in this analysis.

Table showing the average yield per acre and price of the principal crops of the United States for 1870, and the area and condition of winter grain.

STATES.	CORN.		WHEAT.		RYE.		OATS.		BARLEY.		BUCKWHEAT.		POTATOES. ( <i>Solanum tuberosum</i> )	
	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.
Maine.....	33.0	\$1 14	14.8	\$1 78	17.6	\$1 38	27.4	\$0 65	19.5	\$0 99	24.0	\$0 75	125	\$0 66
New Hampshire.....	36.5	1 00	14.8	1 59	16.0	1 24	29.7	66	21.5	1 07	15.0	83	88	79
Vermont.....	39.6	1 10	16.8	1 63	15.8	1 15	33.7	59	23.3	1 01	17.5	75	140	51
Massachusetts.....	33.0	0 83	17.6	1 75	15.4	1 10	26.4	73	20.7	1 08	14.0	1 02	88	96
Rhode Island.....	26.0	1 06	17.8	1 52	18.0	1 27	32.7	61	24.0	1 02	14.0	1 05	79	98
Connecticut.....	26.4	1 14	17.8	1 41	14.4	1 16	35.4	69	26.5	1 02	14.0	1 05	73	99
New York.....	34.0	87	13.8	1 41	13.0	97	32.1	58	21.2	85	17.9	81	98	65
New Jersey.....	33.0	81	12.8	1 43	13.4	97	31.0	54	24.3	1 00	24.3	1 00	75	94
Pennsylvania.....	35.8	75	12.0	1 37	12.0	89	32.6	48	23.9	91	18.0	85	57	78
Delaware.....	25.0	65	10.0	1 25	10.5	78	20.0	50	23.0	1 00	20.0	1 00	75	1 00
Maryland.....	22.5	71	9.7	1 28	10.5	78	23.0	47	23.0	1 11	13.5	1 11	67	90
Virginia.....	20.0	65	9.6	1 24	9.6	73	19.5	42	16.0	58	16.0	58	55	71
North Carolina.....	14.6	78	8.6	1 21	8.3	97	16.2	57	22.0	61	21.4	58	81	70
South Carolina.....	8.9	1 06	7.0	1 89	5.8	1 70	9.7	84	15.0	1 62	15.0	48	48	1 15
Georgia.....	13.5	1 47	8.0	1 47	8.1	1 49	14.6	83	15.0	1 64	15.0	78	78	1 34
Florida.....	10.8	1 35	8.0	1 35	8.1	1 49	12.5	1 00	12.5	1 00	12.5	70	70	1 37
Alabama.....	17.5	83	8.4	1 28	9.7	1 06	15.6	79	15.6	79	15.6	79	73	1 16
Mississippi.....	16.5	98	9.7	1 52	10.0	1 62	14.5	75	23.0	1 11	14.5	75	105	1 16
Louisiana.....	22.5	1 10	11.0	1 11	11.0	1 11	21.0	1 00	30.0	1 33	128	1 33	109	1 07
Texas.....	31.8	50	11.7	1 73	19.1	1 11	33.6	62	22.5	75	20.0	75	88	52
Arkansas.....	25.8	47	8.8	1 30	18.2	1 00	19.3	46	20.0	85	19.9	80	85	58
Tennessee.....	30.4	64	11.4	1 22	11.3	83	27.2	40	19.0	1 05	16.7	75	75	63
West Virginia.....	32.1	48	10.0	1 00	12.1	81	23.2	40	26.4	84	23.6	67	103	56
Kentucky.....	31.4	44	13.0	1 01	15.6	68	25.0	37	20.0	62	18.8	68	81	68
Missouri.....	35.2	35	12.0	94	16.4	60	26.0	32	24.1	83	19.2	71	45	83
Illinois.....	39.5	38	11.0	1 00	13.7	70	28.1	35	23.5	86	16.3	85	72	95
Indiana.....	39.0	48	13.8	1 09	13.8	76	31.1	38	25.0	80	17.3	62	81	88
Ohio.....	37.0	55	14.0	1 08	18.2	75	35.3	39	26.5	80	17.3	62	95	58
Michigan.....	38.0	62	13.4	1 00	13.6	63	39.7	39	26.5	67	20.1	54	57	74
Wisconsin.....	33.0	31	13.2	83	17.7	56	32.9	34	24.5	54	18.6	60	53	95
Minnesota.....	32.0	34	12.5	78	17.6	56	29.7	30	26.0	63	21.6	69	95	52
Iowa.....	28.0	58	15.0	86	20.8	69	31.5	40	24.0	73	20.6	77	106	56
Kansas.....	29.9	36	14.4	64	23.7	34	33.0	30	29.0	65	26.2	1 20	50	50
Nebraska.....	35.6	1 20	19.0	1 10	28.0	1 19	35.5	59	26.9	98	32.5	1 07	148	1 35
California.....	29.7	59	19.5	1 15	36.0	87	36.0	46	32.3	68	30.7	1 41	87	77

Table showing the average yield per acre and price of the principal crops, &c.—Continued.

	POTATOES. ( <i>Batatas edulis</i> ) sweet.		LEAF TOBACCO.		HAY.		SORGHUM MOLASSES.		WINTER WHEAT.		WINTER RYE.		WINTER BARLEY.	
	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in pounds.	Average price per pound on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in tons.	Average price per ton on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in gallons.	Average price per gallon on 1st day of Jan., 1871.	Average amt sown com- pared with 1869.	Condition of the crop com- pared with an average.	Average amt sown com- pared with 1869.	Condition of the crop com- pared with an average.	Average amt sown com- pared with 1869.	Condition of the crop com- pared with an average.
Maine														
New Hampshire														
Vermont														
Massachusetts			1,350	\$0 74										
Rhode Island														
Connecticut			1,250	92.6										
New York														
New Jersey	98	\$1 00												
Pennsylvania	103	1 13	1,200	25	1 30	13 05	83	\$0 63	100	101	88	99	91	95
Delaware	100	1 00			1 00	30 00	70	50	100	101	85	99	99	99
Maryland	107	1 16	637	08.6	1 22	16 33			97	97	88	99	99	99
Virginia	75	92	739	07.3	1 38	14 72	91	57	100	102	95	91	94	94
North Carolina	108	60	586	14.1	1 40	11 47	81	50	100	102	96	96	96	100
South Carolina	74	1 00			1 00	21 66	34	73	100	100	95	100	105	100
Georgia	108	59	650	13.3	1 34	23 33	85	60	107	107	95	97	96	106
Florida	138	72												
Alabama	96	80	650	25	1 33	20 00	66	69	105	102	90	100	100	100
Mississippi	108	85			1 37	21 25	65	1 00	82	96	87	100	100	100
Louisiana	91	67												
Texas	150	71	750	20.1	1 60	15 36	71	81	103	105	94	102	102	102
Arkansas	132	81	666	15.3	1 50	15 00	97	77	108	108	90	100	100	100
Tennessee	98	73	815	08.3	1 43	16 64	85	56	96	96	99	99	99	99
West Virginia	120	1 30	760	11.3	1 36	10 00	115	62	103	104	97	101	101	103
Kentucky	91	1 05	696	08.2	1 36	13 25	86	56	102	102	99	102	102	107
Missouri	113	1 19	750	09.3	1 29	12 22	106	61	103	109	98	108	108	102
Illinois	108	98	840	12.8	1 18	10 74	98	59	115	113	100	108	108	102
Indiana	93	1 46	850	05.3	1 27	11 46	96	63	97	104	99	102	102	108
Ohio	96	1 48	916	12.3	1 31	11 02	121	66	102	101	96	101	97	103
Michigan					1 36	11 17	100	81	104	109	103	110	104	103
Wisconsin					1 34	10 43	99	66	103	104	106	103	106	103
Minnesota					1 47	6 77	80	86	119	102	102	102	102	102
Iowa	145	1 46			1 34	7 70	98	68	115	109	105	113	105	118
Kansas	142	1 20			1 17	7 18	104	63	139	119	120	103	103	118
Nebraska					1 10	5 60	117	77	157	116	120	110	110	91
California	149	1 45			1 48	16 70	115	97	115	97	105	105	101	91
Oregon			1,100	22.5	1 45	12 05	105	93	105	93	105	105	105	108

## NOTES ON THE CROPS.

## WINTER GRAINS.

*Seneca County, N. Y.*—Winter wheat unusually well put in, and it has larger growth than for years. It is in danger of blight from the excessive cold weather without snow.

*Chautauqua County, N. Y.*—Wheat sown early is badly stung by the Hessian fly. It has turned yellow and looks badly.

*Camden County, N. J.*—Early sown wheat much injured by the fly.

*Mercer County, N. J.*—The very favorable fall season has given a very heavy top to wheat. In many instances it has been pastured off.

*Northumberland County, Pa.*—Many wheat fields were infested with the fly soon after the plants made their appearance.

*Chester County, Pa.*—Owing to the poor quality of the last wheat crop, many farmers sowed old wheat, which proves to be quite thin on the ground. Two bushels of new seed is thicker set than where three of old seed was sown.

*Lancaster County, Pa.*—Wheat sown early looked well until the last of October, when it began to turn yellow. It does not cover the ground. Farmers complain of the Hessian fly. Wheat sown on oat stubble does not appear to suffer much.

*Beaver County, Pa.*—Some fields of wheat badly damaged by the Hessian fly.

*Baltimore County, Md.*—Winter grain short, but even on the ground and healthy in appearance. A majority of our farmers have prepared their land well, and are using more manures than years ago. Late seeding is too generally practiced. Mediterranean wheat is nearly altogether sown, and should be in the ground between the 10th and the 20th of September. Heavy losses are annually incurred by this practice of late seeding.

*Montgomery County, Md.*—Wheat does not make much show at a distance, but looks strong and vigorous in the trenches of the drill.

*Washington County, Md.*—Wheat promising. In many parts of the county, wheat, as well as the early-sown barley, has been pastured.

*Surry County, Va.*—Small area of wheat sown, but the plant is in fine condition. Owing to the failure of peanuts more attention will be given to corn this year.

*Wythe County, Va.*—Wheat sown late on a reduced area. Not looking as well as usual.

*Rockbridge County, Va.*—Wheat looking badly owing to severe weather and no snow. The blades are as black as ink. Poor prospect for a crop.

*Buckingham County, Va.*—It is feared that the intense cold dry weather has killed much of the late sown wheat.

*Macon County, N. C.*—An increased area in wheat, with improved preparation of the soil.

*Perquimons County, N. C.*—Wheat acreage reduced owing to wet weather and the demand for labor to pick cotton.

*Stanly County, N. C.*—Wheat sown late but looks well.

*Jackson County, N. C.*—Wheat plant rather feeble, with stand slightly deficient. Wheat is rapidly displacing rye, and is now successfully grown on mountain lands which twenty years ago were thought to be fit only for rye and oats.

*Newbury County, S. C.*—Wheat sown late, unpromising.

*Lexington County, S. C.*—Wheat sown very late, which, with the want of

manure (owing to inability to purchase out of the proceeds of cotton crop) it is feared will seriously affect the crop of 1871.

*Union County, S. C.*—Farmers late sowing wheat, not more than half up. Ground not well prepared.

*Johnson County, Ga.*—Wheat sown late, not yet up.

*Jackson County, Fla.*—Barley is now being tried here, and the plant is looking well. The acreage in oats is annually increasing.

*Burnet County, Texas.*—For want of seed only a small area of wheat has been sown this fall. Send us men from the North and we will raise more grain and less cotton.

*Red River County, Texas.*—Wheat fully up to average, with acreage largely increased.

*Columbia County, Ark.*—Area in wheat slightly increased, sown late. Tolerably good stand.

*Taney County, Mo.*—One-third more wheat sown this year than last.

*Franklin County, Mo.*—Wheat sown in September much more promising than that sown later.

*Pettis County, Mo.*—The fly has done some damage to early sown wheat.

*Moniteau County, Mo.*—Wheat much injured by the Hessian fly.

*Cooper County, Mo.*—Wheat injured by the fly.

*Benton County, Mo.*—Wheat never presented a more promising appearance.

*Shelby County, Ky.*—Decrease of 30 per cent. in wheat acreage, owing to uncertainty of yield and low price for several years past. Rye is growing in favor, as it furnishes good winter and spring pasturage without materially injuring the yield of grain, most of which is fed to hogs. As a fertilizer rye is considered equal to two crops of red clover, especially if followed by corn. Increased acreage over thirty per cent.

*Henry County, Ky.*—Prospects for winter grain exceedingly flattering.

*Ohio County, Ky.*—The dry freeze has greatly injured at least the appearance of wheat.

*Smith County, Tenn.*—Owing to the low price of wheat the acreage has been reduced fully 20 per cent.

*Weakley County, Tenn.*—Much damage is apprehended to the wheat crop from the severe cold.

*Braxton County, W. Va.*—Condition of wheat and rye very promising.

*Nicholas County, W. Va.*—Wheat not so extensively sown as last year.

*Putnam County, W. Va.*—A hard winter thus far for wheat and barley; weather dry and cold, with no snow.

*Schuyler County, Ill.*—Wheat was put in with greater care than usual, and has made a greater growth than common. The fly has done considerable damage, especially in the earlier sown.

*Montgomery County, Ill.*—Wheat looks better than for many years.

*Franklin County, Ill.*—Prospect for wheat never better, if we except a few fields afflicted by the fly.

*Effingham County, Ill.*—Hessian fly has done some injury.

*Putnam County, Ill.*—Winter wheat is looking unusually well, with increased area.

*Edwards County, Ill.*—Owing to the dry weather and the fly, late-sown wheat looks better than early sown.

*Johnson County, Ind.*—Early-sown wheat infested with the fly.

*Warren County, Ind.*—Wheat in uncertain condition. It is feared that the fly will take the crop.

*Boone County, Ind.*—Wheat is better grown than usual; crop covered finely with snow.



*Mercer County, Ohio.*—Wheat never in better condition ; covered with snow now.

*Henry County, Ohio.*—Wheat, acreage increased 20 per cent.; sown late, grown well, but not so forward as usual.

*Noble County, Ohio.*—Early-sown wheat injured by the fly.

*Lake County, Ohio.*—Early sown wheat not looking so well as that sown later.

*Livingston County, Mich.*—Wheat has too large a growth to be safe.

*Clinton County, Mich.*—Wheat very large ; some fields injured by the Hessian fly.

*Van Buren County, Mich.*—Wheat, particularly the early-sown, injured by the fly.

*Montcalm County, Mich.*—Wheat has very large top.

*Portage County, Wis.*—Winter grain has been put in with more than usual care, and the only danger appears to be from large growth.

*Outagamie County, Wis.*—A wonderful growth of wheat ; many fields fed down by stock. More care than usual in getting the crop in, especially on fallow ground.

*Richland County, Wis.*—Wheat seems to be injured by something. The under leaves turn yellow. Some say it is the fly. Some fields have been pastured.

*Winona County, Minn.*—Wheat exposed to winter-killing.

*Goodhue County, Minn.*—Large increase in acreage of winter wheat, owing to the success of the past two years. It has been sown on open ground, as well as in corn-fields.

*Appanoose County, Iowa.*—Wheat injured by the chinch-bug.

*Jefferson County, Kansas.*—Double the acreage of last year in winter wheat.

*Crawford County, Kansas.*—Wheat in good condition, except early sown, which was injured by the army worm.

*Leavenworth County, Kansas.*—Wheat went into winter quarters in excellent condition.

*Jackson County, Kansas.*—Prospect never better for winter wheat.

*Gage County, Neb.*—Increased area in winter wheat. More would have been sown could seed have been procured conveniently.

*Santa Clara County, Cal.*—The continuance of the war in Europe and the advance in price of wheat are inducements for a largely increased acreage in cereals, the only drawback being the high price of seeds.

*Mendocino County, Cal.*—Farmers sadly behind in seeding, owing to the unfavorable season.

*Stanislaus County, Cal.*—Twenty per cent. increase in acreage of wheat and barley. Area in wheat estimated at 180,000 acres ; barley, 40,000 acres.

*San Luis Obispo County, Cal.*—An increase of fifty per cent. is anticipated in acreage of cereal crops for the ensuing year.

*Napa County, Cal.*—Sowing much delayed for want of rain ; at present the prospect of large acreage and yield is not flattering.

*Linn County, Oreg.*—Winter wheat sown two months later than usual, and one-third less in acreage. About fifty per cent. increase of land prepared for spring sowing.

*San Pete County, Utah.*—Decreased area in winter wheat, but the crop is in good condition.

#### COTTON.

*Chattooga County, Ga.*—A number of our planters have this year succeeded in raising a bale of cotton to the acre—the result of the use of fertilizers and careful cultivation.

*De Soto County, Miss.*—The winding up of the cotton crop shows our people generally "broke." Large cotton crop; low price; provisions all from Cincinnati and St. Louis.

*Attala County, Miss.*—Cotton crop of this county one-third larger than that of last year. The common expression is that one-third less cotton will be planted this year, but when planting time comes they will probably go cotton again.

*Newton County, Miss.*—Cotton has made an extraordinary yield, fully forty per cent. greater than last year.

*Morehouse Parish, La.*—Much of the cotton crop remains in the field, and will remain there, owing to the indisposition of the laborers to gather it.

*Hardin County, Texas.*—One hundred per cent. increase in the cotton crop of this county over the crop of 1868.

*Milan County, Texas.*—There are in this county about 20,000 acres in cotton that will yield 15,000 bales, and 10,000 acres that will yield 3,000 bales; 18,000 acres in corn, yielding 30 bushels to the acre; and 4,000 acres in promiscuous cultivation.

*Anderson County, Texas.*—Twenty per cent. of the cotton crop yet unpicked, and most of it will be lost; the best crop year in ten years, and with efficient labor planters would now abound in all the products of the latitude.

*Rusk County, Texas.*—Other crops have been neglected for several years past for cotton. Now that cotton has fallen in price it is thought more attention will be given the former. During the war wheat, rye, oats, barley, and rice were paying crops.

#### SUGAR-CANE.

*Newton County, Miss.*—Our planters are now raising the genuine Louisiana sugar-cane, and are meeting with great success. They make from four to eight barrels of sirup to the acre with the indifferent means at hand for crushing. Some are making sugar.

*Iberia Parish, La.*—Severe cold weather. A large quantity of seed-cane has been destroyed, and a few plantations have had their crops cut short by the heavy freeze. It is feared that the orange crop and trees have been killed.

*Hardin County, Texas.*—Four times as much sugar and molasses have been produced in this county this year as was made in 1868.

*Jackson County, Fla.*—The cane crop has turned out better than expected. The cane was small, but the juice was sweeter than usual, yielding one gallon of sirup to six of juice.

*Manatee County, Fla.*—A killing frost on Christmas day. Cane much injured. It is feared that the seed-cane is much damaged.

#### SORGHUM.

*Mendocino County, Cal.*—Sorghum is a new crop here. In a year or two it will be an important product in this county.

*Surry County, Va.*—Our sorghum has much deteriorated; now hardly worth cultivating. It is mixed with broom-corn.

*Kendall County, Texas.*—There has been a good yield of very superior golden-colored sirup from sorghum.

*Jackson County, Kan.*—The sorghum crop was light, owing to the drought.

## EXTRACTS FROM CORRESPONDENCE.

## THE TOUZELLE WHEAT.

*Rockbridge County, Virginia.*—The small packet of white winter Touzelle wheat you sent me last year I divided among our farmers here. They report their experiments unsatisfactory, in consequence of the unfavorable weather last summer, the excessive rains preventing the crop from maturing. I retained five ounces of the grain, which I sowed myself October 10, 1869, in drills, sixteen inches apart, dropping seed by hand four inches apart in the drill, one to three grains at a place, covering about one inch deep. The soil was a rich vegetable mold. It grew well, and in early spring I gave it a hand culturing. It looked too thin on the ground until it began to tiller; it then covered the whole surface, rendering it impossible to trace the rows. I counted as product of a single grain seventy-five heads, varying from one inch to five inches in length, with a number of short stalks without a head upon them. In fact, it seemed as if it would continue to send out new stalks perpetually. The promise was for a fair yield (I had sowed less than the tenth of an acre) of from two to three bushels of wheat. But the crop was entirely ruined by winds, rains, and hail, that beat the heads down to the earth and prevented their filling entirely.

## THE EXCELSIOR OATS.

*Poweshiek County, Iowa.*—Last spring I sowed one and a half bushels of Excelsior oats (produced from Department seed of the preceding year) on rather less than half an acre of land; they grew quite tall, and yielded twenty-five bushels, forty pounds to the bushel. I value them very highly.

## WHEAT IN THE SAN JOAQUIN VALLEY, CALIFORNIA.

*Contra Costa County, Cal.*—A correspondent reports that the staple of that immediate section is wheat. The soil is new, and until about three years ago was used solely for grazing purposes. Some one, more enterprising than his neighbors, sowed a few acres to wheat, and reaped a ton and a half to the acre. Before the summer was ended, every acre of Government and railroad land, as well as that claimed under Spanish titles, was located, and wheat raising became general. In some instances a yield of forty and fifty sacks was obtained. The following year was one of equal success, although the rain-fall was lighter, deeper plowing supplying the deficiency. The succeeding year was one of total failures. The custom is to dry-plow the land, harrow it, and sow the seed immediately after the first rains. It is proposed to summer fallow the land, and plow deep, when, it is hoped, an average crop will be produced, notwithstanding the drought, which seems to be periodical in that part of San Joaquin Valley.

## PREVENTION OF SMUT IN WHEAT.

*Stockton, California.*—W. G. Phelps recommends the following method of preventing smut in wheat:

Fill a water trough, about twenty inches in height, with cold water sufficient to cover a sack of wheat when lying on the side. If the trough is wide enough to admit the sacks crosswise, with one man to assist in lifting out the sacks, the work may be done more expeditiously. Then dissolve sulphate of copper, commonly called "blue-stone," in hot

water in an iron pot, and as fast as it dissolves pour it into the water in the trough. Then crack a few grains of wheat and dip them in the water, and immediately take them out and lay them in the sun to dry. As soon as the blue color is perceivable on the cracked wheat the solution is sufficiently strong. Nail across one end of the trough strips of board to lay the sacks of wheat on to drain. Then lay in the sacks of wheat. My trough is sixteen feet long, and I lay in five sacks, and as soon as I lay in the fifth sack I take out the first one and lay it on the strips to drain. As soon as the sacks are drained the wheat may be sown. Otherwise, lay three strips of board on the floor and place the sacks of wheat on them. As soon as the tier is full lay strips on top of the sacks and another tier of sacks, and so on as high as desired. There is no danger of the wheat spoiling if under cover. It needs no rolling in lime or ashes. This course has not failed in fifteen years' trial with me. If everything is convenient, with one man to assist, you can prepare enough in a day to sow 1,000 acres. A person wishing to sow a small quantity can take a smaller trough or a barrel and dip the sack in, and take it out as soon as the water has penetrated every part of the sack. The main point is to have your solution strong enough, and take your wheat out as soon as every grain is touched by it.

#### THE CEREALS IN ARKANSAS.

*Independence County, Arkansas.*—Wheat, rye, and oats are planted in this section only on our very poorest lands. The great alluvial bottoms of the White River, running through the center of the county, are exclusively devoted to cotton. Prior to 1860 wheat was sometimes sown upon those lands, and the average product was not less than twenty-five bushels per acre. The universal failure of the cotton planters this season will probably induce them to appropriate more of these rich lands to grain-growing in the future. In that case the valley of the Upper White River of Arkansas will rival the Shenandoah and Genesee Valleys of the East.

#### GRAPES IN KENTUCKY.

*Pine Grove, Clark County, Kentucky.*—Doctor S. D. Martin gives an account of his experiments in cultivating different varieties of grapes. His land slopes gently toward the south, having a fall of about four feet in one hundred yards. The soil is rich, about two feet deep, and laying upon four feet of yellow, tenacious clay, which is underlaid with limestone. The vines on this ground have been growing from two to four years, being a year old when planted. The rows are eight feet apart, running nearly north and south with the slope of the hill, and the vines from four to eight feet apart in the rows. The ground has never had any other manure than that dropped by stock grazed or fed upon it. One row is planted with vines upwards of twenty years old—Isabella and Herbeumont. The following summary of experiments is given:

Anna, a very slow grower, mildewed badly, produced a few sweet grapes; first crop.

Alvey, a fine healthy vine, yielded a good crop; first crop.

Agawam, Rogers's No. 15, mildewed badly, grapes rotted, not half a crop; first crop.

Concord, produced a heavy crop, no rot; second crop.

Crevelling, early and productive; first crop.

Clinton, bore a heavy crop, ripened well, except that a few vines lost their leaves; second crop.

Catawba, mildewed badly and rotted, half a crop of inferior grapes, some bitter; second crop.

Diana, mildewed, rotted, and ripened very unevenly.

Delaware, a slow grower, set a heavy crop, many vines lost their leaves and did not ripen; first crop.

Elsingburg, a fine, healthy vine, no rot; first year.

Goethe, bore a good crop of fine, large grapes, well ripened; first year.

Hartford, healthy and productive, bunches fine and large, no rot; first and second years.

Herbement, bore a fair crop of delicious grapes, especially the young vines, the old vines rotted badly; first to twentieth years.

Ives, a strong grower, healthy and productive, large crop, ripened well; first year.

Isabella, a heavy crop, some ripened well, the roots of some destroyed by grub worms.

Israella, mildewed and rotted so badly as to lose nearly all its fruit; first year.

Iona, worse than the Israella, bringing very little fruit to perfection; first year.

Le Noir, produced less than half a crop, more than half the bunches shriveled before ripening; first year.

Lindley, many of the grapes mildewed and rotted, many of the grapes bitter; first year.

Lydia, a slow grower, has not yet borne fruit.

Mary Ann, a healthy vine, bore a few bunches, ripened well; first year.

Merrimac, mildewed and rotted; first year.

Norton, vine and fruit healthy, large crop, ripened well; first year.

Northern Muscadine, vigorous grower, vine and fruit healthy, large crop; first crop.

Perkins, vine and fruit healthy; first year.

Rogers's Hybrids, Nos. 2 and 33, both mildewed badly, and grapes rotted; those that did not rot ripened badly; first crop.

Rebecca, poor grower, vine unhealthy, killed to the ground some time in winter; no grapes.

Salem, very slow grower, vine healthy, produced a few bunches of fine grapes, ripened well; first crop.

Taylor, produced larger bunches and better grapes than usual; unproductive from second to eighth crop.

The first mildew on the vines was noticed May 31. On the 29th very damp fogs had prevailed. There were also fogs on the 2d, 3d, and 4th of June, the last very heavy. A caterpillar (*Procris Americana*) did much damage to the leaves of the vines, especially to the smooth ones of the Clinton, Delaware, Taylor, &c. Although thousands of these pests were killed, some of the vines were almost completely stripped of their leaves, in consequence of which the grapes did not ripen.

#### TOBACCO IN PENNSYLVANIA.

*Bucks County, Pennsylvania.*—In the lower section of the county the attention of farmers has been turned to raising tobacco, where it produces exceedingly remunerative crops; often \$500 per acre is realized on the sandy soil known as "Penn's manor." Almost every farm has been provided with a large frame building for drying purposes, which is generally paid for, and all other necessary expenses or outlay, by the product

of the first crop. Thus far parties have purchased the crop in the field at an average of about 25 cents per pound.

#### ACREAGE OF CROPS IN YORK COUNTY, MAINE.

*York County, Maine.*—I think the following estimates for this county are nearly correct: Total acreage of the county, 436,000; acres in fields, 109,000; acres plowed in 1870, 15,600; in grass, 93,000; in corn, 6,200; in potatoes, 2,600; in oats, 4,200; in wheat, 1,500; in rye, 350; in barley, 400; in buckwheat, 300.

#### THE CASTOR-BEAN IN CALIFORNIA.

The cultivation of the castor-bean in California is rapidly increasing. The amount raised this year will be quite large. One of the largest and most successful enterprises in this culture is that of Mr. Hedges, whose experiments are carried on in the vicinity of Marysville. Mr. Hedges has under cultivation this season about two hundred acres, and expects to realize about one hundred and twenty-five tons, all of the small "Illinois bean." The stalks of this variety vary in height from six to fifteen feet. The work of gathering begins in July and continues until the frosts set in. The drying grounds on this farm are described as large places cleared off to the "hard pan" of ground, and made smooth like a brick-yard. On this surface the heads or clusters of beans are laid in the sun, many of them having been picked in a green state, and here, as they dry, they open. When pretty well "snapped," the heaps are raked over and the beans removed and placed in a fanning-mill, whence they are transferred in a merchantable condition to the sack. Mr. Hedges utilizes the hulls as manure, and it is asserted that they operate to loosen as well as to enrich the clay soil of his farm. This gentleman finds the cultivation of the castor-bean so profitable that he purposes next season to plant three hundred acres.

#### JUTE.

*Plaquemines Parish, Louisiana.*—A farmer makes the following statement relative to the raising of jute in that section: "About the middle of May last I received from the Department of Agriculture two varieties of the jute seed, one from Calcutta, the other from the south of France. I planted on the first of June and sowed in drills sixteen inches apart. In a few days the plants appeared and grew rapidly. In three months the French jute grew *nine* feet, and the Calcutta over *ten*. The French specimens throw out numerous branches and a dense foliage, while the Calcutta has no branches and but few leaves. I believe this plant will thrive in lower Louisiana."

*Cameron County, Texas.*—On the 3d of May last I received from the Department jute seed from Calcutta and France. On the 7th I planted some of it on mesquit upland. It did not rain on the ground until September 19, and I had the seed watered to bring it up. It came up on the eighth day, and struggled along until November 16, when we had an unusually early frost. The plant in no case got over fourteen inches high. I send you one as a specimen. With good seasons I have no doubt the plant would grow well on our bottom lands, but the past season was a very severe one. We had slight rains in January; then none to more than lay the dust until April 25, after which, until September 19, no rain fell. I did not try to force its growth, for unless it will stand our climate, it will of course be of no benefit as a field crop.

*Matagorda County, Texas.*—I distributed the jute seed among our best planters, but it came too late and was planted when the plants should have been in bloom. The two varieties, French and India, are quite distinct. From what I see I much prefer the India, which grows more like hemp or flax, and has a pod about three or four inches long, growing on the stalk and limbs something like oca. The pod is full of seed, and in diameter the size of a man's little finger. The India plant grew on our sandy prairie soil, in a severe drought, five or six feet high, while the other kind, planted on strong bottom lands, grew ten or fifteen feet high. The latter throws off limbs and branches, and to my mind is objectionable on that account. Its seed grows in little buttons. I believe soil and climate here suit the plant. I made no efforts to gather the fiber, which will require experience and investigation.

#### IMPROVED CULTURE.

*Marshall County, Ill.*—We have come to the conclusion that for a series of years we have been skimming the cream off our land and throwing it away, and that we cannot make high-price farms pay except by a correct system of "high farming." We are now making all the improvements which our means will allow in a new system of cultivation.

#### RECLAIMED LANDS IN NEW JERSEY.

*Hudson County, N. J.*—The corn planted on the drained lands of this county did not produce as largely as anticipated; the grass choked it, and as the newly tilled land was stubborn and still wet in May and in July, the drought injured it. Yet they raised on an average sixty bushels per acre. (They say shelled corn, but I doubt it.) They have plowed a large number of acres this fall and kept at it until the 15th of December, and hope to do better next year. The oats sown on this new drained land grew too rank, and lodged badly, and the crop was a failure. The proprietors say they will try oats next season. Corn and grass are more certain to do well than any other crop until the land is thoroughly worked and sweetened.

#### USING CROPS ON THE FARM.

*Marion County, Iowa.*—Our correspondent, after referring to the low price of grain, &c., adds: "Our strength here is in raising as much corn and grass as possible, and then stock enough to consume the crops. The stock should be fed up to the best marketable condition where raised, in order to realize the greatest profit. Many sell their cattle and hogs as soon as fit for feeding, instead of feeding and selling them when ready for market eastward."

#### CLOVER AND TIMOTHY SEEDS.

*Fond du Lac County, Wis.*—We have a large amount of clover seed in our county, which is selling at \$5 per bushel; also much timothy seed, at \$3.

#### WINE PRODUCT OF HANCOCK COUNTY, ILLINOIS.

*Hancock County, Ill.*—Forty thousand gallons of wine have been made from the vintage of the past season. The grapes matured perfectly and have never before done so well. Large quantities of the product were sold for table use.

#### HOG AND CHICKEN CHOLERA.

*Fairfax County, Va.*—The hog cholera has been prevalent in many portions of the county. The loss from this cause may be safely stated

at 20 per cent. There has also been much loss among chickens and turkeys.

*Jefferson County, W. Va.*—The hog cholera has killed a few hogs in this county during the past year. About 300 fowls were killed by chicken cholera.

*Laurens County, Ga.*—Cholera is destroying hogs in some parts of the county.

*Hickman County, Tenn.*—Less hog cholera in the county than for many years.

*Owsley County, Ky.*—Several hogs lost from cholera. The disease acted differently from heretofore. The hogs died gradually.

#### PORK PACKED ON THE FARM.

*Smith County, Tenn.*—More hogs fattened in the county this year than for several years; only about half of them sold; the remainder packed at home.

*Hickman County, Tenn.*—Large surplus of pork has been packed.

*De Kalb County, Mo.*—The farmers are packing their hogs to a large extent. Some paid 7 to 8 cents for stock hogs and are selling the fattened hogs at 5 cents. One farmer purchased 18 head at 8 cents per pound, fattened and sold them, and had 56 cents over the cost of the stock hogs.

#### LIVE STOCK IN BOONE COUNTY, ILLINOIS.

*Boone County, Ill.*—The following table shows the number of live stock in this county, as returned by the assessors in 1868-'69-'70, compared with the census of 1860:

	1860.	1868.	1869.	1870.
Horses.....	4,711	6,093	6,465	6,438
Mules.....	14	100	98	106
Milch cows and other cattle.....	13,212	12,791	14,832	14,718
Sheep.....	7,185	28,101	24,008	19,531
Swine.....	4,972	7,191	5,679	6,754

#### STATISTICS OF WEST VIRGINIA.

Our correspondent in Jefferson County, West Virginia, submits estimates of the yield, acreage, price, and total value of the principal farm products of that county for the year 1870:

Name of product.	Acres to each.	Yield per acre.	Aggregate yield.	Price Jan. 1, 1871.	Total value.
Indian corn.... bushels.	21,835.	30.	655,050	\$0 52	\$340,626 00
Wheat..... do..	29,232.	8.5	248,472	1 30	323,013 60
Rye..... do..	1,084.	9.5	10,298	80	8,238 40
Oats..... do..	4,912.	18.5	90,872	40	36,348 80
Barley..... do..	10.	9.5	95	90	85 50
Buckwheat..... do..	70.	10.	700	1 00	700 00
Beans..... do..	8.	13.	104	2 75	286 00
Potatoes, (Irish).... do..	400.	70.	28,000	75	21,000 00
Potatoes, (sweet).... do..	2.5	60.	150	1 50	225 00
Turnips..... do..	10.	65.	650	50	325 00
Sorghum..... gallons.	32.	45.	1,440	75	1,080 00
Wine, (grape)..... do..	10.	100.	1,000	2 05	2,050 00
Leaf tobacco..... pounds.	10.	600.	6,000	12	720 00
Hay..... tons.	6,800.	1.28	8,604	14 00	120,456 00
Total.....	64,415.5				855,154 30

The above table shows an increased acreage of nearly 4,000, and an increase of nearly \$45,000 in total value.



## LIVE STOCK AT CHICAGO.

George T. Williams, assistant secretary, furnishes the following report of receipts and shipments of live stock at the Union Stock Yards, Chicago, Illinois, for the year ending December 31, 1870 :

## RECEIPTS.

Source of supply.	Cattle.	Hogs.	Sheep.	Horses.
Chicago, Rock Island, and Pacific Railroad..	63, 665	251, 584	22, 399	357
Illinois Central Railroad.....	87, 915	379, 513	89, 597	289
Chicago, Burlington, and Quincy Railroad..	188, 800	491, 824	77, 326	1, 028
Chicago and Northwestern Railroad.....	101, 417	338, 707	107, 761	1, 148
Chicago and Alton Railroad.....	81, 922	176, 295	27, 270	455
Pittsburg, Fort Wayne and Chicago Railroad..	296	3, 493	1, 118	54
Michigan Central Railroad.....	2, 786	19, 423	6, 281	76
Michigan Southern Railroad.....	670	20, 964	11, 880	107
Pittsburg, Cincinnati, and St. Louis Railroad.	2, 805	10, 686	3, 212	23
Driven into the yards.....	2, 688	669	3, 011	.....
Total in 1870.....	532, 964	1, 693, 158	349, 855	3, 537
Total in 1869.....	403, 102	1, 661, 869	340, 072	1, 524

## SHIPMENTS.

	Cattle.	Hogs.	Sheep.	Horses.
Pittsburg, Fort Wayne, and Chicago R. R..	129, 885	299, 356	40, 047	717
Michigan Central Railroad.....	110, 404	170, 764	61, 592	363
Michigan Southern Railroad.....	118, 142	448, 965	12, 552	1, 010
Pittsburg, Cincinnati, and St. Louis R. R..	4, 952	1, 181	189	77
Chicago, Rock Island, and Pacific Railroad..	3, 308	365	488	390
Illinois Central Railroad.....	8, 063	547	230	18
Chicago, Burlington, and Quincy R. R.....	2, 441	412	899	52
Chicago and Northwestern Railroad.....	3, 355	2, 737	561	736
Chicago and Alton Railroad.....	11, 159	126	153	125
Total in 1870.....	391, 709	924, 453	116, 711	3, 488
Total in 1869.....	294, 717	1, 086, 305	108, 690	1, 538

MARKET PRICES OF FARM PRODUCTS FOR DECEMBER, 1870, AND JANUARY, 1871.

[Record made as near the first of the month as practicable.]

Products.	December.	January.
NEW YORK.		
Flour—State*.....per barrel..	\$4 90 to \$6 20	\$5 35 to \$6 65
Western.....do.....	4 90 to 8 25	5 35 to 8 25
Wheat—No. 1 spring.....per bushel..	1 27½ to 1 28	1 41 to 1 43
No. 2 spring.....do.....	1 33½ to 1 34	1 27 to
Winter and amber western.....do....	1 41 to 1 45	1 46 to 1 48
Corn—New western mixed.....do....	75 to 82	76 to 77

\*Including "St. Louis extra." †Old and new spring mixed. ‡New spring.

## Market prices of farm products, &amp;c.—Continued.

Products.	December.	January.
NEW YORK—Continued.		
Corn—Old western mixed.....per bushel..	\$0 86 to \$0 88	\$0 90 to \$1 05
Rye.....do.....	95 to 1 06	78 to 1 10
Barley.....do.....	90 to 1 12	60 to 62
Oats—Western mixed.....do.....	60 to 61	60 to 61½
State.....do.....	60 to 62	60 to 61½
Hay—Shipping qualities.....per ton..	21 00 to 22 00	23 00 to 24 00
Prime.....do.....	to	24 00 to 27 00
Pork—Mess.....per barrel..	23 00 to 23 50	19 25 to 19 50
Prime mess.....do.....	21 50 to 22 50	20 00 to 21 00
Beef—Mess.....do.....	10 00 to 15 00	10 00 to 15 00
Extra.....do.....	15 00 to 18 00	15 00 to 18 00
Lard.....per pound..	12½ to 13½	11½ to 12½
Butter—Western.....do.....	14 to 30	12 to 25
State.....do.....	20 to 45	20 to 45
Cheese—Dairy.....do.....	7 to 14	7 to 14
Factory.....do.....	10 to 16	13 to 16½
Cotton—Ordinary.....do.....	13½ to 13¾	12½ to 13¾
Middling.....do.....	16½ to 16¾	15½ to 16
Tobacco—Sound lugs, light grades.....do.....	7 to 7½	7 to 7½
heavy grades.....do.....	8 to 8½	8 to 8½
Common leaf, light grades.....do.....	7½ to 8½	7½ to 8½
heavy grades.....do.....	9 to 9½	9 to 9½
Wool—Combing fleeco.....do.....	53 to 58	53 to 58
Extra pulled.....do.....	38 to 42	38 to 42
Texas common to medium.....do.....	30 to 33	30 to 33
California, com. on.....do.....	26 to 28	20 to 23
CHICAGO.		
Flour—Winter extras.....per barrel..	4 75 to 7 50	5 00 to 7 50
Spring extras.....do.....	4 25 to 5 75	4 25 to 6 00
Wheat—No. 1 spring.....per bushel..	1 03½ to 1 04	1 08½ to 1 11
No. 2 spring.....do.....	1 01½ to 1 03½	95 to 1 11
No. 3 spring.....do.....	98½ to 1 00	88 to 1 05
Corn—No. 2.....do.....	58 to 62	42½ to 44
Rejected.....do.....	45 to 46	to
No grade.....do.....	42 to 44	41 to 43
Rye—No. 1.....do.....	71 to	72 to 76
No. 2.....do.....	69 to 70	70 to 75
Rejected.....do.....	63 to 65	65 to 70
Barley—No. 2.....do.....	80 to	68 to 75
No. 3.....do.....	67 to 69	53 to 54
Rejected.....do.....	50 to	40 to 45
Oats—No. 2.....do.....	39½ to 40½	38½ to 39½
Rejected.....do.....	35½ to	36½ to 37½
Hay—Timothy and clover (on track)..per ton..	16 00 to 18 00	16 00 to 18 00
Prairie.....do.....	11 00 to 15 00	10 00 to 18 00
Pork—Mess.....per barrel..	19 25 to 19 50	18 12½ to 18 25
Prime mess.....do.....	18 75 to 19 00	17 50 to 17 75
Beef—Mess.....do.....	10 00 to 11 25	11 00 to
Extra mess.....do.....	13 00 to 13 25	13 00 to
Lard.....per pound..	12 to 12¼	11½ to 11¼
Butter—Firkin and tub.....do.....	11 to 27	9 to 15
Extra.....do.....	to	22 to 28
Cheese—New York factory.....do.....	15½ to 16½	14 to 15
Western factory.....do.....	13 to 14	to
Western reserve.....do.....	13 to 14	to
Wool—Medium fleeco.....do.....	38 to 42	35 to 40
Unwashed, medium.....do.....	27 to 30	25 to 27
Tub.....do.....	45 to 50	42 to 48
CINCINNATI.		
Flour—Family.....per barrel..	5 50 to 5 75	5 60 to 5 65
Extra.....do.....	5 25 to 5 50	5 25 to 5 35

## Market prices of farm products, &amp;c.—Continued.

Products.	December.	January.
CINCINNATI—Continued.		
Flour—Superfine.....per barrel..	\$4 25 to \$4 50	\$4 25 to \$4 50
Low grades.....do.....	3 75 to 4 00	3 75 to 4 00
Wheat—No. 1 white.....per bushel..	1 20 to 1 23	1 20 to 1 35
No. 2 white.....do.....	— to —	— to —
No. 1 red.....do.....	1 17 to 1 19	1 16 to 1 17
No. 2 red.....do.....	1 16 to —	1 14 to 1 15
Corn—No. 1.....do.....	50 to 52	53 to 54
New ear.....do.....	50 to 52	53 to 54
Rye—No. 1.....do.....	86 to —	83 to —
No. 2.....do.....	83 to —	81 to —
Rejected.....do.....	78 to —	78 to —
Barley—No. 1.....do.....	1 03 to 1 10	95 to 1 00
No. 1 State.....do.....	1 00 to 1 05	— to —
Oats—No. 1 mixed.....do.....	42 to 44	42 to 43
No. 2 mixed.....do.....	37 to 39	40 to 42
Hay—Light pressed.....per ton..	19 00 to 22 00	17 00 to 20 00
Loose pressed.....do.....	20 00 to 24 00	19 00 to 23 00
Pork—Mess.....per barrel..	19 00 to 19 25	19 00 to —
Prime mess.....do.....	— to —	— to —
Lard—Prime steam.....per pound..	11 $\frac{5}{8}$ to 11 $\frac{3}{4}$	10 $\frac{5}{8}$ to 10 $\frac{3}{4}$
Butter—Choice Ohio.....do.....	23 to 30	26 to 23
Fair to good.....do.....	20 to 24	— to —
Cheese—Western reserve.....do.....	14 to 14 $\frac{1}{2}$	13 $\frac{1}{2}$ to 14 $\frac{1}{2}$
Factory.....do.....	15 to 15 $\frac{1}{2}$	14 $\frac{1}{2}$ to 15 $\frac{1}{2}$
Cotton—Ordinary.....do.....	— to 12 $\frac{1}{2}$	12 to —
Middling.....do.....	— to 15 $\frac{1}{4}$	14 to 14 $\frac{1}{4}$
Tobacco—Lugs, West Virginia.....do..	6 $\frac{1}{2}$ to 8	6 $\frac{1}{2}$ to 8
Lugs, Kentucky.....do.....	7 to 9 $\frac{1}{2}$	7 to 10
Common to medium leaf, West Virginia.....do.....	8 to 13	8 to 12
Common to medium leaf, Kentucky.....do.....	10 to 15	10 to 18
Wool—Tub-washed.....do.....	45 to 48	45 to 48
Fleece-washed.....do.....	40 to 45	40 to 45
Unwashed.....do.....	30 to 35	30 to 35
Pulled.....do.....	31 to 32	31 to 32
ST. LOUIS.		
Flour—Superfine.....per barrel..	4 20 to 4 60	4 20 to 4 60
Spring.....do.....	4 25 to 4 75	3 25 to 5 00
Choice.....do.....	7 00 to 7 50	6 50 to 7 25
Wheat—Spring.....per bushel..	1 05 to 1 10	1 05 to 1 10
Winter No. 1.....do.....	1 30 to —	1 37 to —
Winter No. 2.....do.....	1 26 to 1 28	1 28 to —
Winter No. 3.....do.....	1 07 to 1 18	— to —
Red.....do.....	1 15 to 1 37 $\frac{1}{2}$	1 12 to 1 25
Corn—Mixed.....do.....	52 to 53	55 to 56
Yellow.....do.....	52 to 53	55 to 57
Rye.....do.....	83 to —	75 to 78
Barley—Winter.....do.....	80 to —	1 00 to 1 05
Spring.....do.....	— to —	— to —
Oats—Mixed.....do.....	43 to 43 $\frac{1}{2}$	44 to 45
White.....do.....	44 to 45	45 to 46
Hay.....per ton..	18 00 to 19 50	16 00 to 18 50
Pork—Mess.....per barrel..	19 00 to 19 50	19 00 to 19 50
Lard—Tierce.....per pound..	11 $\frac{1}{2}$ to 11 $\frac{3}{4}$	11 to 12
Keg.....do.....	13 to 13 $\frac{1}{2}$	13 to 13 $\frac{1}{2}$
Butter—Choice.....do.....	30 to 32	30 to 30
Fair to medium.....do.....	17 to 25	20 to 20
Cheese—Factory.....do.....	15 $\frac{1}{2}$ to 16 $\frac{1}{2}$	15 $\frac{1}{2}$ to 16

## Market prices of farm products, &amp;c.—Continued.

Products.	December.	January.
ST. LOUIS—Continued.		
Cotton—Middling.....per pound..	\$0 13 $\frac{1}{2}$ to	\$0 13 $\frac{1}{2}$ to \$0 14
Tobacco—Sound lugs.....do.....	5 to \$0 8	5 to 6 $\frac{1}{2}$
Common leaf.....do.....	7 $\frac{1}{2}$ to 8 $\frac{1}{2}$	7 $\frac{1}{2}$ to 8 $\frac{1}{2}$
Medium leaf.....do.....	8 $\frac{3}{4}$ to 9 $\frac{1}{2}$	8 $\frac{3}{4}$ to 9 $\frac{1}{2}$
Wool—Tub-washed.....do.....	40 to 48	40 to 48
Fleece-washed, (accord to grade).....do.....	30 to 41	31 to 41
Combing.....do.....	35 to 36	35 to 35
Pulled.....do.....	30 to 33	30 to 33
NEW ORLEANS.		
Flour—Superfine.....per barrel..	4 75 to 5 00	5 50 to 5 75
Extras, (according to grade).....do.....	5 75 to 8 00	5 80 to 8 00
Corn—Mixed.....per bushel..	70 to	69 to
Yellow.....do.....	77 $\frac{1}{2}$ to	69 to 70
White.....do.....	65 to 73	69 to 70
Oats—Choice.....do.....	50 to 52	54 to 56
Hay—Choice.....per ton..	30 00 to	30 00 to 32 00
Prime.....do.....	28 50 to 29 00	32 00 to
Pork—Mess.....per barrel..	22 00 to	21 00 to 21 50
Lard—Tierce.....per pound..	13 $\frac{1}{2}$ to 14	12 $\frac{1}{2}$ to 12 $\frac{3}{4}$
Keg.....do.....	14 to	13 $\frac{3}{4}$ to 14 $\frac{1}{2}$
Butter—Choice Western.....do.....	32 to 34	30 to 32
Choice Northern.....do.....	43 to 45	42 to 44
Common Northern.....do.....	30 to 35	30 to 35
Cheese—Choice factory.....do.....	15 to 16	15 $\frac{1}{2}$ to 16 $\frac{1}{2}$
Western reserve.....do.....	13 to 14	14 to 14 $\frac{1}{2}$
Cotton—Ordinary.....do.....	12 $\frac{1}{2}$ to 13 $\frac{1}{2}$	12 to 12 $\frac{1}{2}$
Low middling.....do.....	13 $\frac{3}{8}$ to 14 $\frac{3}{8}$	13 $\frac{3}{8}$ to 14 $\frac{1}{8}$
Middling.....do.....	15 $\frac{3}{8}$ to 15 $\frac{1}{2}$	14 $\frac{3}{8}$ to 14 $\frac{5}{8}$
Tobacco—Lugs, light.....do.....	5 $\frac{1}{2}$ to 6 $\frac{1}{2}$	5 $\frac{1}{2}$ to 6 $\frac{1}{2}$
Lugs, heavy.....do.....	6 $\frac{1}{2}$ to 7	6 $\frac{1}{2}$ to 7
Low leaf, light.....do.....	6 $\frac{3}{4}$ to 7 $\frac{1}{2}$	6 $\frac{3}{4}$ to 7 $\frac{1}{2}$
Low leaf, heavy.....do.....	7 to 8	7 to 8
Medium leaf, light.....do.....	7 $\frac{1}{2}$ to 8	7 $\frac{1}{2}$ to 8
Medium leaf, heavy.....do.....	8 to 8 $\frac{1}{2}$	8 to 8 $\frac{1}{2}$
SAN FRANCISCO.		
Flour—State.....per barrel..	5 25 to 6 50	5 25 to 6 50
Oregon.....do.....	5 25 to 6 50	5 25 to 6 50
Wheat—State.....per bushel..	1 85 to 2 12 $\frac{1}{2}$	2 00 to 2 30
Oregon.....do.....	2 05 to 2 12 $\frac{1}{2}$	2 25 to 2 30
Corn—White.....do.....	1 35	1 50 to 1 60
Yellow.....do.....	1 35	1 50 to 1 60
Barley.....do.....	1 20 to 1 35	1 40 to 1 45
Oats.....do.....	1 25 to 1 50	1 40 to 1 60
Hay—State.....per ton..	10 00 to 14 00	12 00 to 16 00
Pork—Mess.....per barrel..	24 00	24 00
Prime.....do.....	21 00 to 23 00	21 00 to 22 50
Beef—Mess.....per barrel..	18 00 to 20 00	18 00 to 20 00
Lard—In barrels.....per pound..	13 to 14	12 $\frac{1}{2}$ to 13
Domestic.....do.....	11 to 12	11 to 12
Butter—State.....do.....	40 to 60	40 to 55
Oregon.....do.....	15 to 25	15 to 25
Overland.....do.....	25 to 35	25 to 35
Cheese.....do.....	12 to 17	12 to 17
Wool—Native.....do.....	13 to 14	13 to 14
Californian.....do.....	15 to 18 $\frac{1}{2}$	15 to 18 $\frac{1}{2}$
Oregon.....do.....	24 to 25	24 to 25

## NEW YORK HAY MARKET.

The following is a comparison of the prices of hay and straw in the New York market for the past three years

	Sept. 30, 1867.	Sept. 30, 1868.	Sept. 30, 1869.	Sept. 30, 1870.
Shipping hay.....			\$0 65	\$1 00
Retail hay.....	\$1 30 to 1 45	\$1 25 to 1 40	1 15	\$1 20 to 1 35
Long straw.....	90 to 95	1 00 to 1 05	\$0 90 to 95	1 00 to 1 10
Short straw.....	70 to 75	85 to 90	75 to 80	80 to 90
Oat straw.....	75 to 80	85 to 90	60 to 75	70 to 80

### THE NORTH AMERICAN DESERT FLORA BETWEEN 32° AND 42°, NORTH LATITUDE.

The following paper was read at the meeting (1870) of the British Association at Liverpool, England, by C. C. Parry, M. D., the botanist of this Department:

The desert tracts of North America, as at present defined by our recent geographical knowledge, comprise those interior basins of greater or less extent shut in by mountain ranges from the influence of the moist oceanic currents. These well-marked districts, while presenting certain diversities of soil corresponding to particular geological conditions, everywhere characterized by an arid climate, irregular and scanty rainy seasons, and wide extremes of heat and cold, both diurnal and annual. The permanent water-courses of this region, having their distant sources in snow-clad summits, traverse a succession of basins, presenting occasional alluvial belts bounded by elevated and abrupt table-land, which latter is mainly composed of beds of coarse gravel or drifting sand. The intervening ridges forming the basin rims are cut through by those deep chasms known as cañons.

The local drainage, not connected with the main valleys, terminates rather in salt lakes or saline flats, the intense evaporation being sufficient to carry off the superficial supply of water, leaving their soluble mineral contents to be concentrated in the lower depressions. The intervening rocky ridges and isolated mountain peaks, when not of sufficient elevation to act as condensers of the upper currents of the atmosphere, exhibit the same characters of arid vegetation, though comprising a larger proportion of shrubbery and dwarf-tree growth.

In attempting an enumeration of North American desert plants, my aim has been not so much completeness of detail as to exhibit the main features of desert vegetation, as here brought to view, and to afford the means of comparison with corresponding districts in other portions of the earth. One of the most striking features of the desert flora may be noted in the very marked distinction between the annual and perennial vegetation. Thus, the annual desert plants, whose period of growth is strictly confined to a short and uncertain period of spring or fall rains, require for their continued preservation a safe deposit for their usually minute seeds during the prolonged dry season. This condition is, in great measure, supplied by the porous sandy and gravelly soil, or rock crevices, into which they fall and are safely buried, not only out of the reach of climatic influences, but also safe from destruction by animals. Their growth is necessarily rapid and evanescent, and no sooner do warm rains moisten the ground than they spring forth from their hiding places and clothe the barren soil with their scanty verdure, rapidly flower and mature their seeds, which are again deposited in the earth, while their slight evanescent forms dry up and are blown away, hardly leaving any visible trace of their existence. These characteristics are plainly exhibited in ordinary herbarium specimens, and are further exemplified in the specific name of "exile," so often very appropriately applied. On the other hand, the perennial desert plants either store up a large amount of surplus nourishment in their thick, tuberous, or tap roots; or, in the case of trees and shrubs, present exposed stems and foliage of the most scant and starved character. Spine-clad branches and green-barked stems are, in many instances, made to supply the office of leaves, or where these latter are present, they are often thickly coated with resinous varnish, or clothed with tomentose hairs or scales, serving, in either case, to check evaporation, and thus limit the usual processes of growth. The preservation of species in perennial plants being less dependent than in annuals on the production of seeds, these are generally scanty, often mature late, and

are frequently protected by hard or spiny envelopes. In certain cases, especially among cactuses, proliferous shoots, easily detached and quickly rooting, serve the purpose of seeds in providing for the continuance and distribution of species; and in such instances the very remarkable and significant fact may be noted, that the fruits generally prove abortive, or even revert to the condition of proliferous shoots.

In the accompanying list a great disproportion in the representation of different natural orders and of particular genera is very plainly exhibited, and there is complete absence of some orders and genera usually represented in northern temperate climates.

The list contains 183 species. Dicotyledons are represented by 169 species, included in 48 natural orders and 144 genera; and monocotyledons include 19 species, comprised in 4 natural orders and 10 genera. The natural order *Compositæ* possesses the largest number of species, viz: 44, or nearly one-fourth of the whole phanerogamic flora. Leguminosæ (which includes most of the dwarf trees and larger shrubs) comes next in point of number, with 25 species. Other prevalent natural orders are variously represented. Of the lower orders (which are not included in the following list) lichens only are fairly represented.

- Myosurus minimus, L.*  
*Berberis trifoliata, Moricand.*  
*Argemone mexicana, L.*  
*Eschscholtzia Douglasii, Hook.*  
*Corydalis aurea, Willd.*  
*Sisyrinchium canescens, Nutt.*  
*Vesicaria Fendleri, Gray.*  
*V. argyrea, Gray.*  
*Diithyrea californica, Har.*  
*Lepidium flavum, Gray.*  
*L. Wrightii, Gray.*  
*L. alyssoides, Gray.*  
*Cleomella angustifolia, Torr.*  
*C. longipes, Torr.*  
*Cleome Sonore, Gray.*  
*Polanisia unguiculata, DC.*  
*Sesuvium Portulacastrum, L.*  
*Lewisia rediviva, Pursh.*  
*L. Brachycarpa, Engelm.*  
*Fouquieria splendens, Eng.*  
*Malvastrum exile, Gray.*  
*M. coccineum, Gray.*  
*M. Monroanum, Gray.*  
*Hibiscus denudatus, Bth.*  
*Larrea mexicana, Moric.*  
*Kallstroemia maxima, Torr. et Gray.*  
*K. grandiflora, T. et G.*  
*Cevallia sinuata, Lag.*  
*Petalonyx Thurberi, G.*  
*Mentzelia albicaulis, D. J.*  
*M. Multiflora, Nutt.*  
*Eucnide lobata, Gray.*  
*Cucurbita digitata, Gray.*  
*Apodanthera undulata, Gray.*  
*Mamillaria phellosperma, Engelm.*  
*M. Grahami, Engelm.*  
*Echinocactus Wislizeni, Engelm.*  
*E. horazonthalonus, Engelm.*  
*Cereus dasycanthus, Eng.*  
*C. Stramineus, Engelm.*  
*C. Engelmanni, Parry.*  
*C. Giganteus, Engelm.*  
*Opuntia basilaris, Engelm.*  
*O. Emoryi, Engelm.*  
*O. Whipplei, Engelm.*  
*O. arborescens, Engelm.*  
*O. Parryi, Engelm.*  
*O. tessellata, Engelm.*  
*O. Arbuscula, Engelm.*  
*O. Bigelovii, Engelm.*  
*O. Davisii, Engelm.*  
*Pectis filipes, Harv. et G.*  
*P. longipes, Gray.*  
*P. imberbis, Gray.*  
*P. papposa, Harvey et G.*  
*Carphophorus junceus Bth.*  
*Nama Jamaicensis, L.*  
*Phacelia micrantha, Torr.*  
*Gilia aurea, Nutt.*  
*Navaretia Schottii, Torr.*  
*Ipomoea leptophylla, Torr.*  
*Evolvulus argenteus, Psh.*  
*Nicotiana quadrivalvis, Pursh.*  
*Physalis cardiophylla, T. et G.*  
*Lycium pallidum, Miers.*  
*Amsonia tomentosa, T.*  
*Asclepias subulata, Dne.*  
*Thamnosma montanum, Torr.*  
*Rhus microphylla, Engelm.*  
*Glossopetalum spinescens, Gray.*  
*Rhamnus croceus, Nutt.*  
*Ceanothus Fendleri, Gr.*  
*Zizyphus Parryi, Torr.*  
*Condalia spathulata, Gr.*  
*Microthamnus ericoides, Gray.*  
*Karwinskia Humboldtiana, Zucc.*  
*Adolphia infesta, Meisn.*  
*Janusia gracilis, Gray.*  
*Holacantha Emoryi, Gr.*  
*Canotia holacantha, Torr. et Gray.*  
*Polygala scoparia, H. B. K.*  
*P. Lindheimeri, Gray.*  
*P. Puberula, Gray.*  
*P. Xantii, Gray.*  
*Krameria parvifolia, Bth.*  
*K. canescens, Gray.*  
*Dalea spinosa, Gray.*  
*D. Emoryi, Gray.*  
*D. Fremontii, T. et G.*  
*D. Schottii, Gray.*  
*D. divaricata, Benth.*  
*Dalea scoparia, Gray.*  
*D. lanata, Spreng.*  
*Petalostemon exile, G.*  
*Machaeranthera tanacetifolia, Nees.*  
*Eremiastrium belloides, Gray.*  
*Aphanostephus ramosissimus, DC.*  
*Gymnosperma corymbosa, DC.*  
*Gutierrezia Euthamiae, T. et G.*  
*Linosyris graveolens, Torr. et G.*  
*Altopappus spinulosus, DC.*  
*Perityle nuda, Torr.*  
*P. Emoryi, Torr. et G.*  
*Baccharis Emoryi, Torr. et G.*  
*B. sergileoides, T. et G.*  
*Melampodium cinereum, DC.*  
*Dicoria canescens, T. et G.*  
*Frauseria dumosa, Gray.*  
*F. deltoidea, Torr.*  
*Flourensia cernua, DC.*  
*Eucelia conspersa, Bth.*  
*E. nivea, Benth.*  
*Simsia canescens, Gray.*  
*S. frutescens, Gray.*  
*Hymenatherum acerosum, Gray.*  
*H. pentactum, DC.*  
*Nicolletia Edwardsii, Gr.*  
*Porophyllum scoparium, Gray.*  
*Palafoxia linearis, Lag.*  
*Bahia rubella, Gray.*  
*B. biternata, Gray.*  
*E. cordatum, Torr.*  
*E. Abertianum, Torr.*  
*Chorizanthe brevicornu, Torr.*  
*Acanthogonum rigidum, Torr.*  
*Centrostegia Thurberi, G.*  
*Achyronychia Cooperi, G.*  
*Acanthochiton Wrightii, Torr.*  
*Sarratia Berlandieri, Moq.*  
*Gutierrezia densa, Moq.*  
*Altemanthera lanuginosa, Torr.*  
*Obione canescens, Moq.*  
*A. Nuttallianus, Gray.*  
*A. Fremontii, T. et G.*  
*Lupinus passilus, Pursh.*  
*Sophora sericea, Nutt.*  
*Hoffmanseggia microphylla, Torr.*  
*H. drepanocarpa, Gray.*  
*Cercidium floridum, Bth.*  
*Cassia bahinioides, G.*  
*C. Pumilio, Gray.*  
*Parkinsonia microphylla, Torr.*  
*Algarobia glandulosa, Torr. et G.*  
*Mimosa Lindheimeri, G.*  
*Acacia Greggii, Gray.*  
*A. constricta, Benth.*  
*A. Schottii, Torr.*  
*Prunus minutiflora, Eng.*  
*Cercocarpus parvifolius, Nutt.*  
*Cowania mexicana, Don.*  
*Fallugia paradoxa, Torr.*  
*Purshia tridentata, DC.*  
*Eriogonum albicaulis, Nutt.*  
*Ge. chamænerioides, G.*  
*Ge. claviformis, Torr.*  
*Ge. cardiophylla, Torr.*  
*Ge. brevipes, Torr.*  
*Ge. dentata, Cav.*  
*Eurichia lanosa, Gray.*  
*Trichoptilium incisum, G.*  
*Baileya pauciradiata, G.*  
*B. pleriradiata, H. et G.*  
*Artemisia tridentata, Psh.*  
*A. filifolia, Torr.*  
*Psathyrotes annua, Gray.*  
*P. scaposa, Gray.*  
*Senecio longilobus, Bth.*  
*Rafinesquia neo-mexicana, Gray.*  
*Lygodesmia juncea, DC.*  
*Stephanomeria minor, Nutt.*  
*Nemacladus ramosissimus, Nutt.*  
*Plantago patagonica, Jacq. var.*  
*Chilopsis linearis, D. C.*  
*Martynia arenaria, Engelm.*  
*Maurandia Wislizeni, Engelm.*  
*Pentstemon ambiguus, T.*  
*P. puniceus, Torr.*  
*Castilleja affinis, Hook.*  
*Mohavea viscida, T. et G.*  
*Sericographis californica, Gray.*  
*Hyptis Emoryi, T. et G.*  
*Salazaria mexicana, Torr.*  
*Tetraclaea Coulteri, Gray.*  
*Tiquilia brevifolia, Nutt.*  
*Eritrichium micranthum, Torr.*  
*Pectocarya linearis, DC.*  
*Amsinelia spectabilis, Fisch. et Mey.*  
*Ephedra antisiphilitica, Berland.*  
*Juniperus tetragona, Schk.*  
*J. occidentalis, Hook.*  
*Agave americana, L.*  
*A. lecheguilla, Torr.*  
*A. geminiflora, Gavl.*  
*A. parviflora, Torr.*  
*Dasyliroon graminifolium, Zucc.*  
*D. Bigelovii, Torr.*  
*Hesperocallis undulata, G.*  
*Yucca angustifolia, Psh.*

Selinocarpus augustifolius, Torr. et G.	O. occidentalis, Moq.	Y. stenophylla, Eng. ined.
S. diffusus, Gray.	Corispermum hyssopifolium, L.	Y. brevifolia, Eng. ined.
Boerhaavia erecta, L.	Sarcobatis vermicularis, Nees.	Y. baccata, Torr.
B. erioselina, Gray.	Phoradendron californicum, Nutt.	Aristida purpurascens, Poir.
Abronia mellifera, Dougl.	Euphorbia albo-marginata, Torr.	Pappophorum boreale, Led.
A. cyclopetra, Gray.	Croton procumbens, Esch.	Bouteloua oligostachya, Nutt.
A. fragrans, Nutt.	Aphora serrata, Engel.	B. eriopoda, Torr.
Eriogonum fasciculatum, Benth.	Mozinna cardiophylla, Engel.	B. polystachya, Benth.
E. gracile, Benth.	Pilostyles Thurberi, G.	Chloris alba, Presl.
E. vimineum, Dougl.	Hosackia puberula, Bth.	Tricuspis pulchella, Kth.
O. hymenelytra, Torr.	Astragalus Missouriensis, Nutt.	Brizopyrum spicatum, Hook.

## CULTIVATION OF THE PLAINS.

Mr. R. S. Elliott, agent of the industrial department of the Kansas Pacific Railway, has been making experiments in the cultivation of the unirrigated plains at Wilson, 236 miles west of the State line of Missouri, and 1,586 feet above the level of the sea; at Ellis, 302 miles west of the State line, and 2,019 feet above the sea; at Pond Creek, 422 miles west of State line, and 3,175 feet above the sea. These plantations are west of the limits heretofore assumed by most meteorologists as the limit of cultivation, except by the aid of irrigation. Only a few acres of ground were broken at each place on account of the lateness of the season when the work was begun. After one plowing and a slight harrowing the seeds were sown.

At Pond Creek, on the 26th of September, 1870, were sown 4 acres of wheat, 3 acres rye, 2 acres barley, timothy sown on the wheat. On the 14th of November, lucerne was sown across the wheat, rye, and barley. At Ellis were sown, on the 20th of October, wheat three acres, rye 3 acres, barley 1 acre. On the 22d of the same month 3 quarts of Touzelle wheat and 3 quarts of Scotch rye, furnished by this Department, were sown, and on the 24th, Italian rye grass, lucerne, northern lucerne, province lucerne, Alsike clover, sainfoin, seradilla, vetches, vetchlings, and perennial rye grass, also from this Department. On the 12th of November a few nuts and tree seeds were planted at Wilson, burr-oak, pecan, chestnut, peach, and ailanthus. Mr. Elliott says:

The experiment, without irrigation, at Pond Creek, 120 miles beyond Ellis, and on the extreme western border of the State of Kansas, in the very midst of the dry plains, and in a soil to be classed with the least promising on the line of your road, is the most interesting and important. The location is near the 102d degree of west longitude, four degrees west of the limit of arable effort, depending on rain-fall alone, as heretofore assigned by eminent meteorologists. Boldly, but not unwisely, you have invaded the "desert," not only with the iron rail, but the plow and harrow as well; and success, under circumstances heretofore believed to forbid it, will prove the wisdom of your order to make the trial; and it will also establish a new value for millions of acres of lands heretofore regarded as worthless except for limited grazing resources in favored portions. Even with the first trial I have no doubt of success. A second trial, with better culture and a decomposed sod, will yield larger results, but will not more clearly illustrate the favorable climatic conditions and the strength of the soil.

Relative to tree growth on the plains, Mr. Elliott lays down these propositions: 1. Forests can be established in all parts of the plains, even without artificial irrigation. 2. Much deeper plowing will be required than for winter grains or forage plants. 3. The most rapid growers are the beech trees for first planting. 4. Planting seed is better than transplanting young trees.

The ailanthus seeds sent by this Department to Ellsworth County, Kansas, last spring, have been tried by several farmers with very favorable results. The little trees now in Ellsworth County are "the talk of the county." Mr. Elliott is satisfied that there is no tree seed so valuable as this for that part of the country.

## SCIENTIFIC NOTES.

## SULPHATE OF MAGNESIA AS A MANURE.

The accumulation of sulphate of magnesia, or epsom salts, as a waste product at a mineral-water establishment in Königsberg, where it is offered for sale at about 15 cents per hundred weight, has suggested its use for agricultural purposes, as its constituents enter largely into the composition of most vegetable substances. Magnesia, especially, is found in considerable quantity in the seeds of various cultivated plants, and especially in corn, &c. The experiment has already been tried of applying the sulphate of magnesia to one part of the field, and the sulphate of lime, or gypsum, to the other; and, according to Professor Goltz, it is stated that in the case of clover especially, the difference was very markedly in favor of the magnesia, although the general nature of its agency appears to be quite similar to that of the gypsum. Both seem particularly valuable in this connection, on account of entering directly into the composition of the plant instead of requiring a certain transformation before being taken up. The sulphate of magnesia, as stated by Professor Goltz, has a perhaps still more important application in the stable, acting like gypsum in retarding the decomposition of the manure, and fixing the ammonia developed from it. The sulphate of magnesia, however, acts more quickly and energetically than gypsum, in consequence of being very soluble in water; quite the contrary being the case with gypsum. From the preceding considerations, therefore, it is inferred that sulphate of magnesia is quite equal to gypsum as a fertilizer, and decidedly superior for use in stables. From one pound to one and a half pounds per day, per head, will suffice for the latter object, or from four to five hundred weight per annum. The cost in the vicinity of Königsberg being less than one-half that of gypsum, is an important point in favor of the epsom salt.

## CONSTITUENTS OF THE MILK OF DIFFERENT ANIMALS.

From a late examination of different kinds of milk, with reference to their solid constituents, it has been ascertained that asses' milk is most diluted, containing scarcely 9 per cent. of solid matter. Next comes human milk, with somewhat over 11 per cent., while mares' milk contains 17 per cent. The average is seen in the milk of the goat and of the cow. In reference to the percentage of casein and albumen, human milk is poorest, containing only 4 per cent. of casein; cows' milk nearly 5 per cent., with more than one-half per cent. of albumen. Again, goats' milk, with nearly 6 per cent. of casein and albumen, as far as known, has a larger amount of albumen than that of any other mammal. The smallest quantity of butter is found in asses' milk; that of the goat containing the largest, or nearly 7 per cent. Sheeps' milk is most nutritious, as it contains  $11\frac{1}{2}$  per cent. of protein matters and hydrocarbons; and while the milk of the cow contains only about 4 per cent. of milk sugar, that of the mare has 8 per cent., which renders it very prone to alcoholic fermentation, and has given rise to its employment by the Tartars in the production of an intoxicating liquor, known as quass.

## THEORY OF FATTENING ANIMALS.

An important suggestion has lately been made by Mr. Lawes, of England, on the waste of food during respiration, and its relationship to the fattening of animals. He remarks that in the case of animals fed for



the butcher the economy of the feeding process will be the greater, the less the amount of food expended by respiration, in the production of a given amount of increase; and it is equally obvious that one ready and efficient means of lessening the proportion of waste or expenditure to the increase of the products, is to lessen, as far as possible, the time taken to produce it. In other words, to fatten as quickly as possible. Thus, from experiments made by him, he assures us that a pig weighing 100 pounds will, if supplied with as much barley meal as he can eat, consume 500 pounds of it, and double his weight—that is, increase from 100 pounds to 200 pounds—in seventeen weeks. He then points out that if instead of allowing the pig to have as much barley meal as he will eat, the 500 pounds of meal had been made to last many more weeks, the result would have been that the animal would have appropriated a correspondingly larger proportion of the food for the purposes of respiration and perspiration, and a correspondingly less proportion in the production of increase. In other words, if the 500 pounds of barley meal were distributed over a longer period of time, it would give less increase in live weight, and a larger proportion of it would be employed in the mere maintenance of the life of the animal. Indeed, if the period of consumption of the 500 pounds of meal be sufficiently extended, the result will be that no increase whatever will be produced, and that the whole of the food, excepting the portion obtained as manure, will be expended in sustaining the animal's existence.

#### REARING GRAPE VINES IN POTS.

A horticulturist in Stuttgart has devised an ingenious method of rearing grape vines in pots so as to obtain grapes with very little trouble in a room or other sheltered place. For this purpose a vigorous healthy cutting of the late growth of the wood is taken, from three to five feet in length, having at the upper end two fruit buds. The cutting is to be entirely enveloped with moss, and bound with bast, but so as to leave the extremity bearing the fruit buds uncovered. The cutting thus prepared is to be inserted spirally into a sufficiently large flower-pot, leaving the fruit buds projecting above the edge of the pot, which is then to be filled with rich hot-bed earth well moistened, and placed in the sun behind a window and kept uniformly moist. The water applied should never be cold, but rather lukewarm, so as to stimulate to the utmost the development of the young roots. When the weather is such that there is no danger from night frosts, the pot may be placed outside the window or against a sunny wall, or even inserted in the ground in order to secure a more uniform moisture and temperature. When the two fruit buds have produced branches, having bunches of grapes upon them, these shoots are to be trimmed so that two sound leaves remain over each grape shoot, in order to keep up the circulation of the sap, since without this the grapes would not develop. A single leaf would be sufficient, but two are better, for greater security. An occasional watering with a liquid manure is advisable in order to stimulate the growth of the plant, although this must be applied with care, since an excess will do more harm than good. In one instance a grape shoot treated in this way produced nine large bunches of fine grapes, although such a number would be rather more than could conveniently be supported by the plant.

#### DESTROYING ANTS.

A French agriculturist reports that after trying every method known to him for the destruction of ants infesting some of his fruit trees, he

succeeded in effecting his purpose in the most complete manner by placing a mixture of arsenic and sweetened water in a saucer at the foot of the trees. For the larger species he made use of honey instead of sugar, and he found that in a few days time he could exterminate them completely.

#### UTILIZATION OF COTTON FIBER.

A communication was presented to the British association at its late meeting in regard to the utilization of the fibers of the cotton seed. The author expressed his astonishment that a vegetable production which was capable of so many important applications, and could be supplied by millions of pounds, was now entirely wasted, the amount thus thrown away in America alone being a million and a half tons.\* According to Mr. Rose's estimate, as the seed is composed of 50 per cent. of kernel, yielding about one-third of oil, and 50 per cent. of husk, one-third of which is fiber, the wasted seed should produce 250,000 tons of pure cotton, 250,000 tons of oil, and 5,000 tons of cattle cake, representing the value of \$1,000,000. The husks could then be taken to a paper mill and the cotton abstracted in such a state as to form most valuable material for paper. By a process devised by the speaker, the cotton fiber could be completely separated from the shell. He stated that a very slight alteration in the ordinary machinery for manufacturing paper will enable this material to be utilized.

#### NEW OIL-SEED.

A new form of oil-seed has lately been exciting the attention of experts. These are supposed to have come from Mozambique, although shipped from Lisbon, and are said to be seeds derived from the *Telfairia pedata*, a tall, climbing, cucurbitaceous plant, a native of the coast opposite Zanzibar. These seeds look somewhat like almonds, and are flat, nearly circular, and about one and a half inches across. The kernel is about the color and hardness of the Brazil-nut, and contains a large quantity of oil, said to be equal in many respects to olive oil in excellence. The fruit is very large, and is stated to contain as many as 250 seeds.

#### CULTURE OF IPECACUANHA.

The government authorities in India, stimulated by their success in introducing and naturalizing the cinchona tree in various parts of the country, are endeavoring to do the same in regard to the ipicacuanha plant, and with every prospect of success. The plants in the gardens at Nelamboor are said to be doing well, some of the fleshy leaves being already four inches in length.

#### IMPROVEMENT IN REFINING SUGAR.

A much-needed improvement has lately been made by Dr. Seyforth, of the Brunswick sugar refinery, in regard to the purification of sirups and molasses in the manufacture of sugar, especially that from the beet. As is well known the juices and liquors employed in the first extraction of beet sugar from the raw material, as well as the sirups resulting from the sugar refining process, generally contain a certain quantity of alkaline substances. By treating the saccharine juices with milk of lime, several of the bases of the alkaline salts present in the juices are separated from the acids they were at first combined with, and by thus being set free, and remaining mixed with the sugar, impede crystallization.

\* The crop of 1870 would yield at least two millions of tons.

One part of alkaline matter can absorb as much as four parts of sugar, and some kinds of molasses contain as much as eight per cent. of alkali.

Various means have been used to remedy this defect; among them, more particularly sulphuric and phosphoric acids, the use of which, however, is, in most instances, inadvisable for various reasons. Sulphurous acid has also been recommended, and used with excellent advantage.

The method of Dr. Seyforth consists in introducing the sulphurous acid either in the form of gas, or as a weak active solution, into the vacuum pans. In this way it becomes possible to bring all particles of the sugar solution (or sirup) into contact with the sulphurous acid, and to eliminate, by the joint action of heat and vacuum, any excess of that acid which, however, not only saturates free alkalis and carbonate of lime, but also sets the organic acids which may be present, as alkaline salts, free from those combinations. The sulphurous acid thus takes hold of the bases they were combined with, while the greater part of the organic acids are volatilized along with the steam. Thus the sulphurous acid promotes the good and ready crystallization of the sugar, while its action as a decolorizer comes also into play. The details of the new process embrace the two operations of the manufacture of the acid in a simple form, and its introduction into the vacuum pans. The quantity to be applied in any solution varies from four to eight, or from ten to fifteen per cent. of the bulk of liquid sirup to be evaporated. The process is said to involve very little cost, to require no inconveniently large space, to be applicable to any existing manufactory, and to be very easily understood by manufacturers.

#### COMPARATIVE FECUNDITY OF DUCKS AND HENS.

Some interesting experiments have recently been made upon the comparative fecundity of ducks and hens so as to determine from which of the two the larger number of eggs can be obtained in the same time. For this purpose three hens and three ducks were selected, all hatched in February, and nourished with suitable food. In the following autumn the ducks laid 225 eggs, while the hens laid none. In the next February the laying season began again with the ducks and continued uninterruptedly till August. They showed no inclination to set, but became very thin, although they afterward fattened up somewhat. The total number of eggs laid by the hens amounted to 257, or 86 eggs each; and 392, or 131 each for the ducks. Although the eggs of the ducks were rather smaller than those of the hens, yet they proved to be decidedly superior in nutritive material, so that the superiority in productiveness appears to be decidedly with the ducks.

#### PREHISTORIC HORSE.

According to Professor Owen, who has lately been examining animal remains from the cavern of Bruniquel, the human bones show most affinity with the Celtic types, the cranium being oval and rather dolicocephalous than brachycephalous in general proportion. The cranial capacity corresponds to that of uneducated Europeans of Celtic origin, and exceeds that of the average of Australian aborigines.

Professor Owen, referring to certain carvings on the animal bones accompanying the remains, says that some of them are pictures of the heads of horses, and show much artistic skill. They represent an animal with short pointed ears, the stallions having beard-like hairs. The tails of the horses also appear to have been short, and furnished with long hairs to their base instead of having these hairs form a kind of

tuft nearer the end of the tail. Professor Owen finds no evidence anywhere of an aboriginal wild horse resembling that of the present day, no remains of the kind existing in any museum; and it is probable that the delineations of the cave horse of Bruniquel represent all that we are likely to know of the form of the primitive stock from which the present horse is descended.

#### TIN FOIL FOR PRESERVING LEMONS.

Tin foil has long been used, with excellent effect, as a preservative from the air, of various substances that require such exclusion, especially such as chocolate, tobacco, cocoa-butter, efflorescent and deliquescent salts, &c. Quite recently a new application has been made of it in the preservation of lemons, which, as is well known, soon become dry and hard when exposed to the air, and ultimately parchment-like and covered with mold. The foil, however, has the effect of preventing such drying up, and of keeping the lemons fresh for an indefinite period of time. In one experiment, after an interval of two months, the lemons had only lost  $1\frac{1}{2}$  per cent. of their weight, and in three months little over 3 per cent., and in some cases even less than this. Oranges, similarly treated, lost only about 5 per cent. in two months, and on the removal of the metal covering, both kinds of fruit were found to be as fresh and fragrant as when the experiment commenced.

#### PRESERVING MEAT IN CANS.

A new method of preserving meat in tin cans, which is favorably commented upon, is that of Mr. R. Jones, of London. In this process the meat is first packed in its raw state into tins of any desired size. The lids are then soldered down, the top of each lid having a small tin tube in it, which communicates with the interior of the tin. These tubes are next inserted into the exhauster, which is a receptacle connected with a machine designated a "Torricellian vacuum," an apparatus in which the air is exhausted by the action of water. The tins are then placed in the cooking-bath, and at the proper juncture the vacuum is created and the meat thoroughly cooked, at a temperature varying from 180 to 228 degrees. At this stage another feature of the invention comes into play. The vacuum having been created, a supply of gravy is turned on from a receptacle, and the tins filled with nutritious fluid. The feed-pipes of the tins are then nipped and the cases hermetically sealed. By thus filling the tins with the gravy the difficulty of collapse, which has always prevented large tins being hitherto used, is obviated, while the whole space of the package is utilized. Testimonials from captains of ships and others who have used it are furnished by the inventor, certifying to the excellent quality of the meat. By this improved process the great objection of over-cooking the meat has been obviated, and as now prepared it would seem to merit general approval.

#### IMITATION OF HUMAN HAIR.

In a recent article upon the trade in human hair it is stated that a patent has recently been taken out for converting goat's hair into hair for ladies' use; and that the experiment is so successful as to render it almost impossible to distinguish the real article from the imitation. This will be good news not only to the dealers in hair, who might apprehend the exhaustion of their source of supply, but also to the ladies who depend upon art to compensate the deficiencies of nature. The same article states that in 1868 over 22,000 pounds of hair were im-

ported into Great Britain, representing the clip of about 45,000 women. Much of this is obtained from the large communities of sisterhoods scattered throughout France and Belgium.

#### PRESERVING EGGS.

The French Journal de Pharmacie contains an account of various experiments made in France on the best method of preserving eggs—a subject of much importance there. Among the different processes, the best, and at the same time one of the simplest, was found to consist in rubbing some vegetable oil (linseed especially) on the egg, this preventing any alteration for a sufficient time, and proving to be much more satisfactory than any other plan hitherto recommended.

#### CARBOLIC ACID AND RINDERPEST.

Dr. Hope, in a communication to the British Association, stated the result of certain experiments upon cattle with carbolic acid, during the rinderpest pestilence in 1867. Of about 270 cows under his charge the majority were attacked by the disease; but by injecting a solution of carbolic acid, either through the mouth or rectum, he was enabled to recover 111 of them. The remainder, not so dealt with, died, or had to be slaughtered. For this reason, he argued that the chemical treatment of contagion is much better than the medicinal, both in respect to man and adult animals.

#### CARBOLIC ACID IN TANNING.

A patent was not long since taken out in Paris for the application of carbolic acid as a preventive of putrefaction in the different branches of leather manufacture, a few thousandth parts of carbolic acid added to the liquids used in tanning preventing the rotting of the skin, it is said, during the process of preparation.

#### CHINESE METHOD OF PRESERVING GRAPES.

Travelers inform us that the Chinese have a method of preserving grapes, so as to have them at their command during the entire year; and a recent author gives us the following account of the method adopted. It consists in cutting a circular piece out of a ripe pumpkin or gourd, making an aperture large enough to admit the hand. The interior is then completely cleaned out, the ripe grapes are placed inside, and the cover replaced and pressed in firmly. The pumpkins are then kept in a cool place, and the grapes will be found to retain their freshness for a very long time. We are told that a very careful selection must be made of the pumpkin, the common field pumpkin, however, being well adapted for the purpose in question.

#### TREATMENT OF SCARLET FEVER.

Mr. Lennox, in a late communication upon the very prevalent epidemic of scarlet fever through England and Wales, calls attention to certain common sense views in regard to its treatment, which commend themselves to all thoughtful persons. He remarks that although we may not always be able to control the appearance of the disease, yet when it has been developed, its further progress is or should be entirely under our control, since it is a contagious disease, and, as such, capable of being antagonized. In this case, as in many other diseases, the poison is evidently propagated in the form of germs, whatever be their

character, which, thrown into the air and falling upon or entering the body, give rise to renewed cases. In scarlet fever these germs appear to retain their vitality for an unusual length of time, one case being mentioned where a piece of flannel, worn around the neck of a scarlet fever patient, was picked up and used two years after, and developed a fresh case of the disease. In a certain instance of an outbreak of scarlet fever over a wide neighborhood it was ascertained that in every instance this took place in families that had been supplied with milk by the same milkman. On inquiry it was found that persons connected with the farm from which milk was supplied had been infected with scarlet fever. The precautions to be taken, according to Mr. Lennox, after the disease has made its appearance, are, in the first place, to isolate the patient at whatever trouble or expense, preventing the approach of any one excepting the nurse and physician. With this, disinfectants must be used with the utmost freedom, whether they be carbolic acid, permanganates of soda and potash, chloride of zinc, chloride of aluminum, chlorinated lime or soda, sulphate of iron, &c. These should be employed in and around the patient. All his discharges and excretions should be immediately disinfected, and all bed clothing and linen worn by the patient treated with the same care. Nurses in attendance, and physicians touching the patient in any way, should also wash their hands in a disinfecting solution before leaving the room. Woolen clothing that cannot be washed should be exposed to a heat of at least 212 degrees, this temperature having the property of destroying the poisonous germs. Even after the patient has apparently recovered, the precautions should be maintained until the peeling off of the cuticle, or the scales, has been entirely accomplished, as in many cases the disease has been traced to the particles of this character.

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#### ITEMS FROM VARIOUS SOURCES.

**AN IMMIGRATION SCHEME.**—A society in England proposes to organize a colony of agricultural laborers, in number about 60 or 70, to settle in California, supplying them with agricultural implements, and supporting them until such time as they can support themselves. It is proposed that each settler receive 40 acres, ranged in alternate plats around a central section of 640 acres. The condition of carrying out this plan is that the owners of real estate on which the colony is located shall contract to give the society, free of charge, the fee-simple of 640 acres, central block, and the alternate quarter quarter-sections (40 acres) occupied by the immigrants; the owners of the estate to recompense themselves by sale at advanced prices of the alternate quarter quarter-sections. The estimated cost of each immigrant to the society is £100 to £150, or a total investment of £6,000 to £9,000. In the event of the first colony proving a success, it is proposed to organize others. It is supposed that by confining the free grant to 40 acres, each man would soon require the contiguous 40 acres, and would pay a high price for it. The movement originates among wealthy, charitable English persons.

**COLONY IN FLORIDA.**—A colony has recently been planted on the Halifax River, in East Florida, where it is proposed to raise sugar-cane and semi-tropical productions. It is thought that the climate and soil for such purposes are as congenial as those of Cuba. The location is within a mile of the ocean, where a forty-mile drive on the hard sand beach may be had. The Halifax, a beautiful stream, abounds in fish

and oysters, and the woods in deer, turkeys, and wild cattle. The winters are mild and pleasant.

**CALIFORNIA FRUIT.**—The aggregate value of fruit raised in California during the year 1870, as reported by the San Francisco Bulletin, was \$2,371,612. The varieties included are apples, apricots, blackberries, cherries, currants, figs, grapes, nectarines, peaches, pears, plums, prunes, raspberries, strawberries, quinces, oranges, lemons, limes, watermelons, cantaloupes, and citron. Total number of pounds, exclusive of oranges, 63,574,150. Number of oranges, 2,466,000.

It is estimated that five hundred tons of California fruits have been received in New York since the 1st of July last, all of which found ready sale at remunerative prices. The principal fruit shipped is the pear. A considerable quantity of grapes have been received, and a notable instance of the effect of receiving fruit of this kind from California is the low price at which imported Malaga grapes are offered in the market compared with last season.

**FRUIT IN ALAMEDA COUNTY, CALIFORNIA.**—The following is reported as the fruit crop of this county for 1870: Apples, 2,400 boxes, 50 pounds each; apricots, 1,950 boxes, 35 pounds each; blackberries, 1,050 chests, 100 pounds each; cherries, 9,500 boxes, 35 pounds each; currants, 2,250 chests, 100 pounds each; figs, 6 tons; grapes, 55 tons; peaches, 5,650 boxes, 40 pounds each; pears, 12,300 boxes, 60 pounds each; plums, 5,150 boxes, 35 pounds each; prunes, 1,100 boxes, 35 pounds each; raspberries, 300 chests, 100 pounds each; strawberries, 100 chests, 100 pounds each; quinces, 50 boxes, 50 pounds each.

In this county, also, the ramie plant has done extremely well, throwing out an abundance of stalks. The roots planted were brought from New Orleans.

**PALM LEAVES.**—The steamship *Crescent City* lately took out 50 bales of palmetto leaves from New Orleans to Liverpool, where, at the present gold premium, they bring about 10½ cents per pound. These leaves, which can be had for the mere gathering in the Florida and Louisiana forests, thus command almost the price of low ordinary cotton. If there is any permanent demand for them in Europe it will be the basis of a very profitable new industry. This first consignment is worth about \$1,200, of which at least \$1,000 is clear profit. The labor of gathering these leaves could not have occupied a man more than 30 or 40 days.

**EXTENT OF SAN JOAQUIN VALLEY.**—The area of this valley is stated by the Stockton (California) Independent at 32,000 square miles, in round numbers, divided about equally between the level valley, 12,000 square miles, and the low foot-hills, 4,000 square miles, on the one hand, and the mountain slopes, 16,000 square miles, on the other hand. This is equivalent to the combined areas of New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut. The population of the valley is 65,476, while that of the States just named is 2,854,593.

**GRAPE SUGAR IN GERMANY.**—The journal of Applied Chemistry is authority for the statement that there were in 1868 sixty establishments for the manufacture of grape sugar in Germany. The product for that year was 22,000,000 pounds of sirup, and 8,000,000 pounds of sugar. Since that time, other and more extensive factories have been established, and the cultivation of potatoes for the purpose covers a large extent of territory. The process of manufacture does not essentially differ from that pursued in the United States. The great increase in the wine growing districts of this country has occasioned an enlarged demand for glucose, and the manufacture of this article appears destined

to assume large proportions in the United States, where corn can be obtained in unlimited quantity.

**CHINESE SUGAR CANE.**—A farmer of Stark County, Ohio, states that from a package of Chinese sugar cane, received from this Department, and planted on 28 rods of well-prepared ground, he derived 45 gallons of sirup, equal in flavor to the best New Orleans molasses. With a better mill, he thinks he might have expressed 50 gallons. The product was at the rate of 257 gallons of sirup per acre, worth one dollar, local price, per gallon.

**ADULTERATED SIRUP.**—It has been stated that "sugar drips," produced by the destructive action of strong sulphuric acid upon starch, is extensively sold and used as "golden sirup." A druggist in New Orleans proposes as a test a few grains of tannic acid dissolved in a wine-glass of rain water in which has been dissolved a teaspoonful of this sirup, or a cup of tea, containing tannic, in which a spoonful of sirup has been dissolved. In either case the liquid will become black and ink-like. The American Chemist answers that the test with tannic acid in tea is totally fallacious, as it is simply a test for iron, which would do no harm, but in many cases, as a tonic, might be absolutely beneficial. With this test the pure golden sirup might be rejected and the starch adulteration selected instead.

**LIVE STOCK IN SWITZERLAND.**—The number of live stock in Switzerland in 1866 was as follows: Horned cattle, 992,895; sheep, 445,000; swine, 304,191; goats, 374,481. Among the best horned cattle are those of Hasli and Uri. These animals are small, but exceedingly robust. The cows of Schwytz and Appenzell are celebrated for the quantity and quality of their milk. Berne and Fribourg possess animals of colossal proportions, but they do not yield much milk. The cows of Schwytz are perhaps the largest milk-producers in Europe, and they are bought, with the bulls of Summenthal, by the rich farmers of the Grand Duchy of Hesse and Rhenish Hesse. Of the 992,895 head of horned cattle, 627,116 head were milch cows, the product of which is largely used in the manufacture of cheese.

**IMPROVED STOCK FOR UTAH.**—A society has been organized in Salt Lake City to promote the general introduction and improvement of horses, horned stock, sheep, bees, fish, fowls, &c. Agents have already been sent to the States and to Canada, to make purchases of choice stock. Auxiliary societies are to be formed in different sections of the Territory.

**RAMIE PRODUCTION.**—Mr. William Hall, President of the "Ramie Plantation Company of Louisiana," states that great improvements have very recently been made in the machinery for preparing the ramie. The plant may now be cleaned on the field, the refuse being left for manure. The fiber is then dried, becoming comparatively pure, white, and silky, divested entirely of gum, and prepared for baling and for spinning. The improved machinery was, unfortunately, not perfected till late in the season, when the ramie had become harsh from a growth of eight months, the tops having been partly killed by frost. It was therefore found impossible to produce the fiber in bulk this season. With these improvements, and one laborer to clean the product of ten acres, Mr. Hall thinks one acre will yield at least two tons, making a product of twenty tons to the hand, estimated to be worth \$200 per ton.

Two joint stock companies for the planting and manufacture of ramie have been organized in Louisiana, one with a working capital of \$45,000, the other with a capital of \$165,000.



**WILD FOWL.**—In Princess Anne County, Virginia, during the gunning season, from November 1 to March 1, 104 days, the average number of geese shot daily was 25; of ducks, 100; in all, 2,600 geese and 10,400 ducks. Average price of geese, 70 cents; of ducks, 40 cents; making in all for the season, \$5,980.

**THE SHARE SYSTEM.**—Mr. Louis Grevemberg, of St. Mary's Parish, Louisiana, has been quite successful in cultivating about three hundred and ten acres of land in corn and cane on the share system. He employed six creole families, allowing about twenty-five acres to the hand, or fifty to the family. Each family found their own teams, plows, feed, and food. His share of the crop was 62½ hogsheads of sugar, 100 barrels of molasses, and 800 bushels of corn.

**OSAGE ORANGE TIMBER.**—It is said that Bois d'Arc timber (Osage orange) will resist rot and decay indefinitely. It makes excellent wagon timber. There is a forest of it on the Upper Trinity River two miles wide and fifty miles in length.

**COST OF LIVING IN CALIFORNIA.**—The difference between the cost of living in San Francisco and the Atlantic cities is stated by the Commercial Herald of the former city, based on a comparison of bills of fare of well-known restaurants in Boston, New York, and San Francisco. The following table is given:

	Boston.	San Francisco.
Lamb chop, with peas.....	\$1 00	\$0 25
Broiled ham and eggs.....	65	20
Rump steak.....	60	15
Tenderloin steak.....	1 00	20
Large porterhouse steak.....	1 50	25
Fillet of beef, with truffles.....	1 40	50
Fillet of beef, with olives.....	1 15	37½
Pork steak.....	60	15
Mallard duck.....	1 50	50
Venison steak.....	75	25
Roast beef.....	50	15
Boiled tongue.....	50	15
Boiled ham.....	40	15
Roast turkey.....	75	25
Pressed beef.....	40	15

In San Francisco restaurants an admirably cooked and well served meal, consisting of tenderloin or porterhouse steak, with two kinds of potatoes, pickles, green tomatoes, green corn, string beans or peas, and all the bread and butter one requires, can be had for the moderate charge of from 25 to 37½ cents.

**FISH CULTURE.**—A practical movement is going forward in Virginia to urge the legislature to encourage by proper enactments the propagation of fish in the waters of that State. At the last session of the Maryland legislature \$2,000 was appropriated for the purpose of defraying the expenses of a commission appointed by the governor to stock the rivers of the State. The Alexandria Gazette says:

It is now proposed that Virginia take similar action; that a similar commission and appropriation be made by our legislature; that the two commissions may act jointly, together with the aid of the proper department in Washington; that a practical experiment in pisciculture be made during the spring of 1871, in this neighborhood, on shad and herring roe taken from those fish and brought to this market.

At a late meeting of the Maryland Academy of Science it was sug-

gested that all persons who have ponds, streams, or fountains of water should procure at least a few black bass, which is a hardy breeder, ranking second to the brook trout, and by some considered superior. This fish is well adapted to the waters of the State, requires but little care besides feeding, and protects its young, which the trout does not.

**BEXAR COUNTY, TEXAS.**—The vice-president of the Agricultural, Stock-raising and Industrial Association of Western Texas, W. G. Kingsbury, furnishes the Department with some interesting particulars in regard to Bexar County, of which San Antonio is the principal town.

Prior to 1859-'60 it was generally believed that peaches were the only kind of fruit that would do well and pay as a marketable product. During the war very little was done in the direction of planting orchards. The few that were planted are now coming to maturity, and exceed the most sanguine hopes of all parties. The peaches are of a superior flavor, and the crop almost a certain one, there having been but two failures in the last twenty years, in both cases caused by late frosts. Last year peaches sold in the San Antonio market at 25 cents a bushel. Apples, pears, apricots, nectarines, and plums, as far as tried, are succeeding well. Peaches, plums, cherries and grapes grow wild throughout Western Texas.

Bexar County is about equally divided into prairie and timber lands, and is well watered by numerous springs, creeks, and one beautiful river flowing from large springs, four miles above the city of San Antonio, down through the center of the county. The surface is undulating, and the soil from two feet in depth on the hills to twelve feet in the valleys. The forest growth consists chiefly of post oak, live oak, hackberry, elm, cotton-wood, pecan, cedar, juniper, and cypress. The air is so pure that fresh meat will not spoil if exposed to a free circulation. The lands are rich and productive, averaging, this season, one bale, of 500 pounds, of cotton to the acre. With the present market facilities, stock-raising is considered the most remunerative employment. Stock cattle (an average of all ages) are worth from \$2 50 to \$3 50 per head. Lands are worth from 50 cents to \$2 00 per acre, unimproved, although they are rapidly advancing in price.

# METEOROLOGY.

## NOVEMBER AND DECEMBER, 1870.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY OBSERVERS OF THE SMITHSONIAN INSTITUTION.]

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature and amount of rain-fall and melted snow, (in inches and tenths,) for November and December, 1870, at the stations named. Daily observations at 7 a. m. and 2 and 9 p. m.

Stations in States and Territories.	NOVEMBER.					DECEMBER.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
<b>MAINE.</b>												
Houlton .....	3	58	30	15	33.5	6.01	11	50	24	-10	23.9	5.10
Orono .....	3	57	30	21	36.6	5.61		43	24, 30	-5	24.4	3.01
Surry .....	3	59	17, 30	20	38.7	.....	2	46	25	-3	26.7	.....
Williamsburg .....	3	47	22	16	31.2	5.75	2	40	25	-10	18.2	2.10
West Waterville .....	3	61	22	24	37.6	4.34	2	46	25, 30	0	26.8	2.60
Gardiner .....	3	56	17	27	39.5	4.19	2	46	24	-2	27.0	2.82
Lisbon .....	3, 27	58	17	18	38.7	3.40	2	50	24	-9	25.8	2.25
Norway .....	3	59	17	19	35.9	3.40	2	46	24	-4	23.7	1.85
Cornish .....	3	60	22	24	36.5	3.89	1	47	25, 30	-1	25.8	2.20
Cornishville .....	3	61	22	24	37.9	4.60	2	47	25	0	26.3	3.00
Averages .....					36.6	4.53					24.9	2.77
<b>NEW HAMPSHIRE.</b>												
Stratford .....	2	58	16	12	34.6	5.42	2	44	30	-12	20.9	1.70
Whitefield .....	2	59	23	13	33.5	4.58	1	45	30	-19	31.9	1.13
Mt. Washington .....	25	27	30		16.5	.....						
Tamworth .....	5	56	17	15	35.7	4.05	1	49	24, 30	-13	25.3	2.25
Contoocookville .....	2	63	17	10	41.3	.....	1, 2	50	25	-2	29.3	.....
Goffstown Centre .....	3	63	16, 17, 18	26	38.9	2.34	2, 5	48	25	-2	24.6	1.69
Averages .....					33.4	4.10					26.4	1.69
<b>VERMONT.</b>												
Lunenburg .....	9	56	22	18	33.7	6.15	2	40	25	-18	21.8	0.80
North Craftsbury .....	2	52	22, 30	13	31.7	3.29	1	41	30	-18	18.8	2.28
Newport .....	9	55	30	18	35.5	4.81						
Randolph .....	9	63	16	17	35.6	2.40	1, 2	45	25	-13	24.4	2.02
Woodstock .....	2, 5	51	16	15	34.2	1.87	1	44	30	-12	22.6	2.56
Near St. Albans .....	3	62	30	19	34.8	2.30	1, 2	42	29	-11	22.5	2.70
West Charlotte .....	2, 9	60	16, 20	20	38.4	2.38	2	49	30	-4	27.7	1.44
Panton .....	9	59	20	19	35.5	2.38	2	46	30	-12	24.9	2.12
Castleton .....	9	62	16	22	37.3	1.64	2	47	30	-3	26.7	0.47
Averages .....					35.2	3.02					23.7	1.80
<b>MASSACHUSETTS.</b>												
Kingston .....	9	66	17, 30	23	43.4	2.65	2	53	25, 30	0	33.0	3.15
Topsfield .....							1, 2	48	30	-2	28.9	3.39
Lawrence .....	3	65	17	25	44.1	3.62	2	50	30	0	30.6	3.03
Newbury .....							2	50	30	1	30.1	.....
Georgetown .....	2	65	17	23	41.0	4.53	2	50	25	4	29.8	4.45
Milton .....	3	68	17	25	43.4	3.08	2	65	30	3	34.1	2.38
Cambridge .....	3	68	17	27	44.0	.....	2	53	25	4	33.0	.....

Table showing the highest and lowest range of the thermometer, &c.—Continued.

Stations in States and Territories.	NOVEMBER.						DECEMBER.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
<b>MASS.—Contin'd.</b>		Deg.		Deg.	Deg.	In.		Deg.		Deg.	Deg.	In.
North Billerica	3	66	17	16	40.5	2.50	2	50	25	5	30.5	.....
West Newton							5	56	25	— 6	33.1	4.35
New Bedford	3	61	19	20	43.4	3.15	2	51	30	4	32.1	3.35
Worcester	2	62	19	27	40.3	3.48	1, 2, 4	48	25	5	29.1	4.10
Mendon	2	66	17	23	40.4	3.40	4, 13	50	30	— 2	28.2	1.20
Lynnburg	2	65	19	26	40.3	2.55	2	50	30	0	28.4	5.02
Amherst	3	61	17	25	39.1	3.28	2	47	30	1	28.0	1.84
Richmond	2	60	11, 17	26	37.4	3.12	5	47	25, 29	2	27.6	1.75
Williams' College	2	62	16	18	37.1	2.25	1	49	30	— 3	26.6	0.76
Hinsdale			16, 19	18	33.6	3.98	4	56	25	— 4	25.6	0.95
Averages					40.4	3.20					29.9	2.84
<b>RHODE ISLAND.</b>												
Newport	2	66	17	28	42.3	2.38	2	51	25, 30	10	35.6	3.06
<b>CONNECTICUT.</b>												
Columbia	2	68	20	24	42.5	3.40	7	58	30	0	30.6	3.47
Middletown	2	66	20	19	41.3	2.45	4	55	30	— 2	31.2	2.30
Southington	2	63	19	25	41.4	2.88	4	53	30	— 1	30.5	1.92
Colebrook	2	62	19	20	37.5	3.09						
Brookfield	6	65	17	23	43.6	2.35	2	60	30	10	34.8	.....
Round Hill							4	51	30	0	29.5	1.68
Averages					41.3	2.83					31.3	2.34
<b>NEW YORK.</b>												
Moriches	3, 9	60	17	16	39.0	3.37	2	51	30	— 4	29.5	3.32
South Hartford	2	68	16	22	40.7	1.13	1	54	30	— 9	28.4	1.73
North Argyle									30	— 11		
Luzerne	2, 5	54	16	14	35.6	2.15	2	46	30	— 20	24.1	2.81
Garrison's	9	58	16, 19	25	40.9	2.22	1, 2	50	30	7	33.0	2.06
Throg's Neck	1, 9	64	19, 20	26	44.9	.....	4, 5	52	30	4	32.7	.....
White Plains	2	72	16	29	45.2	.....						
Cooper Union	9	65	20	30	46.7	2.41	2	55	30	12	35.9	2.83
Brooklyn	9	66	19	32	46.7	2.25	5	56	30	10	35.8	1.85
Flatbush	8	65	19	29	48.8	0.93	11	55	29	9	34.4	3.19
Glasco	15	58	10	22	37.0	2.70	2, 7	58	30	— 3	30.2	2.10
Newburg	2	66	19	29	44.7	1.90	2	54	30	9	33.0	1.33
Minaville	2	60	15	20	36.6	1.60	1	48	29	0	25.2	1.30
Cooperstown	2	64	16	19	37.0	1.92	5	50	23, 29	— 2	25.0	1.96
Gouverneur	2	63	22	14	34.5	1.71	1, 2, 6, 4, 13	46	29	— 17	21.3	3.34
North Hammond	2, 3	65	22	24	39.4	2.14	4	47	29	— 8	25.0	2.50
Utica	2	59	16	20	37.6	2.09	4	47	29	— 4	27.4	3.31
South Trenton	2	61	22	16	34.9	2.58	1, 4	48	29	— 6	24.6	2.45
Cazenovia	2	62	22	15	36.8	.....	5	48	29	— 5	25.5	.....
Oneida							2, 4	47	29	— 4	27.8	3.56
Depauville	2, 2, 2, 2, 2, 2	66	22	20	36.8	1.95	3, 4	44	29	— 9	24.2	3.57
Oswego	2, 2, 2, 2, 2, 2	63	22	25	39.6	2.75	1	48	29	— 2	29.0	3.33
Palermo	2, 2, 2, 2, 2, 2	63	16, 23	19	36.1	3.00	5	47	29	— 9	24.9	1.55
North Volney	2	65	22	21	38.3	.....	4, 5	47	29	— 4	27.0	.....
Nichols	2	66	16	17	37.1	.....	5	53	22	— 2	28.3	.....
Newark Valley	2	66	16	14	36.9	1.00	5	56	30	— 8	27.5	2.20
Himrod's	2	63	19	20	37.4	0.69	1, 4	50	29	0	26.7	1.44
Little Genesee	2	68	11	12	35.8	3.15	4, 5	50	29	— 3	25.8	3.03
Suspens'n Bridge	2	65	19	23	39.9	2.85	4	52	29	7	28.3	3.95
Lockport	2	67	22	22	38.5	2.54	4	47	29	4	28.1	3.26
Buffalo	2	66	22	22	40.0	2.89	5	49	29	2	29.3	3.44
Averages					39.4	2.16					28.2	2.62
<b>NEW JERSEY.</b>												
Paterson	9	64	16, 20	27	43.3	2.68	2, 5	53	30	5	32.7	1.36
Newark	9	65	19	34	43.7	2.46	2, 4	53	30	6	33.4	2.19

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

Stations in States and Territories.	NOVEMBER.					DECEMBER.				
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature. Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature. Rain and melted snow.
<b>N. JERSEY—Con.</b>										
		<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i> <i>In.</i>		<i>Deg.</i>		<i>Deg.</i>	<i>In.</i>
South Orange	9	69	19	25	43.1 3.18	4	56	30	2	31.8 2.58
Trenton	9	74	20	29	47.9 1.67	5	58	30	8	37.0 0.97
Rio Grande	2	69	20	25	46.7 4.75	4	57	24	10	34.5 4.30
Moorestown	9	72	16, 20	26	43.4 1.95	4, 5	57	30	5	33.6 1.59
New Germantown	29	65	19	20	42.1 1.68	2	54	30	2	31.3 1.86
Haddonfield	9	70	20	26	43.3 1.83	4, 12	55	30	5	33.4 1.59
Greenwich	9	71	25	30	46.3 1.65	5	58	24, 25	11	35.5 1.60
Vineland	9	71	20	25	44.2 2.80	4, 5, 12	57	25	7	34.1 2.32
Averages					44.4 2.47					33.7 2.03
<b>PENNSYLVANIA.</b>										
Nyces	2	64	16	15	37.5 2.22	1, 4	50	30	- 5	25.8 1.04
Hamilton	2	70	16, 17, 19	25	40.0 1.50	4	52	30	0	32.0 1.13
Fallsington	9	68	19	27	44.5 1.50	4, 5	56	30	6	33.0 1.80
Philadelphia	9	70	20	30	46.9 1.97					
Germantown, (M)	29	67	19	28	41.1	1	60	30	2	33.3
Do (T)	2	66	20	27	44.9 2.23					
Horsham	2	67	20	26	43.3 1.30					
Plym'th Meeting	2	68	17, 20	26	43.4 2.27	4	58	30	1	33.1 1.49
Egypt	28, 29	60	18	20	41.5	4	55	30	4	31.6
Factoryville	2	64	17	17	37.4 1.83	5	53	30	- 2	27.7 1.65
Reading	2	67	16	29	46.1 2.09	4	59	24	12	36.1 2.39
West Chester	9	67	22	23	42.2 1.99	4	57	30	5	31.9 2.19
Parkerville	2, 29	64	17, 19	24	42.7 1.42	2, 5	56	30	1	32.8 2.00
Tamaqua	6	63	18	11		5	48	26	-10	25.6
Catawissa	1	70	16	22	40.4	4	60	23	9	35.2
Ephrata	29	64	16, 19	25	43.4 1.59	4	58	30	4	31.9 2.00
Mount Joy	2, 17	67	16	29	45.1					
Carlisle	29	66	20	24	42.7 1.75	4	61	24	8	33.2 2.35
Fountain Dale	2, 28, 29	62	20	29	43.6 1.28	4	61	24, 30	5	33.0 2.10
Tioga	2	64	16	16	37.3 0.75	3	54	30	0	27.8 1.10
Lewisburg	2	61	16	20	39.6 1.60	4	57	24, 30	4	30.2 1.53
Grampian Hills	2	64	11	18	34.6 1.55	4	51	24	- 6	23.2 3.30
Johnstown	2	67	11	24	40.1 1.32	5	60	24	0	30.3
Franklin	2	67	11	24	38.0 2.35	4	55	23, 24, 29	2	28.0 4.66
Pittsburg	2	67	19	29	43.0 1.30	5	57	24	2	31.7 2.00
CConnellsville	2	71	19	24	41.6	5	62	24	- 2	29.0
Brownsville	2, 8	70	19	26	44.0	5	62	24	0	32.0
New Castle	2, 8	60	11	23	40.6 2.20	4	55	25	1	27.9 1.50
Beaver	2, 8	65	11	27	41.7	5	56	24	4	31.0 0.70
Canonsburg	2	78	11	22	41.7 1.06	4	62	24	- 1	30.1 1.78
Averages					41.7 1.69					30.7 1.93
<b>DELAWARE.</b>										
Milford	5	65	20	24	44.3 2.20	5	58	27	6	33.5 1.06
Dover	9	73	20	28	46.7 1.10	2	58	24, 25, 30	10	35.8 0.97
<b>MARYLAND.</b>										
Woodlawn	9	67	20	24	44.5 2.24	2	60	24	6	33.1 1.84
Fallston	29	72	20	27	47.0 1.66	4	65	24	7	34.2 2.10
Annapolis	9	74	20	25	49.1 1.82	4	60	30	6	37.7 1.33
Woodstock Col						4	59	30	4	32.4 1.22
Mt. St. Mary's	29	64	20	25	43.4 1.83	5	59	24	5	32.8 2.05
Averages					46.0 1.89					34.0 1.71
<b>DIST. OF COLUMBIA.</b>										
Washington	9, 29	65	19	31	46.5 1.37	5	58	24	8	36.0 0.95
<b>VIRGINIA.</b>										
Johnsontown	9	76	20	28	50.0 2.00	5	66	30	9	38.7 2.15
Hampton	2, 5	72	20	25	49.9 1.55	4, 5	65	25	6	38.7 2.50

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

Stations in States and Territories.	NOVEMBER.					DECEMBER.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
VIRGINIA—Cont'd.												
Surry C. H. ....	9	Deg. 78	20	Deg. 20	Deg. 49.4	In. 2.54	5	Deg. 71	25	Deg. —4	Deg. 38.2	In. 3.80
Comorn .....	9	71	16, 19	31	48.2	0.94	5	61	25	6	35.9	0.99
Vienna .....	29	69	20	32	46.8	1.30	5	59	25	8	34.8	3.40
Fairfax C. H. ....	1	70	16	23	39.2	0.50	4, 5	60	24, 25	10	32.1	0.60
Accotink .....	9, 29	68	19, 20	24	44.8	1.75	4, 5	60	30	4	33.0	1.45
Piedmont .....	13, 29	67	20	22	44.3	1.80	4	63	30	3	36.6	2.30
Piedmont Station.	27, 29	69	20	20	41.8	2.00	5	64	30	2	32.3	2.30
Staunton .....	13, 14	66	16, 19	29	44.9	1.56	4, 5	60	24	5	32.3	2.05
Lexington .....	13	66	16, 20	18	41.3	1.77						
Lynchburg .....	2, 13	68	20	31	49.2	1.63	4	62	24	9	38.1	1.13
Near Wytheville.	2	66	20	20	41.9	1.55	4	60	24	—4	31.4	1.40
Averages .....					45.5	1.61					35.2	2.01
NORTH CAROLINA.												
Goldsboro. ....	3, 5, 9	80	17	28	53.4	2.00	5	72	25	8	42.5	3.40
Warrenton .....	9, 30	69	21	32	49.3	1.90						
Oxford .....	9, 13	70	20	26	47.2	2.40	5	63	25	5	36.2	2.60
Albemarle .....	13	76	20	15	46.3	1.97	2, 4, 5	70	25	0	36.2	2.91
Statesville .....	9	66	19	18	46.0	0.75	2	58	24, 25	0	32.3	4.06
As <sup>h</sup> ville (A.) .....	2	69	20	19	44.7	1.80	5	64	24, 25	—1	34.2	2.70
Do. (H.) .....	1, 2	66	20	18	44.1	.....	5	62	24, 25	0	33.0	.....
Averages .....					47.3	1.80					35.7	3.13
SOUTH CAROLINA.												
Aiken .....	3	78	19	29	52.7	2.11	5	75	24	10	43.7	1.53
Gowdeysville .....	9	70	20	27	52.1	2.50	4, 5	69	25	7	41.6	5.10
Bluffton .....	3, 8	86	{ 17, 18 19, 20 }	39	60.9	4.20	5	68	24	18	48.4	5.20
Averages .....					55.2	2.94					44.6	3.94
GEORGIA.												
Berno .....	1, 9	76	20, 27	34	55.7	0.75	19	72	25	16	46.9	2.10
St. Mary's .....	9	80	26	34	58.9	2.65	19	75	25	18	50.0	3.07
Penfield .....	3	78	17, 19, 20	30	52.0	2.95	5	69	25	7	41.1	3.40
Atlanta .....	16	76	17, 19, 20	32	54.0	4.62						
Averages .....					55.2	2.74					46.0	2.86
ALABAMA.												
Rockville .....	2, 5	77	19	19	50.6	3.25	5	70	24	3	40.3	4.00
Carlowville .....	2	84	23	32	54.9	8.66	7	72	24	12	44.8	7.70
Selma .....	2, 3	85	17, 19	31	57.0	5.15	5	74	24	14	46.8	5.29
Greene Springs .....	4	80	17	25	52.3	7.35	7	72	24	9	42.6	5.13
Coatopa .....	4	83	17	26	53.4	5.30	5	73	24, 25	11	44.0	5.80
Fish River .....	5	76	20	34	.....	1.40	1, 6, 7	64	24	22	.....	5.25
Averages .....					53.6	5.22					43.7	5.51
FLORIDA.												
Port Orange .....	2, 4, 14	78	24	35	63.2	2.02	17, 19	76	24	25	55.0	3.30
Jacksonville .....	2	85	23	40	62.7	4.29	6, 8, 19	73	25	19	53.3	1.95
Pilatka .....	9	90	17, 24	38	64.6	3.60	31	80	25	22	51.6	3.11
Newport .....	3	81	20	29	57.3	2.60						
Chattahoochie .....							14	87	25	15	.....	9.50
Averages .....					62.0	3.13					53.3	5.47
TEXAS.												
Clarksville .....	8	78	22, 25	38	59.7	.....	4	68	24	15	45.4	.....
Gilmer .....	2	90	22, 25	29	58.1	4.90						

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

Stations in States and Territories.	NOVEMBER.					DECEMBER.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
TEXAS—Cont'd.												
Palestine							31	78		10	47.4	6.30
Oakland	4	88	25	34	63.9	2.10	4	78	23	15	49.8	1.00
Blue Branch		99	25	28	62.1	2.60						
Bluff	3, 4, 5	86	22, 25	34	62.3	2.62						
Clinton	2	89	25	31	62.1	5.50	4	77	23	17	50.7	1.10
Austin	2	90	25	30	60.1	3.49	4	75	23	11	45.9	1.30
Houston							4.6	80	23	19	51.5	
Averages					61.2	3.54					48.5	2.43
LOUISIANA.												
New Orleans	4	85	17, 22	34	59.1	6.55	7	76	24	19	49.2	8.45
Shreveport	2, 5	80	17	30	45.6							
Ponchatoula	2, 3	90	17	29	60.5	4.22	5	80	24	16	50.3	9.01
MISSISSIPPI.												
Columbus	5	80	17	25	52.1	3.36						
Philadelphia							5, 7	73	24	8	42.7	4.50
Grenada	5	86	19	22	58.2	1.45						
Near Brookhaven	3	84	17	26	54.4	4.80	7	75	24	9	43.9	7.80
Clinton College							7	74	24	11	43.8	
Holly Springs	5	67	22	37	58.0	0.70						
Averages					55.7	2.58					43.5	6.15
ARKANSAS.												
Helena	4, 5	86	26	31	54.8		7	73	24	4	38.5	
Mineral Spring	2	80	22	24	52.2	2.75	4, 5	66	24	8	40.3	4.50
Fayetteville	3	82	22	20	52.7	2.05	2, 3	72	24	—12	33.0	2.74
Averages					53.2	2.40					37.3	3.62
TENNESSEE.												
Elizabethton	2	72	19, 20	22	44.9	0.95	4	60	25	—2	33.2	0.65
Tusculum College							5	64	25	0	33.1	
Knoxville	2	74	18	22	43.4	1.50						
Lookout Mount'n	6	72	19, 23	30	51.0		5	67	24	—2	37.1	
Clearmount	2	75	19	22	47.5	2.01	5	68	24	0	36.9	3.20
Clarksville	4	79	19	24	47.9	0.95	4, 5	65	24	0	35.7	3.07
La Grange	4	83	21	29	51.3	1.90	4	66	24	4	37.3	4.70
Averages					47.7	1.46					35.6	2.91
KENTUCKY.												
Pine Grove	2	72	19	20	43.9	2.46	5	64	24	—6	31.1	2.36
Danville	2	75	19	26	47.7	1.26	5	70	24	—4	34.9	2.64
Shelby City	2	76	19	24	46.6	1.91	5	65	24	—4	34.1	2.48
Louisville	2	75	19	20	46.6	2.40	4, 5	58	24	—2	33.4	2.20
Averages					46.2	2.01					33.4	2.42
OHIO.												
Salem	2, 8	70	25	22	39.5	1.84	5	59	25	—6	27.2	2.79
New Lisbon									24, 25	—3		2.43
Steuensville	2, 8	63	11, 19	23	43.0	1.25	4	54	24, 25	2	31.0	1.73
Painesville	8	68	25, 26	28	40.9	3.88	5	54	25	—1	26.0	6.10
Milnersville	8	62	11	20	35.8	1.40	1, 2, 3	50	24	—4		0.58
Cleveland	8	72	25	22	40.2	3.07	5	58	24, 25	1	28.9	2.82
Wooster							5	65	24	—4	30.3	
Adams' Mills	8	68	19	21	42.2	1.56	5	61	24	—4	31.0	2.10
Pennsville							5	54	24	—6	28.9	3.00
Gallipolis	2	72	16	28	45.2	1.35	5	63	24	—1	31.3	2.28

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

Stations in States and Territories.	NOVEMBER.					DECEMBER.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
		Deg.	Deg.	Deg.	In.		Deg.	Deg.	Deg.	Deg.	In.	
Ohio—Cont'd.												
Oberlin .....		71	25	18	38.9	2.60	5	58	24	-5	27.2	2.35
Kelley's Island .....		70	19	30	43.2	1.64	5	55	23, 24	0	29.9	2.23
Sandusky .....		72	19, 25	27	41.8	2.95	5	57	24	-1	29.7	2.48
Carson .....		70	25	24	42.6	1.95	1	52	23	0	29.8	1.60
North Fairfield .....		74	19	24	42.7	2.16	4	60	24	-8	28.5	1.81
Gambier .....		64	19	22	39.0	1.48	5	55				
Westerville .....		70	19	20	40.9	1.63	5	61	24	-7	29.2	2.43
North Bass Isl'd. ....		67	19	27	42.9	3.01	5	56	25	-2	29.5	2.68
Marion .....		67	19	18	38.9	2.42	1, 3, 4	49	24	-9	26.5	2.63
Hillsboro .....		66	25	21	42.3	1.59	5	60	24	-6	29.1	2.41
Bowling Green .....		73	19	21	42.5	1.65	4, 5	57	23	-10	29.3	3.75
Kenton .....		61	19	30	42.3	1.75	5	62	24, 25	-12	31.5	5.08
Bellefontaine .....		68	19	26	40.3	2.25	5	58	24	-14	26.7	2.72
Urbana Univ. ....		69	17, 24	23	40.4	1.90	4	53	24	-12	26.9	3.13
Bethel .....		72	24, 25	17	42.1	1.50	5	63	24	-8	29.2	2.10
Carthage .....		70	10, 22	27	43.5	2.75	5	59	24	-15	28.7	3.61
Jacksonburg .....		74	19	29	44.2	1.50	4	57	24	-12	29.7	3.10
Mt. Auburn .....		71	19	23	45.5	2.21	4	60	24	-10	30.9	2.09
Cincinnati (H.) .....		75	24	24	45.0	1.50	4	60	24	-8	30.4	2.17
Do (P.) .....		67	19, 23, 24	27	44.2	1.40	5	63	24	-7	31.8	2.30
College Hill .....		72	19, 23, 24	27	43.8	2.00	3, 4, 5	52	24	-10	29.4	2.25
Averages .....					41.9	2.01					28.9	2.65
MICHIGAN.												
Detroit .....	2	68	19	22	39.0	2.00	4	55	23	-11	27.2	2.90
Mourao City .....							4	60	24	-5	29.2	1.40
Ann Arbor .....	2, 6	64	19	22	38.8	2.10	4	53	23, 25	-4	27.9	4.99
Alpena .....	12	56	21	26	38.5	0.96						
Macon .....									23	-5	24.0	
State Agr'l Col. ....							4	52	23	-11	24.8	2.57
Litchfield .....		66	22	19	37.1	1.98	4	52	29	-12	24.3	2.36
Cold Water .....		66	22	18	38.2	1.44	4	53	23, 24	-8	24.7	3.50
Gr'd Rapids (H.) .....		69	22	16	39.4	1.37	4	52	23	-2	27.5	4.75
Do (S.) .....	8	65	22	16	39.6	0.88						
Northport .....	1	62	21	23	39.0	1.58	4	49	22	10	27.6	3.08
Benzonia .....	8	61	21	20	39.4	1.30	4	49	23	10	28.3	4.01
Olivet College .....							4	49	29	-4	24.7	3.97
Copper Falls .....	1	50	21	9	32.0	1.85	3	41	23, 24	-3	19.3	3.73
Ontonagon .....	2	50	21	20	39.0	0.90						
Averages .....					38.2	1.49					25.8	3.39
INDIANA.												
Aurora .....	4, 8	70	24	22	43.4	1.16	15	76	24	-8	30.7	2.37
Vevay .....	2	74	19, 23	24	44.9	1.50	5	61	24	-4	32.1	2.13
Mt. Carmel .....	2	68	19	23	41.2		1, 4	54	24	-10	26.5	2.07
Spiceland .....	2, 8	71	23	22	41.1	1.75	4	56	24	-11	28.4	1.70
Laconia .....	2, 4	74	19	22	45.7	2.26	4	60	24	-4	33.8	2.74
Columbia City .....	2	69	{ 10, 14, } { 19, 22 }	32	44.1	1.94						
Knightstown .....	2	71	23	20	42.6	1.62	4	56	24	-15	27.6	2.15
Fort Wayne .....							4	59	24	-16	27.4	6.71
Warsaw .....			22	23		2.33	4	62	24	-14	27.8	1.04
Indianapolis .....	2, 2, 7	71	19	20	42.7	1.27	4	57	24	-15	28.1	1.93
Near La Porte .....	2	65	22	24	53.7	0.70	3	58	24	-12	27.4	1.82
Annapolis .....	2, 8	68	19	16	39.1	1.10	1, 4	56	23	-26	25.3	1.60
Meroin .....	2	73	19	26	46.5	1.50	4	60	24	-8	31.6	1.45
Kentland .....							1	61	23	-21	26.3	5.28
New Harmony .....	2	72	19	23	46.8	1.27	1	57	24	-2	32.4	2.03
Averages .....					44.3	1.53					30.0	2.50



Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

Stations in States and Territories.	NOVEMBER.					DECEMBER.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
<b>ILLINOIS.</b>												
Chicago	8	Deg. 69	19	Deg. 27	Deg. 43.8	In. 1.16	1	Deg. 53	23, 24	Deg. -9	Deg. 28.3	In. 2.46
Near Chicago	28	74	19	22	42.0		1	56	23	-14	26.9	
Evanston	2	66	19	22	40.2	1.58	2, 5	48	23, 24	-10	26.3	2.15
Marengo	3	68	19, 22	17	37.8	0.69	4	50	23	-18	22.5	1.50
Charleston	2	73	19	17	41.9	2.01	4	59	23	-22	26.5	1.85
Mattoon	1, 2	68	22	21	43.7	3.00	4	54	24	-8	28.4	2.38
Aurora	8	67	19, 22	19	38.2	1.51	4	52	24	-23	23.4	1.47
Louisville	2	79	19	20	46.4	1.80	1, 4	60	24	-14	30.4	2.60
Belvidere	8, 12	64	22	11	36.6	2.33	1	55	23	-15	22.8	2.53
Ottawa	8	69	21, 22, 30	26	42.9	1.58						
Decatur	2	69	19, 22	20	43.4	1.65	4	60	24	-14	27.1	2.25
Pana	2	72	22	22	42.0	1.25	1, 4	58	24	-11	27.2	1.65
Winnebago	12	62	21, 22	17	37.5	0.60	5	57	23	-15	21.5	0.78
Rochelle	2	63	19, 22	20	38.2		4	53	23	-15	24.0	
Wyanet	12	73	22	19	44.1	1.84	2	60	23	-13	26.2	1.53
Hemphill (S.)	8	70	22	17	43.0		1	56	24	-12	25.0	
Do (O.)	1, 2, 28	66	22	18	41.9	2.10	1, 4	56	23	-11	26.2	1.10
Peoria	2, 28	68	22	20	43.3	1.21	4	56	23, 24	-13	27.7	1.07
Havana	28	70	22	15	41.6	2.50	1, 2, 4	56	23	-19	26.4	1.71
Waterloo	2, 4	72	22	20	44.2		4	57	23	-6	29.0	1.07
Dubois	2	75	23	22	46.2	2.20	1	65	24	-16	30.6	2.15
Galesburg	12	66	22	22	43.1	0.60	30	69	23	-10	27.3	1.08
Manchester	27	78	22	20	44.0	1.65	9	68	24	-13	27.7	2.30
Mt. Sterling	23	69	22	22	45.8	1.55	4	59	24	-7	29.7	2.22
Andalusia	3	64	22	18	41.7		30	54	23	-8	26.4	
Oquawka	12	80	22	20	44.2	1.67	1	59	23, 24	-5	28.5	0.62
Angusta	12, 27, 28	69	22	17	42.9	1.40	4	62	24	-12	27.0	1.41
Warsaw	1	71	16, 18, 22	25	43.9	1.53	3, 4	57	24	-10	27.1	1.29
Averages					42.0	1.63					26.7	1.70
<b>WISCONSIN.</b>												
Sturgeon Bay	2, 26	53	21	18	38.8	1.15	1, 4	46	24	-3	24.9	2.39
Manitowoc	2	60	19	20	40.0	0.68	2	48	23	-10	25.6	2.13
Hingham	8	65	21	20	40.4		2	48	23, 24	-10	24.3	
Milwaukee	8	69	22	20	30.0	0.94	2	50	23, 24	-10	25.2	1.79
Geneva	2	62	21	14	38.3	1.20	2	49	23	-17	21.7	1.77
Waupaca	1, 27	60	21	18	38.2		2	49	23, 24, 29	-10	24.2	1.20
Embarrass	27	62	21	16	36.5	2.15	2	54	23	-14	21.4	1.25
Rocky Run	8	71	21	16	38.4	0.68	2	44	29	-14	23.2	1.40
Madison	8	64	22	19	38.7	0.33	2	48	24	-13	22.2	0.67
Edgerton	27	66	19, 21, 22	20	40.6	0.90	3	55	23, 24	-12	24.9	0.90
Mosinee	13, 27	55	21	10	32.5	2.82	4	48	23	-24	17.3	1.66
Baraboo	5	60	21	0	29.7	1.13	3	50	23	-16	22.3	4.00
Tunnel City	27	60	21	12	37.6	0.70	3	48	24	-18		
Bayfield	26	60	21	8	36.5		1	50	23	-12	21.6	
Averages					36.9	1.15					23.0	1.74
<b>MINNESOTA.</b>												
Beaver Bay	26	62	21	20	36.3	1.04						
St. Paul	1	64	18	19	38.4	1.38	3	52	23	-15	19.7	0.90
Minneapolis	1	63	21	6	36.8	1.76	1	53	23	-21	17.3	0.60
Sibley	3	60	21	10	36.4	1.50	3	53	23	-21	18.8	1.10
Koniska	1	60	21	4	35.4	0.60	2	54	23	-20	19.2	0.45
Litchfield	1	64	21	16	38.5	0.90	1	54	26	-14	18.5	0.30
New Ulm	1	68	21	14	39.4	1.10	3	55	23	-20	20.7	0.35
Madelia	25	74	21	10	38.6	1.54	2, 3	70	23	-22	28.8	1.00
Averages					37.5	1.23					20.4	0.53
<b>IOWA.</b>												
Waukon	1	62	18	18	36.7							
Dubuque	6	60	22	22	39.7	0.96	1, 2	51	23	-12	24.0	0.68
Monticello	2, 12, 26	60	21	17	38.0	0.61	1, 3	53	23	-12	22.7	0.54
Muscataine	12	62	21, 22	21	39.7	0.82						

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

Stations in States and Territories.	NOVEMBER.					DECEMBER.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature. Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature. Rain and melted snow.		
<b>IOWA—Cont'd.</b>												
Bowen's Prairie..	1	Deg. 70	16,18,21	Deg. 20	Deg. 39.4	In. 0.50	3	Deg. 52	23	Deg. -18	Deg. 23.7	In. 0.80
Fort Madison....	28	65	22	19	42.8	1.00	4	56	23, 24	-8	28.4	0.72
Guttenberg.....	1	64	18, 21	16	36.7	.....	3	52	23, 24	-14	20.2	.....
Mount Vernon....	12	61	21, 22	19	38.0	.....	1	52	23	-14	23.4	.....
Iowa City.....	1	66	22	20	39.4	0.94	1	54	23	-11	24.4	0.35
Independence....	1	61	16, 18	18	37.6	0.80	3	52	23	-15	20.9	0.90
Near Independence	1, 26	62	19, 24	12	38.0	0.70	3	53	23	-17	19.5	0.70
Rockford.....	1	62	18	20	37.8	.....	4	54	23	-11	23.3	0.45
Algona.....	1	66	21	8	37.8	.....	3	57	23	-17	21.1	0.40
Webster City....	26	67	21	10	33.3	.....	2	54	23	-14	22.1	0.06
Boonesboro.....	1	62	21	11	38.0	0.80	3	53	23	-14	23.4	.....
Fontanelle.....	1, 7, 27	67	21	13	40.4	0.63	3	53	23	-14	24.0	0.10
Grant City.....	26	71	21	10	40.2	.....	3	60	23	-20	21.8	0.20
Sac City.....	26	68	21	10	39.3	.....	3	52	23, 23	-14	22.3	0.30
Logan.....	27	65	21	8	41.6	.....	2	58	23	-17	24.4	0.20
Woodbine.....	3	78	21	8	39.9	0.03	2, 3	56	23	-19	23.0	0.31
West Union.....	11	76	18	19	40.9	1.17	.....	.....	.....	.....	.....	.....
Averages.....	.....	.....	.....	.....	38.8	0.60	.....	.....	.....	.....	22.9	0.45
<b>MISSOURI.</b>												
St. Louis.....	2, 4	74	22	25	47.3	1.87	4	58	24	-4	32.0	1.89
Allenton.....	4	80	22	14	45.9	2.16	4	64	24	-16	29.6	2.85
Hematite.....	2	83	22	14	47.0	2.19	1	71	24	-25	31.5	3.62
Hannibal.....	1	69	22	22	44.0	1.51	4	66	24	-10	27.4	1.10
Rolla.....	4	77	22	15	45.7	2.55	4	62	24	-23	30.5	2.44
Jefferson City..	27	78	22	21	46.6	.....	1	65	24	-10	26.0	.....
Kansas City....	27	74	21	20	45.5	0.50	4	58	24	-6	29.4	0.60
Oregon.....	1, 12	74	21	17	45.2	0.35	3	63	23	-11	28.8	0.45
Corning.....	12	74	21	18	42.7	0.45	3	65	23	-13	27.1	0.35
Averages.....	.....	.....	.....	.....	45.5	1.45	.....	.....	.....	.....	29.1	1.66
<b>KANSAS.</b>												
Atchison.....	12	72	21	16	43.5	0.65	3	62	24	-7	27.6	0.73
Williamstown..	27	75	21	19	46.3	0.64	30	66	24	-10	30.4	1.12
Leavenworth...	12, 27	72	21	17	44.0	0.76	3	62	24	-11	28.3	0.65
Olathe.....	12, 27	71	21	15	43.4	0.50	4	63	24	-11	27.1	0.40
Paola.....	2	78	21	17	45.6	0.47	3, 4	63	24	-12	29.3	0.80
Baxter Springs..	4	75	21, 22	22	48.8	1.50	4	64	24	-10	31.7	0.90
Lawrence.....	12	72	21	17	44.9	0.57	3	64	24	-10	28.7	0.72
Holton.....	12	71	21	14	43.4	0.50	4	66	23	-12	28.2	0.48
State Ag'l College	27	74	21	17	45.6	0.13	4	68	23	-11	30.1	0.45
Council Grove..	27	74	21	16	45.6	0.20	4	66	23	-12	29.2	0.52
Douglass.....	1	74	21	18	46.6	.....	3	66	23	-7	31.3	1.28
Averages.....	.....	.....	.....	.....	45.2	0.59	.....	.....	.....	.....	29.3	0.73
<b>NEBRASKA.</b>												
Omaha Mission..	26	72	18	22	44.7	0.10	3	70	23	-15	27.1	0.53
De Soto.....	27	67	21	13	41.3	0.07	3	57	23	-18	24.7	0.13
Bellevue.....	26	74	21	15	42.9	.....	3	63	23	-11	28.1	0.10
Nebraska City..	1, 26, 27	72	21	13	42.0	0.20	3	66	23	-14	26.1	0.17
New Castle.....	1	72	21	10	.....	.....	3	68	23	-22	.....	.....
Averages.....	.....	.....	.....	.....	42.7	0.09	.....	.....	.....	.....	26.5	0.23
<b>UTAH.</b>												
Coalville.....	26	62	24	14	37.8	0.70	1	52	22	-25	19.1	1.30



## NOTES OF THE WEATHER.

NOVEMBER, 1870.

- Houlton, Me.*—Ground frozen hard; no sleighing yet, 30th.
- West Waterville, Me.*—Auroras 16th, 17th, 24th; first sleighing 20th. Month 2.34° warmer than average of six years, and had sixteen inches snow.
- Gardiner, Me.*—Auroras 16th, 17th, 19th, 23d, 27th. A warm November; no sleighing; plowing possible throughout.
- Oxford, Me.*—Thunder, then rain, 3d; auroras 19th, 24th, 30th.
- Cornishville, Me.*—Thunder-shower 13th. Average November temperature for forty years 33°.33; this, 37°.87. Autumn has been remarkably pleasant.
- Antrim, N. H.*—Thunder storm 3d; little rain; wells very low.
- Contcookville, N. H.*—Thunder-shower 3d; auroras 16th, 17th, 24th.
- Woodstock, Vt.*—Heavy thunder-storm 3d; first skating 26th.
- West Charlotte, Vt.*—Heavy thunder-showers, 3d; Lake Champlain very low. Pastures good 10th; first snow, slight, 19th, the last on April 7th.
- Kingston, Mass.*—Lightning 3d; mild pleasant month; pastures green and dandelions and other flowers in blossom.
- Georgetown, Mass.*—Thunder-storm, lightning vivid, 3d. Little ice or snow.
- Mendon, Mass.*—Thunder-storm 2d; ground frozen two inches 30th.
- Richmond, Mass.*—Heaviest storm of the season, thunder, 3d; first snow 19th. Ground has been but slightly frozen; streams very low.
- Moriches, N. Y.*—Thunder-showers 3d; auroras 16th, 17th, 24th.
- South Hartford, N. Y.*—Severe thunder and lightning 3d. Month very mild and favorable for out-door labors.
- Cooperstown, N. Y.*—Month pleasant, 3° above average; few cloudy days; ground dry; no frost; springs low.
- North Hammond, N. Y.*—Sleighing one day; last of month very mild.
- Utica, N. Y.*—Thunder-shower 3d; ground first covered with snow 15th.
- Depauville, N. Y.*—Thunder 3d; auroras 12th, 13th, 16th, 21st, 29th; first snow 14th. Month pleasant for plowing; good pasturage.
- Palermo, N. Y.*—Thunder-storm 3d; roads dry 8th; first snow 14th. Magnificent autumn; much plowing done this month.
- Lockport, N. Y.*—Thunder-shower 3d; first snows 14th, 23d; sleighing 23d, 24th.
- Buffalo, N. Y.*—Mean temperature of this month exactly the average of twelve Novembers past, but had more clear days.
- Newark, N. J.*—Temperature average, but more pleasant clear days than usual. The fall one of unusual beauty, nearly seventy fair days.
- South Orange, N. J.*—First frost 4th, ice 15th, snow 19th.
- New Germantown, N. J.*—Distant thunder 3d; faint auroras 17th, 18th, 19th; first snow, slight, 19th. Very pleasant month.
- Greenwich, N. J.*—First heavy frost 16th; tomatoes and Lima beans till 23d; very little snow; mild month and autumn.
- Fallsington, Pa.*—Thunder-shower 3d. A pleasant month.
- Philadelphia, Pa.*—First ice 11th; first snow 19th; heavy rain 22d.
- Horsham, Pa.*—Month remarkably open, last part delightful.
- Factoryville, Pa.*—Distant lightning 3d; first snow to cover ground 18th.
- West Chester, Pa.*—Lima beans still green 7th; first snow squall 18th.
- Parkerville, Pa.*—Lightning, thunder-showers 3d. Twelve smoky days.
- Catawissa, Pa.*—Month pleasant. Many wells on high places dry.
- Ephrata, Pa.*—Distant thunder and lightning, rain, 3d; first ice 7th; snow 18th.

*Carlisle, Pa.*—Thunder-storm 3d; first killing frost 11th. Delightful month.

*Fountain Dale, Pa.*—Thunder-shower 3d; first ice 11th; first snow 19th. Weather fine, and plowing throughout the month.

*Tioga, Pa.*—First cold rain this fall 18th; a little snow 19th.

*Connellsville, Pa.*—Ground frozen 1st; thunder-shower 3d; first snow 18th.

*Brownsville, Pa.*—First snow 15th. Month very pleasant but dry.

*New Castle, Pa.*—First snow 16th. No Indian summer.

*Beaver, Pa.*—First ice 2d; first snow 15th. A delightful month.

*Kent County, Del.*—First ice 11th; ground frozen 11th, 16th, 17th; auroras 16th, 17th; ice over half an inch thick 20th, 21st.

*Woodlawn, Md.*—Aurora 19th. Month  $6^{\circ}.2$  above last year.

*Fallston, Md.*—Thunder-shower 3d; first ice 11th; first snow 19th.

*Emmitsburg, Md.*—Thunder-storm 3d; some snow 19th. Month fine.

*Hampton, Va.*—First frost since March 30th, 1st; first ice since March 19th, 16th. Month dry and pleasant,  $6^{\circ}.5$  warmer than in 1869.

*Surry Court House, Va.*—First ice since March 25th, 1st; dandelions, blackbirds 11th. Month fair, mild, dry; warmest fall remembered here.

*Piedmont, Va.*—Distant thunder 3d; first snow 17th; rain, hail, snow 18th; frogs heard 29th. Garden vegetables green till 11th.

*Lexington, Va.*—First heavy frost 1st; snow on mountains 23d.

*Albemarle, N. C.*—First killing frost 11th; aurora 19th; wild geese 30th.

*Godweysville, S. C.*—First killing frost 11th; ice 16th. Fine month.

*Berne, Ga.*—Peach blossoms 1st; thunder and lightning 6th; slight frost 16th.

*Penfield, Ga.*—First killing frost 16th; ice, aurora 17th; hail 22d. Had beans, tomatoes, okra, &c., from garden till 11th.

*Moulton, Ala.*—Ice 11th; first snow 22d. A pleasant month but dry.

*Selma, Ala.*—First killing frosts 16th, 17th; heavy snow storm 22d.

*Greene Springs, Ala.*—Distant lightning and thunder 5th; unprecedented snow-storm of 10 inches, 22d.

*Coatopa, Ala.*—Nipping frost 10th; ice, ground frozen 17th; rain 20th to 22d, then snow; distant thunder, lightning, and rain 29th.

*Jacksonville, Fla.*—First frost 16th. Month  $2^{\circ}$  above average.

*Gilmer, Tex.*—First ice 16th. Month closed with fine weather.

*Bluff, Tex.*—First frost 17th; thunder-storm 28th. Post-oak leaves falling.

*Ponchatoula, La.*—Grinding cane 4th; thunder, blue birds 5th; figs ripening 8th; robins 15th; hard frost 17th; thunder-shower 29th.

*Columbus, Miss.*—Killing frost, ice 17th; rain all day 21st; snow 22d.

*Brookhaven, Miss.*—First killing frost, ice 16th; snow 21st, 22d.

*Fayetteville, Ark.*—Heavy thunder, lightning, rain 8th; frost, ice 16th, 21st, 22d; slight snow 23d.

*Elizabethton, Tenn.*—Ground frozen 19th; slight snow 25th.

*Pine Grove, Ky.*—Ground frozen 1st; snow on 5 days, slight. Month dry.

*Shelby City, Ky.*—First snow 15th. Month dry and pleasant.

*Salem, Ohio.*—First frozen ground 1st; thunder 3d, and lightning 4th; first snow 14th. A mild open fall.

*Adams's Mills, Ohio.*—Ice 1st; first snow, slight, 15th. Indications of aurora nearly every night, but obscured by clouds.

*Carson, Ohio.*—Unusual frequency of brilliant auroras in October and November.

*North Fairfield, Ohio.*—First ice 1st; lightning 2d; snow, 12 inches, 23d.

*North Bass Island, Ohio.*—First frost 7th; ice 10th; snow 20th, 12.8 inches.

*Urbana, Ohio.*—Lightning 2d; thunder 4th; snow gone, laid 6 days, 28th.

*Bethel, Ohio.*—First hard frost 1st; great snow-storm, 6 inches, 22d.

*Carthagena, Ohio.*—Distant lightning 2d; auroras 8th, 16th, 22d, 28th.

*Mount Auburn, Ohio.*—First hard frost 10th; first snow 18th; snow and rain 22d.

*Kelley's Island, Ohio.*—First frost, light, 7th; ice 10th, snow-squalls 18th.

*Detroit, Mich.*—Thunder-shower 2d; snow, 6 inches, 23d; auroral haze 24th, 29th.

*Ann Arbor, Mich.*—Thunder-showers 2d, 8th; auroral light 18th.

*Alpena, Mich.*—First frost 7th; auroras 12th, 14th, 24th.

*Litchfield, Mich.*—Heavy thunder 2d, 10th; first snow-flakes 19th. Springs failing, pastures green, ground open till 30th. No Indian summer.

*Grand Rapids, Mich.*—Lightning, thunder, rain 8th. Warmest, pleasantest November in Western Michigan in 30 years.

*Copper Falls, Mich.*—Very pleasant month, its 15 inches snow gone.

*Aurora, Ind.*—Lightning 2d, 8th, 13th; first snow 15th; aurora 19th.

*Veray, Ind.*—Lightning, rain 2d; first heavy frost 10th; first snow, 6 inches, damp, 22d, 23d; mild, mosquitoes lively 28th.

*Laconia, Ind.*—First ice 1st; first snow 15th; aurora 19th. A delightful fall, no severe cold, and roads firm and dry.

*Knightstown, Ind.*—First killing frost 1st; thunder-shower 4th; first snow-flakes 15th. A very fine November.

*Mattoon, Ill.*—Aurora 17th. Many wells and cisterns dry.

*Charleston, Ill.*—Lightning, rain, thunder, 8th, 13th. Still very dry.

*Louisville, Ill.*—Heavy thunder-storm 4th; first hard freeze 9th.

*Belvidere, Ill.*—Very mild month and autumn, few cold days.

*Winnebago, Ill.*—Lightning 7th, thunder, rain 8th; auroras 17th, 18th, 19th.

*Hennepin, Ill.*—Good weather for farmers; pastures good yet. Frequent frosts to 7th; thunder-shower 8th; thunder and forked lightning 13th.

*Havana, Ill.*—Thunder-showers 4th, 8th, 13th; first snow-flakes, 15th.

*Mount Sterling, Ill.*—Thunder-storms 4th, 8th; first snow, 23d. Month fine, roads excellent, strawberries bloomed the first half of the month.

*Manitowoc, Wis.*—Thunder-storms 8th; first snow-flakes 9th; aurora 18th.

*Milwaukee, Wis.*—First snow, an inch, 15th; auroras 17th, 18th.

*Mosinee, Wis.*—Aurora 3d; southern lights 16th. Very fine weather.

*Baraboo, Wis.*—Remarkable November; dry and clear; birds returned.

*Tunnel City, Wis.*—First snow, light, 8th; aurora 9th.

*Bayfield, Wis.*—First snows 5th, 20th. Ground bare, open, mellow, 30th.

*Minneapolis, Minn.*—Warmest November on our records.

*Koniska, Minn.*—Thunder and lightning 7th. Month fine and dry.

*New Ulm, Minn.*—Auroras 17th, 18th, 19th. Fine for farm work.

*Waukon, Iowa.*—Auroras 16th, 17th, 18th, 19th. Month dry, pleasant.

*Monticello, Iowa.*—The pleasantest November in many years.

*Bowen's Prairie, Iowa.*—Month warm; streams low, no snow; plowing.

*Iowa City, Iowa.*—First snow, slight, 15th. Month and fall very mild.

*Independence, Iowa.*—Thunder-storm 8th. Month unusually fine.

*Boonesboro, Iowa.*—Month about 4° above its average in 16 years.

*Logan, Iowa.*—No rain; every day fit for out-door work.

*West Union, Iowa.*—Thunder-storm 8th; first snow 13th; aurora 17th. Mean temperature  $10^{\circ}$  above that of November, 1869.

*St. Louis, Mo.*—Thunder-shower 4th; first snow, slight, 15th.

*Hematite, Mo.*—Finest November known in many years.

*Rolla, Mo.*—Thunder-storm 4th, 11th; thunder 8th; first snow 15th.

*Oregon, Mo.*—Auroras, 8th, 18th, 19th, 22d; bluebirds, crickets 12th; first snow, light, 23d; roads, pasture, health, good; springs well filled.

*Corning, Mo.*—Thunder-shower 8th; first flurry of snow 23d. Pleasant month, little rain, 27 starlight evenings.

*Baxter Springs, Kans.*—First ice 15th; first snow 23d; thunder 28th.

*Lawrence, Kans.*—Sixty-one meteors 14th. Fine month for out-door work.

*Bellevue, Nebr.*—Beautiful aurora 19th. Fine weather, good roads.

*Cathlamet, Wash. Ter.*—Dandelions, daisies, &c., blooming all the month.

*Deer Lodge City, Mont. Ter.*—Beautiful month, no snow in valley 30th.

#### DECEMBER, 1870.

*Gardiner, Me.*—Snow; pond iced over; open 242 days, 17th; auroras 17th, 27th. Month  $2^{\circ}.15'$  warmer than its average for seven years.

*Gardiner, Me.*—Auroras 1st, 16th, 17th; river closed 16th. Month dry,  $4^{\circ}.24'$  warmer than its average of 35 years.

*Lisbon, Me.*—First sleighing 31st. Brooks and wells very low.

*Norway, Me.*—Month very mild, no good sleighing, streams low.

*Cornishville, Me.*—Month  $5^{\circ}.25'$  above its average ( $21^{\circ}$ ) for 40 years.

*Stratford, N. H.*—Snow on 18 days, 17 inches; no sunshine 7th to 14th.

*Tamworth, N. H.*—Aurora, brooks freezing over 17th; drought 31st.

*Contocookville, N. H.*—First sleighing 9th; plowing 13th; auroras 14th, 15th, 17th, 18th, 20th, 24th; river frozen over 17th. First half of month mild.

*Goffstown, N. H.*—Drought continues; hard year for farmers.

*Craftsbury, Vt.*—First half of month very warm, last half cold.

*Randolph, Vt.*—Every month this year above the average temperature, except February and March. Year  $2^{\circ}.7'$  above mean temperature of five years.

*Woodstock, Vt.*—Drought continues; ice a foot thick, ground frozen a foot.

*Topsfield, Mass.*—First frozen ground 15th; drought of summer continues.

*New Bedford, Mass.*—Little frost at any time; navigation open all month.

*Lunenburg, Mass.*—No sleighing till 28th, and then poor.

*Williamstown, Mass.*—Month mild; no sleighing.

*Middletown, Ct.*—Auroras 15th, 17th; river closed 21st; thermometer reached zero for first time in 1870 on 30th.

*Brookfield, Ct.*—Month cold and windy; many springs and wells dry.

*Moriches, N. Y.*—Auroras 10th, 15th; first ice and skating 17th.

*South Hartford, N. Y.*—Heavy thunder 12th; lake and canal navigation closed 10th, 16th. A dry month; springs and streams very low.

*Luzerne, N. Y.*—Auroras 6th, 8th, 15th; lake frozen over 17th; waters very low.

*Glasco, N. Y.*—Hudson River closed 27th, and harvesting ice to 31st.

*Minaville, N. Y.*—Highest water in March, and greatest drought known here in 1870. No sleighing this December; waters very low.

*Cooperstown, N. Y.*—Fine, pleasant month. The year was the warmest and its winter the mildest (except March) in twenty-one years, and crops the earliest.

*North Hammond, N. Y.*—Ground open till 8th; St. Lawrence closed 24th.

*South Trenton, N. Y.*—Nine inches snow on ground, but poor sleighing. The warmest year since 1848.

*Depauville, N. Y.*—Auroras 14th, 15th 16th; first sleighing 19th.

*Palermo, N. Y.*—Finished plowing 13th; first sleighing 23d. Many brooks dry. The warmest year on my record for seventeen years; total snow 116 inches.

*Little Genesee, N. Y.*—Mild and muddy till snow of 14th; sleighing to 31st.

*Buffalo, N. Y.*—First week mild, no frost, thunder-shower 5th; rough and cold after 15th; first sleighing 26th; mean temperature same as for thirteen years.

*Trenton, N. J.*—Slight earthquake 14th; canal frozen first time 22d.

*New Germantown, N. J.*—Auroras 10th, 15th; ice is six inches thick 27th.

*Greenwich, N. J.*—Roses 1st; blue violets 4th; wintry after 20th to 31st.

*Hamilton, Pa.*—Very dry, springs failing, but little snow.

*Plymouth Meeting, Pa.*—Very dry, mild to 21st, then cold to 31st.

*Factoryville, Pa.*—No real snow-storm; many wells dry; ground hard frozen.

*Fountain Dale, Pa.*—First half of month mild, last half cold.

*Tioga, Pa.*—Diffuse lightning 7th; a very pleasant month.

*Grampian Hills, Pa.*—Heavy thunder-storm 5th; to 20th pleasant; little snow.

*Pittsburg, Pa.*—Hard freeze 1st; river full of ice, four inches thick, 23d.

*Brownsville, Pa.*—Thunder-storm 5th; river closed 23d; a fine month.

*Cannonsburg, Pa.*—Dandelions 4th; thunder and lightning 5th.

*Milford, Del.*—First snow 18th; coldest weather in several years 31st.

*Woodlawn, Md.*—Susquehanna River closed 23d.

*Emmitsburg, Md.*—Aurora 16th; coldest day in 1870, 24th.

*Hampton, Va.*—To 23d very mild and dry, then snow and severe cold.

*Surry Court House, Va.*—Thermometer 4° (lowest since 1856) 25th; to 21st warm, dry, windy, then to close calm, snowy, cold.

*Vienna, Va.*—Cold 20th, very cold 21st, still colder 22d, coldest 24th.

*Piedmont, Va.*—Very cold 23d to 26th; ice six inches; month dry, windy.

*Wytheville, Va.*—Coldest day since December 12, 1868, 24th.

*Goldsboro, N. C.*—Thunder and lightning 11th, 31st; very cold 24th, 25th.

*Oxford, N. C.*—Three inches snow 28th; coldest December in many years.

*Statesville, N. C.*—Coldest December days in forty years, (or more, 24th, 25th.

*Smith's Ford, S. C.*—Coldest spell in several years, 24th, 25th.

*Bluffton, S. C.*—First frogs and robins heard this winter, 1st; sleet and snow, two to four inches, 22d; coldest Christmas (24th and 25th) in many years.

*Penfield, Ga.*—Ripe strawberries 15th to 23d; Christmas coldest day since January, 1852, when it was 1°.

*Greene Springs, Ala.*—Cold week after 20th; ice several inches thick.



*Moulton, Ala.*—Pleasant for out-door work till 21st; then a cold week.  
*Fish River, Ala.*—Sleet, then one-quarter inch snow, 22d; most in twenty years.

*Jacksonville, Fla.*—Hard freeze 23d to 25th, injuring orange and other trees.

*Pilatka, Fla.*—Hardest freeze since 1855, 23d, 24th; lemon, lime, and young orange trees killed to the ground; bearing orange trees will survive it.

*Clarksville, Texas.*—Ice 11th to 20th, mornings; 23d, 24th, froze all day.

*Pontachoula, La.*—Coldest morning since 1851; ground frozen.

*Brookhaven, Miss.*—First frozen ground 20th; frozen five inches; ice three inches thick 24th; the coldest "snap" since February 8, 1835.

*Clinton, Miss.*—Hard frost 21st; ground frozen three to six inches 22d to 25th; robins here 26th.

*Elizabethton, Tenn.*—Streams full of ice 24th, 25th, and ground frozen six inches.

*Pine Grove, Ky.*—Snow, hail, sleet, rain, 19th; sleet, snow, 20th; snow, 21st.

*Shelby City, Ky.*—Aurora 21st; first skating 22d; ice six inches 27th.

*Stuebenville, Ohio.*—Rain, with thunder, lightning, hail, and high wind, 5th.

*Cleveland, Ohio.*—Thunder-storm 5th; river and canal freezing over 21st. December temperature in 1856, 24°.81; this year, 28°.93; average for sixteen years, 30°.98.

*Kelley's Island, Ohio.*—Slush ice in lake 21st; lake crossed on ice 24th.

*Carson, Ohio.*—Sudden thunder-storm, hail, almost a hurricane, 5th.

*North Fairfield, Ohio.*—Heavy rain and wind, severe thunder and lightning, 5th; storm commenced with hail; snow, ending in rain, 19th.

*Urbana, Ohio.*—Month 5°.5 warmer than in 1869; ice on ponds twelve inches.

*Bethel, Ohio.*—Driest fall and earliest winter in many years.

*College Hill, Ohio.*—Ohio River full of ice; smaller streams closed.

*Ann Arbor, Mich.*—A foot of snow on the ground; good sleighing.

*Ontonagon, Mich.*—Season mild, with but half the usual snow.

*Northport, Mich.*—Summer unusually wet and warm; fall very fine, and no severe weather till 20th, and then not very severe.

*Mount Carmel, Ind.*—Aurora 4th; coldest day since January 1, 1864, 24th, but exceeded by February 4, 1856, when the thermometer stood at 23°.

*Kentland, Ind.*—Snowed before freezing; hence ground is not frozen.

*Veray, Ind.*—Much ice in river 21st; six to eight inches thick 27th.

*Merom, Ind.*—Wabash river frozen over; crossed by teams 25th.

*Marengo, Ill.*—Beautiful till snow-storm on 7th; thunder and lightning 12th; thunder and snow 13th; first sleighing 19th; a blustering Christmas.

*Mattoon, Ill.*—No rain, ponds dry; no running streams here; water scarce; two weeks' sleighing—very rare occurrence here.

*Aurora, Ill.*—Ponds frozen 20th; then to 26th very cold; ground bare.

*Belvidere, Ill.*—Unusually warm spring, summer, fall and December to 16th. Rain and melted snow in 1870, 27.82; in 1869, 42.49 inches.

*Hennepin, Ill.*—Fair and pleasant to middle; 20th to 26th cold, clear, calm; then milder to close, with good pasture and plenty of good butter.

*Havana, Ill.*—Rivers bridged with ice 21st; very pleasant 31st.

*Dubois, Ill.*—First snow-fall 19th, two months later than in 1869.

*Galesburg, Ill.*—Except a few days, a fine month; no sleighing.

*Andalusia, Ill.*—First snow 11th; Mississippi closed the 20th; drought.

*Hingham, Wis.*—First snow two inches 5th; streams frozen 18th; being low, some froze to the bottom, making water very scarce for cattle.

*Mosinee, Wis.*—Cold stopped vegetation 7th; not enough snow for logging.

*St. Paul, Minn.*—Mild to 20th; river closed 21st; moderate 26th to 31st. Average mean of 46 years,  $43^{\circ}$ ; of 1870,  $46^{\circ}.60$ ; 187 clear days in 1870; a pleasant year.

*Koniska, Minn.*—Light snow; ground frozen eighteen inches; lake ice eighteen inches.

*New Ulm, Minn.*—River bridged with ice 21st; no snow or frost 31st.

*Madelia, Minn.*—Rivers and lakes closed 20th; ground frozen two feet 30th.

*Bowen's Prairie, Iowa.*—Month dry; springs low; roads dusty.

*Guttenburg, Iowa.*—Thunder-shower 5th; Mississippi closed 21st.

*Iowa City, Iowa.*—To 20th very mild, then the coldest week in the year. The year unusually warm and dry;  $2^{\circ}.65$  above mean of 31 years; rain-fall 16.17 inches less than mean of 22 years.

*Independence, Iowa.*—Plowing to 5th; thunder-storm and snow-squall 5th; raw Christmas; snow gone; mild; wheeling splendid.

*Boonesboro, Iowa.*—No storms worth naming for two and a half months.

*Sac City, Iowa.*—Finest fall and winter I ever experienced.

*Woodbine, Iowa.*—Delightful to 16th, much plowing done; ground dry 31st.

*St. Louis, Mo.*—Month of great and sudden changes of barometer, followed by as great atmospheric changes.

*Hematite, Mo.*—Gale 5th; deepest snow-fall for years 19th; coldest ever known here 24th; killed peach buds and some twigs and even trees.

*Oregon, Mo.*—Roads fine; plowing 16th; auroras 19th, 28th, 29th, 30th; dusty 22d; ice eight inches thick 26th; thawing 27th to 31st.

*Leavenworth, Kans.*—The sudden changes, ( $41^{\circ}$  from heat to cold, and  $49^{\circ}$  cold to heat,) 19th to 30th, (not mere cold,) killed budded peach buds.

*Olathe, Kans.*—Open to 17th, when four inches snow; below zero all 23d, and below  $15^{\circ}$  from 19th to 25th; the hardest freeze in at least 13 years.

*Paola, Kans.*—Gales 3d, 4th; fowls froze 25th; robins and bluebirds 30th.

*Baxter Springs, Kans.*—Coldest since settlement of this county, 24th.

*Belleveue, Nebr.*—The Missouri and Platte closed 20th; pleasant yet remarkable month; no rain, no snow to measure, and roads never better.

*Nebraska City, Nebr.*—Floating ice in river 14th; river closed 21st.

*Watsonville, Cal.*—Thunder-storm 2d; thunder 5th; coldest December known here for many years.

*Deer Lodge City, Mont. Ter.*—Middle of month colder, latter part warmer than usual; month  $4^{\circ}.3$  colder than average of 4 years; no snow in valley.

*Missoula, Mont. Ter.*—River closed 13th; warm from 26th to close.

*Denver, Col. Ter.*—Coldest month since settlement of this Territory.

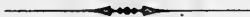
MONTHLY REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR

FEBRUARY, 1871.



WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1871.

THE HISTORY OF THE UNITED STATES

1877

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# MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE,  
*Statistical Division, February 28, 1871.*

SIR: I herewith report for publication statistics showing the relative numbers and prices of farm stock, as compared with returns made in February of last year; also a variety of extracts from correspondence, a copy of the circular of the Commissioner of Agriculture calling for aid for the farmers of France, and articles on the New York Agricultural Society, British improvements in plows, scientific notes, market prices of farm products, meteorological tables and notes, &c.

J. R. DODGE,  
*Statistician.*

Hon. HORACE CAPRON,  
*Commissioner.*

## RELATIVE NUMBERS AND PRICES OF FARM STOCK.

The February circular was intended to obtain a comparative view of the numbers and prices of farm stock. Returns have been received from all the States, showing a small increase in numbers, taking the whole country together, in all animals except sheep. The increase of swine has been largest; that of cattle and horses moderate, slightly in excess of the advance in population.

There is no increase of horses in the northern half of New England, and but a slight advance in Massachusetts and Rhode Island. New Jersey and Delaware have scarcely sustained the figures of last year, while New York and Pennsylvania have exceeded them. The Southern States, excepting Texas, return larger numbers, as do all the Western States, Nebraska presenting an increase of 15 per cent., and Kansas 20 per cent. The average increase is about three per cent. The prices of horses are lower, as a rule, than in February of 1870. A slight decrease in the number of mules is reported in New Jersey, Maryland, Virginia, Florida, Ohio, and Minnesota, and elsewhere an increase of from one to six per cent., Kansas and Nebraska only exceeding that rate, their percentage being respectively fifteen and sixteen per cent. A reduction in price similar to that noticed in horses is reported. The following statement affords a fair illustration of the range of prices of horses:

	1870.				1871.			
	One year.	Two years.	Three years.	Over 3 years.	One year.	Two years.	Three years.	Over 3 years.
Illinois .....	\$29 63	\$45 76	\$65 33	\$95 02	\$28 57	\$44 60	\$66 66	\$93 93
Ohio .....	34 86	54 08	78 00	106 34	34 70	54 00	77 47	102 92
Kentucky .....	40 91	58 08	76 75	102 25	36 14	52 75	73 42	96 35
Georgia .....	42 59	68 62	101 58	142 16	40 20	63 54	92 53	129 45
Texas .....	13 04	21 43	26 31	42 82	12 06	18 19	26 96	45 52

A decrease in milch-cows is observed in Maine and New Hampshire, many having been sold there last fall in consequence of the drought and reduced supply of hay; and also in Maryland, North Carolina, Alabama, and Texas. There has been no increase in New Jersey and Delaware. The average total increase appears to be about three per cent. Kansas claims the largest increase, reaching 20 per cent.

Of oxen and other cattle the following States report a decrease: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New Jersey, Maryland, Alabama, Louisiana, Texas, Kentucky, and California. The States east of the Mississippi have scarcely maintained the numbers of last year. The aggregate numbers of all the States will not show an increase of much more than one per cent.

A decrease in the numbers of sheep of five per cent. is indicated. The only States showing increase are Delaware, Florida, Tennessee, Nebraska, California, and Oregon. The largest relative increase is 31 per cent. in Oregon, and 12 per cent. in California.

All the States report an increase in swine except Connecticut, Maryland, North Carolina, and Texas. The total average increase appears to be about 10 per cent. The percentage of increase is placed at 2 in Kentucky, 7 in Ohio, 14 in Illinois, 18 in Minnesota, 27 in Kansas.

The decline in the price of swine is general, yet not universal—in Ohio, young hogs and 12 months old, from \$6 95 to \$6 20; \$6 32 to \$5 79 in Illinois; \$3 53 to \$3 37 in Missouri; \$6 47 to \$5 28 in Iowa; \$10 25 to \$8 77 in New York; \$14 55 to \$11 60 in Massachusetts; \$3 63 to \$3 46 in Tennessee; \$3 51 to \$3 26 in Mississippi. An increase is observed in Georgia from \$2 67 to \$3 68; \$3 57 to \$4 77 in California; \$6 11 to \$6 90 in Nebraska; \$5 16 to \$6 93 in Kansas.

Table showing the relative percentage of farm stock in February, 1871, as compared with the returns of February, 1870.

STATES.	HORSES.				MULES.				MILCH COWS.	
	Total number of horses compared with that of February, 1870.	Average price per head under 1 year old.	Average price per head between 1 and 2 years old.	Average price per head between 2 and 3 years old.	Total number of mules compared with that of February, 1870.	Average price per head under 1 year old.	Average price per head between 1 and 2 years old.	Average price per head over 3 years old.	Total number of milch cows compared with that of February, 1870.	Average price per head at this time.
Maine.....	100	\$33 35	\$50 50	\$74 72	\$100 77				93	\$36 37
New Hampshire.....	99	37 00	58 33	107 50	107 50				97	37 50
Vermont.....	100	32 50	52 50	82 50	122 50				101	47 50
Massachusetts.....	102	46 40	72 40	101 00	154 16				104	59 16
Rhode Island.....	102	35 75	61 25	90 00	117 50				102	44 25
Connecticut.....	101	47 50	65 50	95 83	120 66				103	53 50
New York.....	102	42 64	68 17	96 55	135 88				103	48 51
New Jersey.....	99	58 50	93 07	130 33	163 91				100	61 38
Pennsylvania.....	103	44 39	73 13	105 57	139 92				103	46 67
Delaware.....	100	40 00	60 00	80 00	120 00				100	35 00
Maryland.....	102	39 16	62 41	80 91	120 55				98	39 09
Virginia.....	102	36 37	56 83	80 00	112 14				102	35 00
North Carolina.....	101	38 37	59 70	85 93	112 25				99	29 09
South Carolina.....	105	37 12	63 37	95 62	119 66				105	22 57
Georgia.....	104	40 20	63 54	92 53	129 45				105	23 22
Florida.....	108	38 33	70 00	115 00	168 33				101	21 61
Alabama.....	103	40 00	65 55	96 11	131 50				105	15 83
Mississippi.....	103	36 91	59 16	89 38	122 00				104	25 34
Louisiana.....	109	26 00	43 00	67 00	96 42				106	24 62
Texas.....	99	12 96	18 19	26 96	45 92				97	12 87
Arkansas.....	105	27 50	41 16	55 66	84 85				102	22 14
Tennessee.....	104	40 85	61 78	84 42	106 64				103	23 57
West Virginia.....	103	35 95	56 50	79 87	106 53				102	34 73
Kentucky.....	102	30 14	52 73	72 42	96 35				104	31 92
Missouri.....	105	30 27	45 91	65 04	83 46				102	37 68
Illinois.....	104	28 57	44 60	66 66	93 93				102	38 50
Indiana.....	104	31 40	49 00	69 64	94 78				102	38 50
Ohio.....	102	34 70	54 00	79 47	102 92				102	45 09
Michigan.....	106	30 19	52 53	76 76	107 84				106	41 15
Wisconsin.....	110	32 34	50 19	74 61	107 38				111	35 26
Minnesota.....	109	35 16	51 33	71 41	110 41				113	32 91
Iowa.....	111	32 03	46 54	65 78	94 23				112	34 31
Kansas.....	120	33 25	50 38	72 26	102 46				130	38 46
Nebraska.....	115	36 36	55 00	79 77	109 09				116	41 81
California.....	104	21 13	31 63	47 00	75 81				101	46 86
Oregon.....	102	22 50	32 00	48 66	84 16				104	32 25

Table showing the relative percentage, &c.—Continued.

STATES.	OXEN AND OTHER CATTLE.						SHEEP.				HOGS.			
	Total number of oxen and other cattle compared with that of February, 1870.	Average price per head under 1 year old.	Average price per head between 1 and 2 years old.	Average price per head between 2 and 3 years old.	Average price per head over 3 years old.	Total number of sheep compared with that of February, 1870.	Average price per head under 1 year old.	Average price per head over 1 year old.	How many head of sheep were killed by dogs in your county in 1870?	Total number of hogs compared with that of February, 1870.	Average price per head under 1 year old.	Average price per head over 1 year old.		
Maine.....	85	\$11 97	\$19 05	\$34 90	\$60 05	83	\$2 30	\$2 68	925	104	\$2 72	\$13 35		
New Hampshire.....	95	10 66	19 66	30 50	62 16	90	2 02	2 45	375	105	13 50	26 06		
Vermont.....	95	10 00	19 50	35 00	76 00	83	2 25	2 75	200	106	13 50	27 50		
Massachusetts.....	99	12 83	23 83	38 00	75 00	70	2 37	3 87	822	106	11 60	27 40		
Rhode Island.....	102	14 25	22 50	34 75	65 10	100	3 25	3 87	352	102	12 50	21 00		
Connecticut.....	99	13 80	22 00	37 00	63 00	90	3 41	4 29	473	99	15 50	28 50		
New York.....	100	12 78	25 53	40 04	64 57	90	2 45	3 37	1,733	108	8 77	18 06		
New Jersey.....	99	16 78	29 07	44 17	65 78	98	4 16	5 03	1,161	104	12 50	24 30		
Pennsylvania.....	102	13 71	25 10	43 39	63 94	94	2 32	3 45	3,963	108	8 47	17 50		
Delaware.....	110	10 00	15 00	25 00	40 00	110	3 00	4 00	100	100	5 00	10 00		
Maryland.....	90	10 54	17 09	26 81	41 68	100	3 17	4 10	1,330	96	6 40	11 86		
Virginia.....	102	8 07	13 85	23 96	35 51	94	2 18	2 44	1,623	101	4 11	10 10		
North Carolina.....	101	4 06	6 90	11 70	17 97	97	1 23	1 77	5,667	99	3 32	7 26		
South Carolina.....	104	4 77	8 55	13 55	19 44	95	1 28	1 78	960	103	3 44	8 44		
Georgia.....	102	4 58	7 83	12 65	17 09	98	1 17	1 81	4,365	107	3 68	7 53		
Florida.....	103	3 75	5 25	9 00	13 25	110	1 30	1 80	30	100	2 00	5 00		
Alabama.....	97	4 90	8 45	13 60	20 20	89	1 11	1 59	975	101	2 91	8 38		
Mississippi.....	102	5 10	8 13	13 73	23 46	90	1 43	2 30	1,450	103	3 26	7 83		
Louisiana.....	94	6 40	10 50	16 00	23 12	90	1 50	2 41	4,410	110	3 50	6 70		
Texas.....	92	2 78	4 37	6 57	11 78	93	1 54	2 59	3,330	99	2 05	4 92		
Arkansas.....	110	4 00	7 89	12 92	17 64	100	1 54	2 59	1,430	104	2 21	6 50		
Tennessee.....	106	4 85	8 92	14 10	23 50	103	1 48	2 80	3,450	101	3 46	7 60		
West Virginia.....	106	11 22	20 47	31 04	44 20	97	1 27	1 80	3,206	110	3 69	8 13		
Kentucky.....	99	11 85	19 83	31 30	47 28	96	1 82	2 77	4,697	102	3 65	8 30		
Missouri.....	104	9 02	16 01	26 91	41 10	94	1 17	1 76	9,595	116	3 37	7 28		
Illinois.....	102	10 13	17 94	28 00	43 00	88	1 48	2 15	6,678	114	5 79	12 71		
Indiana.....	101	9 48	18 36	29 63	42 68	88	1 60	1 97	6,372	116	4 72	10 01		
Ohio.....	102	13 20	22 97	36 65	51 09	91	1 58	2 40	8,266	107	6 50	12 97		
Michigan.....	103	9 35	18 37	26 03	41 67	92	1 58	2 45	1,208	112	5 39	13 34		
Wisconsin.....	105	9 15	16 57	26 03	42 16	96	1 94	2 61	2,032	98	5 08	12 91		
Minnesota.....	105	7 58	13 91	25 08	39 58	100	1 70	2 40	71	118	5 05	11 29		
Iowa.....	109	9 19	15 98	25 78	40 45	91	1 22	1 88	3,118	124	5 28	12 79		
Kansas.....	138	10 16	18 23	29 75	44 07	100	1 64	2 53	322	127	6 93	14 73		
Nebraska.....	103	9 72	18 09	31 54	46 36	107	1 39	2 63	1,051	127	6 90	13 63		
California.....	98	12 72	19 72	29 90	41 36	112	1 86	2 84	1,400	102	4 77	9 45		
Oregon.....	100	10 75	17 00	24 12	32 14	131	1 42	2 06	1,400	115	1 85	4 50		



## EXTRACTS FROM CORRESPONDENCE.

## — A NEW GRAPE REGION.

*Webster, Jackson County, North Carolina.*—Permit me to digress from a report of my county to indicate a grape region not generally known. The Blue Ridge at its great southern bend runs nearly east and west for one hundred miles, nearly coinciding with the thirty-fifth parallel of latitude. It here forms a huge mountain wall, in many places six thousand feet high. This great wall is braced on the south side by many lateral ranges, running down between the heads of the rivers, thirty or forty miles in extent. Some of the knobs on these side ranges nearly equal in height the parent mountain. The soil on the top and east side of many of these mountains is a loose and fertile loam, abounding in springs and rivulets of pure water, and clothed in forests of excellent timber. The greater part of this country is yet in a state of nature, and the lands are cheaper than the Government lands of the West. Railroads already built and in process of construction run along the lower spurs of these mountain slopes, sometimes tunneling through them, giving easy access to the markets of the world.

The climate is delightful; the great mountain wall on the north breaking the force of the cold storms of winter and spring, and its great elevation exempting it from the burning heats of summer. Here is the country for the man of weak lungs; and if he has a turn for vine-growing, sheep husbandry, or bee culture, he may obtain health and money at the same time. I know of no country that can surpass it in climate, unless it be the south of Spain, under the Sierra Nevada, or some parts of Lombardy, in Italy.

Among many desirable localities, from the Tryon Mountain, in North Carolina, to the Yona, in Georgia, I would designate the Oconee Mountain, in South Carolina, as possessing peculiar attractions. First, a highway of easy and gentle grade to Walhalla, a German town on the railroad. Second, an elevation of about eight hundred feet above the valleys, and perhaps sixteen hundred feet above tide-water. Third, a level and fertile mountain top of hundreds of acres, with springs and rivulets everywhere. Fourth, a rich and steep mountain on the east side with thousands of acres of sunny and shady slopes, giving every kind of exposure except a western one, with magnificent forests of oak, walnut, poplar, locust, pine, and bass wood. Fifth, the site is beautiful. Looking north we behold a huge mountain for one hundred miles, in winter covered with snow or sleet, and in summer in gorgeous green; looking south the hill country of South Carolina lies spread out like the billowy waves of the ocean far as the eye can reach; a few miles above the climate is too cold for Indian corn; a few miles below grow the cotton, fig, and rice. Sixth, the almost certainty of the grape being healthy there. A mountaineer here and there has planted a few peach trees about his house, and an Isabella or Herbemont vine. No frost has ever killed his peaches, or rust or mildew destroyed his grapes.\*

[\* A letter of Hon. G. Cannon, of Spartanburg, South Carolina, directed to Senator T. J. Robertson, in presenting the advantages of the Cincinnati and Charleston Railroad, refers to this subject as follows.—ED. REP. ]

“This line passes directly over the Tryon Mountain, where, in certain localities, frosts have never been known by the oldest inhabitants. Fruits of all kinds never failing, and the wild grapes have been gathered there in the month of January, fresh and juicy as in October. This mountain region also affords wonderful grazing advantages, besides producing all the cereals, common to this climate, in great abundance.”

## BANDERA, TEXAS.

*Bandera County, Texas.*—This county lies northwest of and adjoining Bexar County, and is about nine hundred square miles in area. It is abundantly supplied with streams of pure water, including the Medina River and its several tributaries, and numerous smaller creeks sustained by unfailing springs of wholesome limestone water. The Medina River, averaging one hundred and twenty feet in width, furnishes many eligible sites for manufactories, some of which are utilized, there being in operation three saw-mills and one grist-mill, the latter located at Bandera City, the county seat, a prosperous village upon the left bank of the Medina, forty-three miles northwest of San Antonio. Ten miles above Bandera, on the river, is Moundville, a thriving village, located upon a beautiful prairie, the settlement of which was commenced about one year ago. The lands of the county are prairie, timbered over two-thirds of its area with live, Spanish, and post oaks, elm, cedar, walnut, cherry, sycamore, &c. The Medina and some of its larger tributaries are fringed with highland cypress, the manufacturing of which into lumber is quite a lucrative business. The soil of the valleys and some of the uplands is very dark in color, friable, and easily tilled, and is well adapted to the growth of cereals as well as cotton, tobacco, and various garden vegetables. The average yield of corn is thirty bushels per acre, and other crops yield a generous return for the slight labor and attention usually bestowed upon them. The price of unimproved arable land ranges from one to five dollars per acre. There are no marsh or swamp lands in this region, and probably no healthier climate known, fever and ague and epidemics being unknown. The Gulf breezes prevail during the warm months, giving a cool, pleasant temperature, and the small mountain and forest growths break the cold northers of winter. The Indians have at times committed depredations, but since the frontier troops of the State have been ranging around us we have been free from molestation. The population, which is nearly all white, is increasing by immigration and otherwise, and is peaceable and law-abiding. Stock-raising is the principal business, the ranges affording sustenance throughout the year to all classes of farm animals.

## TRIALS OF SEEDS.

Mr. H. Bowen, of Orleans County, New York, writes as follows: "I herewith send you a sample of White Touzelle wheat, from imported seed, furnished by you to the New York State Agricultural Society in the fall of 1869, while holding the fair at Elmira. The whole amount,  $1\frac{3}{4}$  bushel, was drilled after barley, at the rate of a little over two bushels to the acre. The season was very bad here, but the yield was sixteen bushels. I received it rather late in 1869, so that it was not sown until the 21st day of September. It is rather a short, fine straw, bald wheat, and, I think, it is well adapted to this climate, it being a little earlier than the Treadwell variety. I sowed fifteen bushels on the 1st day of September last. It is now looking well."

Seth S. Barnes, of Olena, Illinois, writes that, "On the 20th of May last, I planted a peck of the Peerless potato. By dividing the eyes, I made 460 hills, but on account of the drought not more than 300 grew. These were planted on about  $11\frac{2}{3}$  square rods. The land was very rich, and was worked to the depth of fifteen inches, and thoroughly pulverized. One handful of manure was used to the hill, composed of two-thirds hen-droppings and one-third leached ashes. The crop was worked three

times with hand-hoe, and was dug the middle of October. Yield  $42\frac{1}{2}$  bushels, or equal to 583 bushels per acre. Ground seeded at the rate of  $31\frac{3}{9}$  bushels per acre, with a failure of over one-third of the seed to grow. I have twenty potatoes which weigh between three and a half and four pounds. One, when dug, weighed over six pounds. These potatoes are solid to the center, cook up mealy, and of better quality than the Peach-blow, as the Peach-blow in this region grows hollow and the center of the potato does not cook well.

*Columbia, S. C.*—Some details relative to the lucerne seed obtained from the Department may not be without interest. I live in what, as compared with other lands in this vicinity, are called "sand hills," one and a half mile from Columbia, a place of resort for health. The soil of Columbia and much of the country is stiff red clay; but mine, light-gray lands, that soon wash to white sand, and require constant fertilizing to keep them up; also great care to prevent washing. In this soil I planted the lucerne, in my garden; one bed, broadcast, and allowed it to grow without cultivation; another bed I drilled, and had it occasionally worked. Both beds had been coated with barnyard manure, and sprinkled with the debris from a burnt building. The season was favorable to it, as we had plenteous rains. The broadcast bed has grown, and to-day is as green as you can imagine green to be, though it had been repeatedly cut down; and it has settled all doubts I ever had of our ability to raise crops of this sort. That which was drilled and worked surpassed all expectation. To give a more graphic idea of yield, my children have thirty-eight grown English rabbits, with many young ones, and these two beds have supplied them with green food. I am sure they, together, eat as much as a horse would eat, if not more; and I think it worth considering when two beds of 20 by 20 feet supply such a quantity. We are vastly troubled here with two injurious grasses—*wire* or *joint grass* and *nut grass*—of which we find it very difficult to give any Northern man a correct idea. To eradicate them is next to impossible; certainly so with the latter. It sends its nuts down for two or three feet sometimes, and deeper, according to the excellence of cultivation. The more work done, the more it spreads; and as soon as it is discovered the only way is to abandon the land for a term of years to broom-sedge, and allow it be smothered out. As they both die in winter, but come again in spring, I firmly believe that lucerne sown upon this land thickly, and well manured, would smother them out, and be highly profitable also.

#### LIVE STOCK IN MUSCATINE, IOWA.

*Muscatine County, Iowa.*—The raising of horses has been overdone in this county. We, as a farming class, have been crazy on the subject of speed, and are now reaping the fruits of our folly. Had we a number of years ago entered into the raising of horses for the farm instead of the turf, we would not have the comparatively worthless animals now on our hands—not fast enough to win or large enough to work. The majority of farmers are, however, again raising such horses as will always find ready sale. The Percheron is meeting with much favor. Mules are almost entirely neglected. Those wanting them, in most cases, go to the neighboring section of Illinois, where they are quite extensively raised. All kinds of cattle are receiving increased attention. For beef the short-horn takes the precedence, but for dairy purposes the Alderney and Jersey are especial favorites. We think the day is not far distant

when this will be one of the first dairy counties of the West. Sheep are neglected. All for sale, and no buyers.

If this county has any specialty it is the hog, and as the dairy interest increases this class of stock will improve. The ruling breeds are the Cheshire, Chester white, Poland and China, Berkshire, Suffolk, and English Chester. The white breeds are generally preferred. The average weight of hogs sold in this market is fully one hundred per cent. greater than it was fifteen or twenty years ago, and I am confident there is not as much corn consumed per capita as there was then—the result of improved stock.

#### LIVE STOCK IN HARRISON COUNTY, W. VA.

*Harrison County, W. Va.*—The following table shows the number of live stock in this county, as returned by the assessor in 1870, compared with the number returned in 1869:

Stock.	1869.	1870.	Average value in 1870.
Horses and mules.....	4,731	5,036	\$73 00
Cattle.....	16,391	17,857	28 00
Sheep.....	15,376	12,166	1 82
Hogs.....	1,301	1,332	5 98

#### THE SUGAR BEET IN MINNESOTA.

*McLeod County, Min.*—“I think the soil in this county very favorable for the production of sugar beets. Joseph Le Maitre, to whom I gave a portion of the seed received from the Agricultural Department, raised forty bushels of beets, two bushels of which he steamed, crushed, and pressed, by a rude process, and obtained six and a half quarts of molasses of the consistency and taste of ordinary sorghum syrup.”

#### INJURY TO FRUIT TREES.

*Tazewell County, Ill.*—January 13 and 14, heavy storm of rain, sleet, and snow, which froze as it fell, covering fruit and forest trees with a very heavy coating of ice, which was followed the succeeding night with a heavy wind, making sad havoc with peach, cherry, plum, and all other brittle wood. Loss in this county estimated at \$500,000, which I think a very low estimate.

*Henry County, Ky.*—We have just got rid of one of the most extraordinary sleets known to the oldest inhabitant. Great damage was done by it both to fruit and forest trees; the peach trees have suffered most. In many localities the peach orchards have been almost entirely destroyed. For four or five days every branch and twig of every tree was thoroughly encased in ice. What effect it is to have upon the young buds is not yet known. We hope, however, that it will not be disastrous.

#### CHANGE OF CROPS.

*Ottawa County, Mich.*—Public sentiment is being changed in a radical manner as to farm products and stock. More pork, more beef,

more butter and cheese; and fewer sheep, fewer acres of wheat, and less hay to sell, are now the words in every farmer's mouth. With such a change, fruit prospects will not suffer, but will be all the better.

#### NEW COTTON AND WOOLEN FACTORY IN GEORGIA.

*Brooks County, Ga.*—A cotton and wool factory is being erected in this county, which will materially increase wool-growing. Planters are turning their attention more to hog-raising than at any time since the war. Brooks County is more prosperous than any other section of Southern Georgia.

#### THE DAIRY IN MEDINA COUNTY, OHIO.

*Medina County, Ohio.*—Our farmers are disposing of their sheep and increasing the number of their cows. I look upon dairying as injurious to our best interests. During the last decade fifteen out of seventeen townships in our county have decreased in population, and the greatest decrease is in the townships most devoted to dairying.

#### SHEEP AND SWINE.

*Fayette County, Pa.*—The business of wool-growing has run down very much within the last four years; formerly Fayette and Washington counties were among the foremost in the country in wool-growing, but the foot-rot has prevailed very extensively for several years, and many who were formerly largely engaged in the business have now entirely abandoned it.

*Warren County, Ind.*—Owing to our large corn crop last year, farmers have gone largely into the breeding of swine, and mostly from the best stock that can be had. A failure of the corn crop this year would have a tendency to decrease the number. Every species of live stock is on the decline as to market value. Sheep are running out fast. They are not cared for, and the dogs have full liberty to devour whole flocks without much complaint of the owners. I think dogs the greatest nuisance that we have.

*Caledonia County, Vt.*—There has been a very general disposition among farmers to get rid of sheep, particularly the fine-wooled breeds, and to stock with cows. Those who keep sheep have got the coarser-wooled kind, relying more on the mutton than wool. Fine-wooled sheep have almost disappeared among us.

*Owen County, Ind.*—The destruction of sheep by dogs, together with the low price of wool, have lessened the interest in sheep husbandry. To these causes may also be added the fact that mutton sheep were sought for during the past year on account of the high price of beef and other meats. There is a growing sentiment in favor of the larger long-wooled varieties, and if dogs could be banished, our county would be one of the best for sheep. The enormous increase in the number of hogs over last year is attributable alike to the surplus corn and the remunerative price. Thousands of pigs were saved in "feed lots" this year, that were usually knocked in the head as soon as "pigged." These now sell for \$2 to \$4 each.

*Chariton County, Mo.*—Sheep are on the decrease on account of the low price of wool and a tendency to disease in large flocks in small pastures. Hogs are on the increase, and a great improvement is being made in breeds by importation from other States.

## DISEASES OF STOCK.

*Anne Arundel County, Md.*—A singular disease resembling “blind staggers” has attacked quite a number of horses during the past month. Every case has proved fatal in from two to four hours.

*Cobb County, Ga.*—The “blind staggers” has prevailed to some extent, proving fatal in every instance. The disease has been known in this county since the first settlement, and is supposed to be caused by eating corn not fully matured. No remedy known.

*Upshur County, Texas.*—Horses have died with “blind staggers” during the fall and winter.

*Williamson County, Texas.*—At least twenty-five per cent. of the one and two-year-old colts have died of distemper within the last two years.

*Monroe County, Tenn.*—Quite a number of horses have died of “blind staggers” during the past few months.

*Texas County, Mo.*—At least twenty horses have died in this vicinity lately, of “blind staggers,” supposed to result from eating wormy corn, of which there is a large quantity in the county, owing, I suppose, to the very dry summer and wet fall.

*Augusta County, Va.*—Some cattle have died from being kept in corn-fields, the stalks eaten being too dry and indigestible. Also some loss of calves from “black leg.”

*Caldwell County, N. C.*—A disease known as distemper prevails to some extent.

*Worth County, Mo.*—There have been many losses of cattle during the winter, ascribed to various causes. Some attribute the disease to smut on the corn. Post-mortem examinations made in many cases have shown the “manifold” to be perfectly dry, and the fodder eaten—mostly in stalk fields—to be clogged and so hard as to be almost impenetrable to a knife. Some farmers have lost fifteen to twenty head.

*Lagrange County, Ind.*—The fatality among cows and other cattle, caused by smut on corn-stalks, has been much greater than in any former year.

*Osage County, Kansas.*—A few young cattle have died, supposed to have been caused by eating smut on corn fodder.

*Howard County, Md.*—Hog cholera has been unusually prevalent, some farmers losing sixty head during the past year. The entire loss in the county has been about three thousand head.

*Montgomery County, Md.*—Large numbers of hogs have been swept off by cholera, and farmers are discouraged from purchasing stock hogs. Various remedies have been tried without avail.

*Loudoun County, Va.*—There has been a disease among the hogs in this county for the last few months by which some farmers have lost almost their entire stock.

*Alexander County, N. C.*—Fully one-third of the hogs of this county have died of a disease heretofore unknown in this section. Some die in a few hours, without any swelling. Others dwindle for weeks without eating, and become mere shadows. Some partially recover, but none seem to thrive after having once been attacked. The disease has not extended to many adjoining counties as yet.

*Caldwell County, N. C.*—Hog cholera still prevails to some extent, no effectual remedy having been discovered.

*Stanly County, N. C.*—The ravages of the cholera are rapidly thinning the stock of hogs. The disease is partially checked by administering sulphur or spirits of turpentine, as suggested in the agricultural reports.

*Tallapoosa County, Ala.*—There is slight complaint of hog cholera in the northern part of the county, but to no great extent.

*Austin County, Texas.*—Hog cholera prevails to some extent. An active purgative has proved very beneficial. Sweet milk and soft soap, given lukewarm, is recommended.

*Sullivan County, Tenn.*—Neither the cold weather nor any treatment has checked the hog cholera. It attacks all breeds alike. Some believe soft soap fed thrice a week to be a preventive, but the general experience has not proved it so.

*Boyle County, Ky.*—Hog cholera is proving very destructive. No known remedy.

*Shelby County, Ky.*—A large number of fall pigs have died this winter from a disease resembling in some respects the cholera. The symptoms are a cough and gradual wasting away of the system. Half a pound of calomel to fifty shoats, stirred into shelled corn while damp from previous soaking, has been found an efficacious remedy.

*Miami County, Ind.*—Our hogs have been troubled with the cholera and a disease pronounced to be quinsy, proving fatal in forty-eight hours from the time of attack. Suds from common soft soap, and camphor, have proved the most availing remedies.

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## AID TO THE FARMERS OF FRANCE.

The following circular has been issued by the Commissioner of Agriculture, in coöperation with the relief committee of the New York Chamber of Commerce:

### TO THE FARMERS OF THE COUNTRY.

The wants of the peasant-farmers of Northern and Central France, rendered imperative by the spoliations of war, appeal to the sympathies and benevolence of Americans, who can never forget the disinterested services of Frenchmen in our early struggles for national independence. The season of seed-time is approaching, and the supplies of seed to insure a harvest and avert a famine must, in a large measure, come from England, Belgium, and America. In this generous national rivalry it is to be hoped that this country will not be distanced.

The New York Chamber of Commerce offers to give free transportation to France, through its relief committee, to all grains and seeds contributed, and will pay freight charges to New York on any invoice exceeding one hundred bushels; but local donors should arrange with interior railroads for free transportation, if possible, to New York City.

The best local varieties of spring wheat of last year's crop, sound and clean, are especially desirable, yet winter wheat may be contributed where spring wheat is not attainable; the heaviest and most productive oats, as the Excelsior, Swedish, Surprise, and Norway; the most thrifty kinds of barley, and the most prolific varieties of bush-beans. Especial care should be exercised in avoiding seed injured by or containing insects, and grains foul with the germs of pestiferous weeds. The packages should be stout and well-fastened barrels, and the net weight should be plainly marked upon each package, the variety of seed or grain, and the State where grown.

These donations should be sent to the relief committee of the New York Chamber of Commerce, at 64 Pearl street, in season for shipment on the 15th of March, and it is hoped and believed that they will be both liberal and general.

HORACE CAPRON,  
Commissioner.

## NEW YORK AGRICULTURAL SOCIETY.

The annual meeting and winter exhibition of the New York Agricultural Society were held in Albany, February 8th and 9th. The attendance was larger than usual. Hon. B. F. Angel, one of the vice-presidents, presided, in the absence of the president, Solon D. Hungerford. The report of the executive committee was read by T. L. Harison, corresponding secretary. The report of the treasurer, Luther H. Tucker, showed the total receipts of the year to be \$24,308 67, of which \$20,309 72 was received through the Utica State fair, and the total disbursements \$22,133 48, leaving a balance, with the reserve from former years, of \$20,152 64. This substantial surplus has been obtained without recourse to the race-course.

The officers selected for the ensuing year are as follows :

President—Richard Church, of Allegany.

Vice-presidents—1st, Thomas H. Faile, Jr., of New York City; 2d, Edwin Thorne, of Dutchess; 3d, Jurian Winne, of Albany; 4th, Frank D. Curtis, of Saratoga; 5th, James Geddes, of Onondaga; 6th, William M. Ely, of Broome; 7th, Benjamin F. Angel, of Livingston; 8th, Horace S. Huntley, of Cattaraugus.

Corresponding secretary—Thomas L. Harison, of St. Lawrence.

Recording secretary—W. H. Bogart, of Cayuga.

Treasurer—Luther H. Tucker, of Albany.

Executive committee—Adin Thayer, jr., Rensselaer; Milo Ingalsbe, Washington; Fordham Morris, Westchester; Robert J. Swan, Geneva; Harris Lewis, Herkimer; George H. Brown, Dutchess; Joseph Juliand, Chenango; John L. Cole, Wayne.

Miss Middy Morgan, of the New York Times, was introduced by General M. R. Patrick, and read a paper upon the transportation of cattle, its inadequacy, cruelty, and wastefulness, and the neglect and brutality which characterized their treatment after arrival at the market. She also presented earnestly the subject of reformatory schools for vagrant children of both sexes, under the direction of the New York Agricultural Society, in which the boys may be taught practical agriculture, and the girls may be trained to household arts. This important subject was effectively presented, and its spirit and aims were heartily indorsed by the society. It is to be hoped that State aid may be obtained for such an institution.

On motion of Vice-President F. D. Curtis, a resolution was adopted approving the existing law for the prevention of cruelty to animals.

The evening of the 8th was occupied by addresses, in the assembly chamber of the State-house, on wool and mutton in America, by J. R. Dodge, of the Department of Agriculture, and on stock-breeding, by Prof. James Law, of Cornell University. The former explained the causes of depression in wool-growing, giving condensed statistical statements of consumption and production, and showed where and how lamb-raising, mutton-producing, and wool-growing yield relatively the largest profits. The latter made a lucid presentation of the principles which underlie successful breeding of farm stock, illustrated by instructive diagrams.

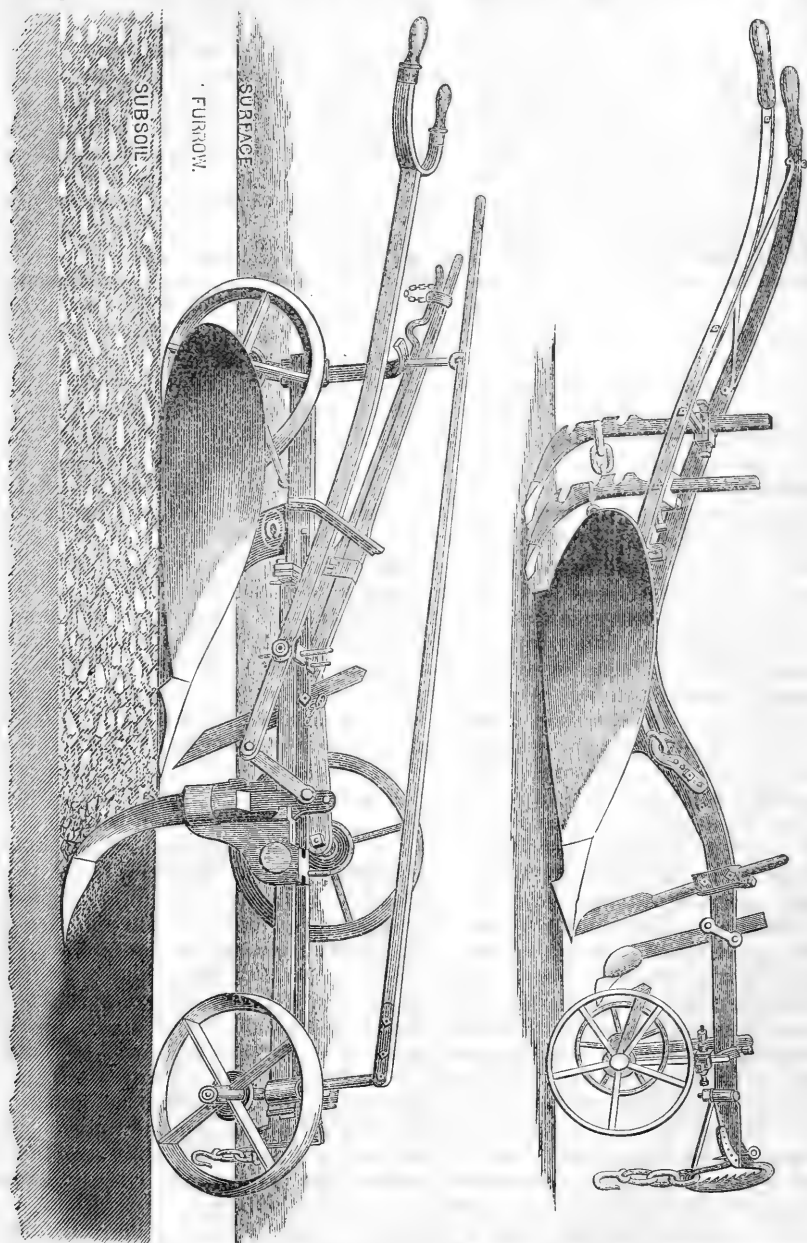
On Wednesday a report on needed reforms of the market system, by Joseph B. Lyman, of the New York Tribune, was read by Vice-President F. D. Curtis, who also read a paper of his own on the conveniences and adornments of country homes.

The winter exhibition at the rooms of the secretary was an interesting show of well-kept fruits and vegetables.



## BRITISH IMPROVEMENTS IN PLOWS.

For the purpose of comparison with American improvements, and to give the general reader an idea of the style of popular foreign plows, engravings and descriptions of two recent British inventions are here-with given.



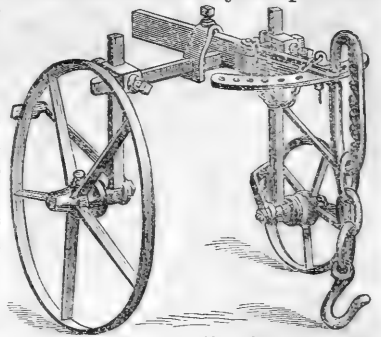
The double-furrow plow (of G. W. Murray & Co.) is intended for turning one furrow-slice, with a subsoiler in front for loosening the sub-

soil in the bottom of the furrows behind the furrow-horse. The Gardeners' Chronicle says of it:

This is a much more effective plan of subsoiling than the old one, as the furrow-slice is turned over the newly loosened subsoil, thus leaving the land in the best possible state for aeration and drainage, with the fertilizing processes that follow. When the work was done on the old plan, either with two teams—one in the subsoil plow and the other a common plow—the furrow-horse of the latter team, trod and consolidated the newly loosened subsoil. Even the feet of the plowman holding the subsoil plow did much harm to land naturally adapted to run together in the bottom, and besides better work done, there is a great economy of horse-power, fully as much as when turning two furrow-slices. By removing the subsoiler, and fixing abreast, the implement is converted into a furrow-plow. At the Oxford meeting of the Royal Agricultural Society this combination of plow and subsoiler received the highest commendation of the judges. Whether used in this combined form or as a double-furrow plow, the implement is remarkably light in draught, thus proving that it is constructed on sound principles. The simplicity of the mechanism and plainness of the illustration render a detailed description unnecessary. The lever on the left hand regulates the depth of the furrow-slice, and throws the implement out at the head-land, by means of the land-wheel. The long lever to the leading furrow-wheel is for steering, and the two handles form a third lever for adjusting the depth of the subsoiler.

The upper figure represents the Messrs. Ransome, Sims & Head's first prize plow at the Newcastle and Leicester meetings of the Royal Agricultural Society, furnished with grubbers—the invention of Mr. Robinson, a practical Middlesex farmer. "For deep plowing these plows were never beaten, and as deep plowing is now the order of the day, and shallow plowing the exception, the implement may justly be termed 'the champion plow of England.' It would take a very elaborate series of mathematical drawings to show how this plow turns the deep-furrow slice and lays it in the manner it does, leaving a clear open furrow for the next turn. We here allude to what the judges said in their report at Leicester, and perhaps we should not be thanked were we thus to lay open the grand secret in the manufacture. But be that as it may, the Smithfield Club show is not the time for the solution of such a question. But speaking generally, the wrought-iron beam, instead of being a single bar, is made double at the lower end, where it embraces the body or frame of the plow. By this construction the beam acquires a degree of stiffness sufficient to obviate vibration, while it at the same time admits of simpler fastenings for the coulter and steam coulter, thus further increasing stiffness. It is a well-known fact that any spring or vibration of the beam greatly increases draught. For a similar reason the handles are braced by diagonal stays. By this formation of the beam and handles, the greatest strength is obtained by the less weight of iron. The plow is fitted with a lever neck by which more or less pitch is given to the share. The two grubbers are not rigidly fixed, but have sufficient play to admit of their going laterally when they come in contact with a stone or any similar obstruction in the land, and to give them strength the other way, they have each a drag-chain fixed in the body. Their object is to break pan and gradually deepen the soil, and also to loosen the soil below in plowing in manure with a shallow furrow. For this latter purpose they are admirably adapted, for the manure laid thus upon a loosened and properly aerated soil is in the best possible state for thorough incorporation with the land; whereas the manure, when turned down into a hard or close bottom, is often more than half lost. The following figure is a front view of the wheels on a larger scale. The judges in their report of the Leicester trials of the Royal Agricultural Society of 1868, spoke in the highest terms of these wheels. They are constructed on the same principle as carriage wheels, the hubs being bored, and the axles turned and capped so as effectually to keep out dirt, and

they are easily oiled without the wheels being taken off. They are attached to the beam at each end of the cross-bar in a very simple and efficient manner, the cross bar being held in its place by a clasp. An adjustable socket, with a vertical and horizontal hole, is put on to each end of the cross-bar. The stalks of the land and furrow wheels are passed through the vertical hole, and the socket works horizontally on the cross-bar. The set-screws which hold the stalks in the sockets are very accessible, little time being occupied in altering either the width or depth. The hake is also furnished with a fine adjustment, so that the plow can be made to run perfectly true, thereby contributing greatly to reduce draught."



### LETTER FROM THE BOTANIST.

The following has been received from Dr. C. C. Parry, botanist of the Department, now with the San Domingo Commission:

SAN DOMINGO CITY, February 13, 1871.

DEAR SIR: I have the honor to report that since arriving at this point I have been closely occupied in making observations and collections of matters of interest connected with the agriculture and natural resources of this district. As first fruits of our labors I send by the Tybee steamer, direct for New York, three boxes, two of which contain dried plants, (so marked;) the larger one contains articles for the museum, including native fibers, cordage, commercial woods, and such articles of native produce as will bear transportation. The fiber called *Kamote* is the product of *Fourcroya Cabense*, and yields enormously. I hope to send some bulblets of this plant that may be grown in the green-house.

This is not the best fruit season, and most of the native fruits will not bear transportation, but at the last point we shall stop at I shall endeavor to secure some of them for modeling. All investigation tends to show the vast resources of this country, which are hardly touched through imperfect methods of culture and want of enterprise. Our collection of plants will, I think, number over five hundred species, and we hope to lay in a good stock of seeds and live plants before leaving. I have found Mr. Shumacher very friendly and obliging. I have visited him at his residence, two miles from town, on the sea beach—a delightful residence. He has the *Fourcroya Cabense* growing in his grounds, and is engaged in making experiments in producing the fiber from the green plant by machinery.

My assistant, Mr. Brummel has been away on an expedition into the country for twelve days; is expected this week. My associate, Mr. Wright, is also absent on an expedition across the country.

I cannot ascertain certainly what will be the movements of the commission, but I judge there will be no particular haste about returning. I shall try to improve all the opportunities that the different movements offer. There is no doubt a large section of the mountainous districts adapted to the growth of *cinchona*. The frequent rains and cool, misty atmosphere, and elevation above the sea, absence of frost, &c., supply all the conditions of successful culture. A fair topographical map would enable one to lay down this *cinchona* district with tolerable correctness.

The woods of the country are numerous and exceedingly valuable; will constitute one great item of the wealth of the country. I have found coffee growing wild by the roadsides. On all these points I hope to present some interesting data in my final report.

Respectfully, yours,

C. C. PARRY,  
Botanist Agricultural Department.

Hon. H. CAPRON,  
Commissioner of Agriculture.

## JUTE IN THE UNITED STATES.

Reports of successful tests of jute culture in this country since its introduction through this Department have been published in previous issues. The following communication on the subject, under date of February 28, has been received from E. H. Derby, of Boston, whose interest in the subject is not of recent origin :

I read with much interest the letters from Louisiana and Texas, in your report for September, which apprises us that the seed which you sent there in May last has produced plants which rose to the height of ten or fifteen feet, (the height in India,) and ripened seed, although planted as late as June last.

It is obvious that the jute has been successfully introduced into the country, and flourishes in the moist bottom lands of the Southern States. I entertain no doubt that it will grow wherever the cane grows, on the moist soils of the South, and I believe that the India plant is best suited to our requirements. One of your correspondents says he made no effort to gather the fiber.

The process of separating the fiber from the stem is thus described in the Atlantic Magazine for August, 1861, in an article in which I published some extracts from the Journal of Agriculture for India. The plants are first placed for a week in standing water; then "the native operator, standing up to his middle in water, takes as many of the sticks in his hands as he can grasp, and removing a small portion of the bark from the end next the roots, and grasping them together, he with a little management strips off the whole from end to end, without breaking either stem or fiber. He then, swinging the bark around his head, dashes it repeatedly against the surface of the water, drawing it towards him, to wash off the impurities. The filaments are then hung up to dry in the sun, often in lengths of twelve feet, and when dried the jute is ready for the market."

I trust you will urge your correspondents to preserve and circulate the seed which they have raised, and to plant it when they plant the cotton. If the Department of Agriculture had done nothing else, it seems to me it has earned all the Government has appropriated for it by introducing and acclimating this valuable plant.

I deem it almost as great an acquisition to the country as cotton itself. It yields one of the cheapest fibers nature produces. It is raised in India, and I presume can be raised here for less than one-half the cost of hemp, and for one-fourth the cost of cotton. It has been produced in India for one cent per pound of fiber. It is woven not only into gunny-cloth and gunny-bags, but enters largely into carpets and many kinds of tissues. In India jute has been constantly gaining upon cotton.

England has imported from India of this article more than 120,000,000 pounds in a single year; and we last year imported more than 19,000,000, which cost more than \$3,000,000, and sold at the South for \$5,000,000. It is used there chiefly to envelop cotton. If we had diverted that amount of labor from cotton to jute we might have raised a much larger quantity at home, and at the same time have increased the value of our cotton crop.

The jute seems to me to be a plant admirably adapted to the wants of the South. The South requires it for bale cloths, also to divert labor from cotton, and to employ the operatives during inclement seasons in the manufacture of cloth.

I presume that the mechanism used in Kentucky for spinning and weaving hemp will be appropriate for jute. In India the widow still sits on the ash-heap and weaves her sackcloth.

I hope the Government will allow your Department ample funds to purchase some of the simple machinery required for this manufacture, and that you will induce some southern planters to continue the cultivation of it until its great value is generally appreciated.

This year demonstrates conclusively that a crop of 3,000,000 bales of cotton yields more than one of 4,000,000. Let jute be the substitute for the last million.

## SCIENTIFIC NOTES.

## PETROLEUM IN DRY ROT.

According to Herbst, petroleum may be applied with excellent advantage in the extirpation of the dry rot, it being only necessary to paint the surface of wood thus affected with the petroleum. A solution of carbolic acid, however, answers the same purpose and involves much less danger from fire.

## HARD CEMENT.

A cement which becomes excessively hard in time may be prepared by mixing 2 parts of silica, 1 part of silicate of alumina, and 9 or 10 parts of carbonate of lime, all in powder, and then roasting in a puddling furnace. The remaining mass is then to be ground and again roasted with 2 or 3 parts of carbonate of baryta. In practice, very pure sand will answer for the silica and chalk for the carbonate of lime, the remaining ingredient being supplied by mineral witherite or natural carbonate of baryta.

## CHLORALUM.

The new antiseptic commended by Professor Gamgee, and known as chloralum bids fair to be of much value in its applications in domestic economy and in medicine. The advantages claimed are the possession of antiseptic qualities equal to those of any other substance; while used in moderation it is entirely free from smell, from unpleasant fumes, has no disagreeable taste, and is without any irritant or poisoning qualities. According to Professor Gamgee, by its use as an antiseptic, raw-hide, meat, and other animal substances, immersed in a solution of 1.030 to 1.040, specific gravity, will be preserved perfectly for an indefinite period of time, and what is still more to the purpose, will not be attacked by insects after being removed from the solution. Fish, slightly tainted, when immersed recovers its freshness of appearance and becomes firm and palatable. In some instances fresh fish, such as salmon, when caught were dipped in the solution, and after a passage of several days, without ice, to London, in the summer season, were found to be entirely eatable. This substance is suggested as an aid in drying cod on the coast of Newfoundland and elsewhere, as thereby an immense mass of fish that are now rejected could be readily preserved. The offal of cod and mackerel fisheries which is now thrown overboard, could be preserved by this substance as long as might be required, and then carried on shore to be converted into one or other of the various forms of fish guano.

For disinfecting purposes a solution varying from 1.006 to 1.010 is sufficiently strong to answer the desired object, stronger solutions being usually unnecessary and imparting a disagreeable smell. The solid matter of sewage is said to be precipitated more rapidly by this substance than by the use of the persalt of iron, and the odor disappears entirely. The use of chloralum in any epidemic, the cattle plague or other contagious disease, including the epizootics, is indicated by the author of the communication. Finally, it is recommended for the treatment of wounds, erysipelas, gangrene, and various contagious and inflammatory diseases. It may also be used for the purpose of immersing the linen of patients before removing it from the sick chamber. For the purification of water-closets it is said to have no equal in any of the preparations hitherto recommended, and has also the advantage over nearly all the rest of being free from any offensive odor.

## SOURCE OF MINERAL PHOSPHATES.

The source of phosphatic manures, such as are found in the mineral form in various deposits, is a subject that has attracted much attention on the part of chemists and agriculturists. Of course, as regards guano, the phosphoric acid is readily referable to the excrement and offal of sea-fowl. Certain guano, such as Sombrerite, is derived from the action of water on this matter, and the subjacent calcareous coral rocks. It is thought that much of the palæozoic phosphatic rocks may have been produced in this way; at any rate, those which have been formed subsequent to the evolution of terrestrial and vertebrate animals. There are, however, many beds the origin of which cannot be referred to any of the causes just mentioned. Professor Dyer, in an article on this subject in "Nature," suggests the same view that was presented at the late meeting of the American Association by Professor Kerr, namely, that the brachiopods may have supplied a large percentage, the recent *Lingula*, as is well known, having over eighty per cent. of phosphate of lime in the mineral ingredient of its shell. In fact, he is of the opinion that the large quantities of phosphate of lime in the Laurentian and Silurian, as well as in the Devonian and carboniferous strata, are derived from this source. In the mesozoic and tertiary strata, instead of finding the mineral phosphate in veins and beds, it occurs mostly in the form of nodules. Mr. Dyer coincides with the hypothesis previously presented by Mr. Lankester, based upon the property possessed by clay of detaching phosphate of lime from its solution in carbonated water. The nodules in question are believed to be bits of clay, which have been imbedded with great quantities of bones, as perhaps, also, with seaweed, from which, by the intervention of gas-charged water, they have extracted the phosphate. Hence the almost invariable occurrence of beds of phosphatic nodules near argillaceous strata.

This same view has been used to explain the origin of the phosphatic nodule beds which have lately been detected in immense extent in the vicinity of the city of Charleston, forming a mineral fertilizer which is coming into very extended use. Among other applications, this substance is ground up and mixed with prepared fish, and converted into an excellent manure for worn-out lands.

## UTILIZATION OF COTTON SEED.

Various movements have been made of late years looking toward the utilization of cotton seed, usually considered a burden to the cotton-planter, and in getting rid of which great ingenuity has been expended. Among the more recent propositions of the kind, that of the employment of the adhering cotton, and, perhaps, of the woody material, in the manufacture of paper, has been brought forward, and a calculation presented as to the number of tons of paper stock that could thus be introduced into the market. Lately, large establishments have been started in the South for the purpose of obtaining the oil from the seed, the refuse being converted into oil-cake for fattening cattle. The crude oil brings in New York from thirty-five to forty cents a gallon, and the oil-cake commands nearly the price of corn, being said to equal it in its fattening qualities. Shipments of the seeds have been made recently in great quantity to Liverpool, from New Orleans, one vessel taking over ten thousand sacks of the seeds, and about one thousand sacks of oil-cake; and it is expected that these shipments will be followed up on a large scale. As over two million tons of cotton seed are every year produced in the South, we may well imagine how important it will be

to our country should the whole of this now nearly waste substance be utilized in some form.

The comparative value of winter refined cotton seed oil, and of olive oil may be gathered from the fact that at the latest dates the former is quoted in the New York prices current at 72 cents per gallon, while the latter with duty off brings only \$1 in gold.

#### POTATO FLOUR.

Few persons in the United States are aware of the demand for farina, or potato flour, and of the almost unlimited extent of the market that can be found for this product, which is simply the dry, evaporated pulp of the ordinary potato, the whiter and more free from black specks the better. It is used for sizing and other manufacturing purposes, and with the aid of precipitation and acid is converted into starch. In Europe it meets a large and increasing demand, in its primitive state, as potato flour; and in Lancashire alone 20,000 tons are annually sold, and as many more would be taken if put into the market. When calcined it is used largely for silk-dressing and other purposes.

At this time the quotation for potato farina in Liverpool is a little over 4 cents a pound, while wheat flour is about  $2\frac{1}{6}$  cents a pound; so that the potato flour is worth nearly double that of the wheat at the present rate. Consignments to Liverpool are solicited by the brokers there, who promise to take all that can be furnished.

#### REMOVAL OF WALNUT STAINS FROM THE HANDS.

Those of our young friends who have occasion to gather walnuts may be interested to have a hint as to the best method of removing the stains produced in hulling them. This may be accomplished simply by rubbing with slices of apple or of pear; the cleansing power being due, it is supposed, to the presence of the acid, which, therefore, may perhaps be advantageously replaced by citric acid or lemon juice. If, however, the stains be at once thoroughly washed in fresh water, without using soap, they may be made to disappear almost entirely; but soap is unadvisable, since its alkali acts as a mordant and fixes the color.

#### PREPARED MEAT-EXTRACTS IN JAVA.

It has frequently been remarked that the best inventions of the western nations have, in nearly every instance, been anticipated by processes long since devised and in use by the Orientals, especially by the natives of China and Japan; and we are assured that the subject of prepared meat-extracts takes its place in this category. We are informed by a recent communication of Dr. Pott that the inhabitants of Java have for many years been in the habit of preparing flesh extracts of various kinds, and especially of beef, fish, and crabs, and that in this form they enter very largely into the internal commerce of the country. The preparation is known by the general name of *petis*, while the particular substance, whether the flesh of one of three kinds of oxen, of fish, or of crabs, is indicated by a special affix.

The preparation of the *petis* appears to be a very simple one, consisting merely in boiling the raw material and chopping it very fine, and then putting it in a press and forcing out all the juices. This juice is then boiled down at a moderate temperature to the consistency of sirup, and kept for use. As a general rule, the preparation is made of such

pieces of meat of all the animals used as when brought to market are not sold before its close, a precaution rendered necessary by the heat of the country, and the impossibility of obtaining ice, by means of which to carry the food over until the next day. The substance from which the petis is expressed is also dried and introduced into commerce, but is generally used immediately, while the petis is distributed widely throughout the Indian Archipelago, and can be kept a long time. These preparations have an extremely saline taste, due almost entirely, however, to the concentration of the organic salts originally contained in the expressed juice. The smell is said to be quite agreeable, and the taste very appetizing.

#### VARYING EFFECTS OF POISONS ON DIFFERENT ANIMALS.

It is a well-known fact that what is poisonous to one animal may be taken by another with entire impunity. In illustration of this proposition, we are informed that strychnine, so fatal to most animals, may be eaten by certain species of monkeys with perfect safety. In the case of an East India monkey, known as the Lungoor, (*Presbytis entellus*,) one grain was first concealed in a piece of cucumber, which was eaten by the animal with no apparent effect. Three grains were afterward given, and with the same result. To test the strychnine used, three grains were administered to a dog, which proved almost immediately fatal. Another Indian monkey, known as the pouch cheek monkey, has been found to be more susceptible than the Lungoor, but not so much so as the dog.

It is also stated that pigeons can take opium in large quantities with no injurious consequence; goats, tobacco; and rabbits, belladonna, stramonium, and hyoseyamus.

#### VICTORIA STONE.

In a communication upon artificial stone made to the British Association by the Rev. Mr. Highton, the well-known fact was adverted to, that certain forms of natural silica occurring in various parts of Europe, especially in England and Germany, can be dissolved, under proper precautions, even when cold. An important application has been made of this soluble silica in the preparation of an artificial stone, which is harder than any natural stone, except the hard granites and primitive rocks. The process indicated for utilizing this consists in first making a concrete of any good hydraulic cement. When this is dry it is steeped in an alkaline solution of silica, in which is placed a quantity of free silica. The following chemical process then takes place: The lime in the concrete extracts the silica from the solution, leaving the alkali free, which immediately attacks the free silica and conveys it in its turn to the concrete. This process goes on continually till the lime in the concrete is saturated with silica. In this way, within a week, the strength of the concrete is increased from 50 to 150 per cent., and to a still greater degree by a longer immersion. As the alkali acts only as a carrier of the silica, it is used over and over again, and it is in this that the economy of the manufacture consists. The substance thus formed is known as silicated concrete, or the patent Victoria stone, and it has been manufactured on a grand scale in London, and several large edifices have been built entirely from it. The economy of its construction is such that it promises to supersede natural stone, except where the latter is very cheap and abundant. In London it can be put into place in building at a much less cost than natural stone.



## ARTIFICIAL ICE IN PACKING FISH.

As might have been expected, the artificial ice machines have been extensively called into play for the manufacture of ice to be used in packing fish. In corroboration of previous statements, it is said to be far more durable than natural ice, the crystals being much more solid and exhibiting less tendency to split into flakes. The estimate has been made that thirty per cent. less of artificial than of natural ice will secure the same preservative effect. One objection to some forms of artificial ice is said to be the opacity of its color; but an inventor announces his discovery of a method by which perfectly transparent ice can be obtained, and for its publication to the world he asks the modest sum of five hundred pounds sterling.

## CINCHONA IN JAVA.

According to Professor Hasskarl, the cultivation of cinchona in Java continues to be a success, the weather having been favorable and the growth of the plant perfectly satisfactory. The number of plants obtained from seeds and layers was about one and a half million, principally of the species *C. calisaya*; eight hundred and seventy thousand were transplanted in addition, and over one thousand pounds of the dry bark were sent to Holland in 1869, bringing from thirty-six to fifty-four cents per pound. The total product of 1870 is estimated at eight thousand eight hundred pounds for exportation, besides some hundreds for home use in the island.

## EARLY VEGETABLES.

According to "*Nature*," Professor Decaisne has brought to the notice of the Academy of Sciences in Paris a scheme for the rapid growing of cabbages, radishes, &c., which are to be sown in richly manured soil, and then used, stem, root, and all, as fresh vegetables. This diet is intended to protect the inhabitants of Paris against the scurvy, which may be expected to make its appearance in time in consequence of the necessity of using salted meats.

## ANALYSIS OF THE ASH OF THE POTATO.

A careful analysis has lately been made, by Dr. Schoras, of the ash resulting from the burning of potatoes, this amounting to from three to four per cent. of the dried potato. According to this chemist, the proportion of potash amounts to over fifty per cent., forty-five per cent. being the smallest quantity observed. Of soda, there is generally from two to three per cent.; in most cases only one per cent. being appreciable. Next to the potash, magnesia enters as the principal constituent among the bases; nevertheless amounting to only the tenth part of the proportion of potash. Lime is a subordinate element, in most cases scarcely equaling half the amount of magnesia. The percentage of potash was found to increase or diminish, as the yield of the crop was greater or less; but of the other bases little difference was found in this respect. It was also observed that the percentage of phosphoric acid increased as that of potash diminished; so that in the abundant harvests it is proportionally less than in the scanty ones, varying from ten to nearly eighteen per cent. The proportion of sulphuric acid is tolerably constant, varying from five to six per cent. The percentage

of chlorine varied very much; namely, from two to nearly eight per cent. The quantitative difference in the percentage of chlorine in the ashes was found throughout to have a direct relationship to the amount of the crop itself. Should this inference, which the author now presents as provisional only, be substantiated by the further experiments he proposes to make, it may be considered that the combinations of chlorine have the same significance in the cultivation of the potato, that gypsum has to various other cultivated plants.

#### IMPROVEMENT OF THE BREED OF CATTLE.

According to Prof. Schmied, a permanent improvement of the breed of cattle is inseparably connected with the following proposition, namely: that calves must be nourished with a sufficient quantity of their mother's milk for a much longer period than has hitherto been the custom; all other methods having reference to this same object being insufficient without a proper adherence to this fundamental consideration.

#### GRINDING FODDER FOR DOMESTIC ANIMALS.

The practice of grinding or crushing hay and straw, instead of the usual method of chopping it, as an article of food for domestic animals, is coming very much into favor. The digestibility of these substances, as is well known, is much increased by steaming and softening with water; but a very marked improvement in the condition of cattle, it is said, is speedily observed in consequence of the adoption of the process referred to. It is maintained, also, that horses fed with ground hay are much less liable to suffer from attacks of colic than when the food is chopped, and that an appreciably smaller quantity will supply sufficient nutriment, less passing off in the form of undigested fiber. The operation of grinding is effected by means of millstones, or any other conveniently-adapted arrangement, a very soft article of food being produced, which is extremely acceptable to the cattle.

#### PRESERVATION OF BEER.

The method of preserving wine devised by Pasteur, which consists in heating it after having been bottled or put up in casks, to a temperature sufficient to destroy the vitality of any existing spores of the wine fungus, and thereby to prevent their development, marked a new era in the business of wine-making, the treatment recommended having been followed with great success, and coming more and more into use. Quite recently the same principle has been made use of in regard to beer, which is still more liable than wine to become sour. In this case, too, the success has been complete, and immense quantities of malt liquors of various kinds, after having been subjected to the process, are now shipped from Germany to all parts of the world. The bottles, after being filled and well corked, are kept for about half an hour in a water-bath having a temperature of 122° Fahrenheit, after which the warm water is gradually replaced by cold, so as to prevent too rapid cooling. In one of the experiments instituted for determining the feasibility of the operation, four bottles of the same kind of beer were well corked, and two of them were submitted to the process in question, after which all were introduced into a heated room in the vicinity of a stove, and kept at a temperature of between 70° and 80° for four weeks. At the end of this time the prepared beer was found to be perfectly clear and

of a golden tint, with only a slight deposit of granular matter at the bottom. The unprepared beer, however, was found to have passed into an active state of fermentation, turning completely sour, and one of the bottles had burst in consequence. It is requisite, however, in preparing beer by this method, that the corks be perfectly tight, and for this purpose the best champagne corks must be selected, and, if possible, soaked in a hot solution of paraffine and some resin, (as colophony,) a composition which melts only at a temperature of 120°. In this way the entire percentage of carbonic acid of the beer will be retained in the bottle, and the beer will be found capable of preservation for an indefinite period of time. It is said that beer of any quality can be kept in this way, the lightest and weakest being as susceptible of preservation as any other.

#### IMPROVED BIRD-LIME.

By adding a concentrated solution of chloride of lime to a strong solution of common glue, a mixture will be produced which does not dry up, and can be easily dissolved by the addition of water. Thus prepared, it is recommended as a bird-lime, replacing advantageously the article usually made out of holly-bark or other substances.

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#### ITEMS FROM VARIOUS SOURCES.

**A NEW INDUSTRY.**—The sweet potato, used in various forms as an esculent, in making bread, as a substitute for coffee, in the brewing of beer, as well as for fattening farm animals, is now beginning to be used in making a sirup “far surpassing that of the beet and even of the sorghum in delicacy of flavor, while the yield is much more abundant. The average product of a bushel of sweet potatoes—the yam variety being preferred—is alleged to be over two gallons, and as the average yield per acre, on poor, sandy soil, is from 150 to 180 bushels, the product must necessarily be from 300 to 350 gallons of sirup. This must open to the view of the piney-woods agriculturist a new and most profitable industry, one man, with a mule, being able to cultivate at least fifteen acres in potatoes. The residuum, after the juice for sirup has been extracted, is pronounced a valuable edible either for man or beast.”

**PROTECTION AGAINST THE CABBAGE-WORM.**—The European cabbage-worm, *Pieris rapæ*, recently introduced by way of Canada, which has proved so voracious and prolific, has become the terror of northern cabbage-growers, and threatens to traverse the country, unless checked by natural or other causes. Wherever the pest has reached, so far as heard from, very few if any remedies have availed to give relief to the gardener. The most noted success is that of P. T. Quinn, the market-garden reporter of the New York Tribune. He sends to us the following statement: On his return from California, last summer, he found his cabbages infested with worms, and threatened with total destruction. He went to work with his accustomed energy, experimenting, trying everything new and old promising riddance of the plague, all to no purpose, until he hit upon the following: 20 parts of superphosphate made of slush acid, 1 of carbolic powder, and 3 of unslacked lime, mixed well together and dusted thoroughly into each head four times at intervals of four days. The result was the saving of 75,000 cabbages, and a loss of but five per cent. The worms would eat fresh lime with impunity, and carbolic powder would destroy cabbages and worms alike, but the ingredi-

ents in the proportion named, with the unsavory perfume of the superphosphate, either sickened or disgusted his swarming enemies.

**FREIGHTS TO CHINA AND JAPAN.**—The through freight from China or Japan, to either St. Louis, Chicago, or New York, is \$5 in gold, equal to \$5 55 currency, per 100 pounds; from China or Japan to San Francisco, \$2 gold or \$2 22 currency; from San Francisco by rail to either St. Louis, Chicago, or New York, \$3 gold or \$3 33 currency (currency figures being based on the present price of gold). The freight from China and Japan by sail is \$1 75 to \$2, gold, per 100 pounds; at an average say \$1 88 gold, equal to \$2 currency; add to this for difference in time, insurance, &c., say 17 cents per 100 pounds; add to this the present high rate of freight by rail from New York to Chicago, \$1 60 per 100 pounds, and we have a total of \$3 85 per 100 pounds; showing a difference of \$1 70 per 100 pounds in favor of New York. Freights by steamer and railroad, from China or Japan to Chicago, are calculated on the gross weight, while freights by rail to New York are calculated upon net weight, and inasmuch as the tare of Oolongs and Japans will average 25 per cent. of the gross weight, and greens 22 per cent. at rates as above, the freights by steamer and railroad, Oolongs and Japans would be \$6 93 per net 100 pounds, and on greens would be \$6 77 per 100 pounds; thus showing a further percentage in favor of New York that will average \$1 30 per 100 pounds, or \$3 per 100 pounds in all.—*American Grocer*.

**THE GUAVA IN CALIFORNIA.**—The San Francisco Bulletin states that William Patterson, a nurseryman living near that city, four years ago planted a guava, of the strawberry variety, imported from Australia, and recently removed it to his branch nursery. Only once during the four years has the tree failed to perfect a crop. It is now loaded with excellent fruit in every stage of ripening. This experiment seems decisive of the fact that the guava can be cultivated in the open air on the Pacific slope. Guava jelly is a well known article of commerce and brings high prices in the market. Another valuable element of agricultural industry is here indicated.

**TEA CULTURE IN INDIA.**—The Agricultural Gazette (Indian) states that there are in Assam 290 tea plantations, embracing 29,350 acres, and producing 435,772 pounds of tea last year. The crop of 1869 in Darjeeling amounted to 851,549 pounds from 44 tea gardens, of 10,067 acres. The crop of Sylhet was 239,909 pounds from 22 tea gardens, having 2,240 acres. In Cachar 118 plantations, with 24,374 acres, produced 4,009,835 pounds. The other tea districts—Dacca, Chittagong, Hagerbagh, and Lohardugah—contain but few gardens, and have failed to send proper statistics. In Sylhet and Darjeeling there were but few imported coolies, but in Assam there were 21,667. Cachar had 14,076 men under contract, and 15,000 whose time had expired. About 200,000 rupees were sent to Cachar during the year. Calcutta, during 1869, exported 11,434,000 pounds of tea—an increase of 2,664,651 over the previous year.

**IMPROVED STOCK IN INDIANA.**—Our Sullivan County (Indiana) correspondent states that much attention is being given in that county to the improvement of farm stock, several gentlemen of means having turned their attention in this direction. Mr. John Giles, of Sugar Tree Grove Farm, near Sullivan, has stocked his farm of six hundred acres with superior breeds of cattle, horses, and hogs, including a fine herd of short-horns, the pedigree of twelve of which our correspondent sends us.

## MARKET PRICES FOR FARM PRODUCTS.\*

Articles.	February.
NEW YORK.	
Flour—State .....	per barrel.. \$6 20 to \$7 30
Western .....	per do..... 6 20 to 8 75
Wheat—No. 1 spring .....	per bushel.. 1 55 to 1 57
No. 2 spring .....	per do..... 1 49 to —
Winter, and amber western .....	per do..... 1 59 to 1 60
Corn—New western mixed .....	per do..... 88 to 90
Old western mixed .....	per do..... 90 to 91
Rye .....	per do..... 1 13½ to —
Barley .....	per do..... 1 10 to —
Oats—Western mixed .....	per do..... 63½ to 65
State .....	per do..... 60 to 61½
Hay—Shipping qualities .....	per ton..... 25 00 to —
Prime .....	per do..... 25 00 to 28 00
Pork—Mess .....	per barrel.. 21 75 to 23 00
Prime mess .....	per do..... 21 50 to 22 00
Beef—Mess .....	per do..... 10 00 to 15 00
Extra .....	per do..... 15 00 to 17 50
Lard .....	per pound.. 12 to 13½
Butter—Western .....	per do..... 12 to 22
State .....	per do..... 20 to 45
Cheese—Dairy .....	per do..... 7 to 14
Factory .....	per do..... 13 to 15¾
Cotton—Ordinary .....	per do..... 13¼ to 15¼
Middling .....	per do..... 15 to 17½
Tobacco—Sound lugs, light grades .....	per do..... 7 to 7½
Sound lugs, heavy grades .....	per do..... 7½ to 8¼
Common leaf, light grades .....	per do..... 7½ to 8½
Common leaf, heavy grades .....	per do..... 8½ to 9
Wool—Combing fleece .....	per do..... 43 to 55
Extra pulled .....	per do..... 38 to 45
Texas, common to medium .....	per do..... 23 to 30
California common .....	per do..... 20 to 28
CHICAGO.	
Flour—Winter extras .....	per barrel.. 5 50 to 8 00
Spring .....	per do..... 5 25 to 7 00
Wheat—No. 1 spring .....	per bushel.. 1 27¼ to 1 32
No. 2 spring .....	per do..... 1 23¾ to 1 32
No. 3 spring .....	per do..... 1 15 to 1 23
Corn—No. 2 .....	per do..... 49½ to 54¾
Rejected .....	per do..... — to —
Oats—No. 2 .....	per do..... 46½ to 47
Rejected .....	per do..... 44½ to —
Hay—Timothy and clover, (on track,) .....	per ton..... — to —
Prime .....	per do..... — to —
Pork—Mess .....	per barrel.. 22 37½ to 22 50
Prime mess .....	per do..... 20 50 to 21 00
Beef—Mess .....	per do..... 10 00 to 11 25
Extra mess .....	per do..... 13 00 to 13 25
Lard .....	per do..... 12¾ to 15½
Butter—Firkin and tub .....	per do..... 10 to 13
Extra .....	per do..... 22 to 28
Cheese—New York factory .....	per do..... 15½ to 16½
Western factory .....	per do..... 13 to 14
Western Reserve .....	per do..... 13 to 14
Wool—Medium fleece .....	per do..... 40 to 43
Unwashed medium .....	per do..... 27 to 30
Tub .....	per do..... 45 to 50

\* Record made as near the first of the month as practicable.

## Market prices for farm products—Continued.

Articles.	February.
CINCINNATI.	
Flour—Family .....	per barrel.. \$6 00 to \$6 25
Extra .....	per do... 5 25 to 5 50
Superfine .....	per do... 5 00 to 5 25
Low grades .....	per do... 4 50 to 5 00
Wheat—No. 1 white .....	per bushel.. 1 40 to 1 43
No. 2 white .....	per do... ——— to ———
No. 1 red .....	per do... 1 32 to 1 33
No. 2 red .....	per do... 1 30 to ———
Corn—No. 1 .....	per do... 52 to 53
New ear .....	per do... 53 to ———
Rye—No. 1 .....	per do... 1 05 to ———
No. 2 .....	per do... 1 00 to ———
Rejected .....	per do... ——— to ———
Barley—No. 1 .....	per do... 1 00 to 1 03
No. 1 State .....	per do... ——— to ———
Oats—No. 1 mixed .....	per do... 48 to 50
No. 2 mixed .....	per do... 46 to 48
Hay—tight pressed .....	per ton... 18 00 to 21 00
Loose .....	per do... 19 00 to 23 00
Pork—Mess .....	per barrel.. 21 75 to 22 50
Prime mess .....	per do... ——— to ———
Lard—Prime steam .....	per pound.. 12 $\frac{1}{2}$ to 12 $\frac{1}{4}$
Butter—Choice Ohio .....	per do... 24 to 30
Fair to good .....	per do... 18 to 21
Cheese—Western Reserve .....	per do... 13 $\frac{3}{4}$ to 14 $\frac{1}{2}$
Factory .....	per do... 14 $\frac{1}{2}$ to 15 $\frac{1}{2}$
Cotton—Ordinary .....	per do... 10 $\frac{1}{2}$ to 13 $\frac{1}{2}$
Middling .....	per do... 14 to 14 $\frac{1}{2}$
Tobacco—Lugs, West Virginia .....	per do... 4 to 8
Lugs, Kentucky .....	per do... 7 to 10
Common to medium leaf, West Virginia .....	per do... 8 to 9
Common to medium leaf, Kentucky .....	per do... 10 to 15
Wool—Tub-washed .....	per do... 48 to 50
Fleece-washed .....	per do... 42 to 44
Unwashed .....	per do... 30 to 31
Pulled .....	per do... 36 to 38
ST. LOUIS.	
Flour—Superfine .....	per barrel.. 5 40 to 5 50
Spring .....	per do... 4 70 to 4 85
Choice .....	per do... 6 00 to 8 50
Wheat—Spring .....	per bushel.. 1 12 $\frac{1}{2}$ to 1 30
Winter, No. 1 .....	per do... ——— to ———
Winter, No. 2 .....	per do... 1 50 to ———
Winter, No. 3 .....	per do... 1 23 to 1 40
Red .....	per do... 1 30 to 1 50
Corn—Mixed .....	per do... 47 to 62
Yellow .....	per do... 54 to 65
Rye .....	per do... 85 to 95
Barley—Winter .....	per do... 84 to 88
Spring .....	per do... 40 to 75
Oats—Mixed .....	per do... 42 $\frac{1}{2}$ to 56
White .....	per do... 53 to 60
Hay .....	per ton... 14 00 to 20 00
Pork—Mess .....	per pound.. 21 00 to 23 00
Lard—Tierce .....	per do... 12 $\frac{1}{2}$ to 13
Keg .....	per do... 13 $\frac{3}{4}$ to 14 $\frac{1}{2}$
Butter—Choice .....	per do... 27 to 29
Fair to medium .....	per do... 10 to 24
Cheese—Factory .....	per do... 15 $\frac{1}{2}$ to 24

## Market prices for farm products—Continued.

Articles.	February.
ST. LOUIS—Continued.	
Cotton—Middling .....	per pound... \$0 13 to \$0 14
Tobacco—Sound lug .....	per do... 5 to 8 $\frac{1}{2}$
Common leaf .....	per do... 7 $\frac{1}{2}$ to 8 $\frac{1}{2}$
Medium leaf .....	per do... 8 $\frac{1}{4}$ to 9 $\frac{1}{2}$
Wool—Tub-washed .....	per do... 40 to 48
Fleece-washed .....	per do... 30 to 41
Combing .....	per do... 35 to 39
Pulled .....	per do... 30 to 33
NEW ORLEANS.	
Flour—Superfine .....	per barrel... 6 25 to 6 37 $\frac{1}{2}$
Extras, (according to grade) .....	per do... 6 25 to 9 00
Corn—Mixed .....	per bushel... 70 to 72
Yellow .....	per do... 70 to 72
White .....	per do... 72 to 75
Oats—Choice .....	per do... 70 to —
Hay—Choice .....	per ton... 28 00 to —
Prime .....	per do... 26 00 to 27 00
Pork—Mess .....	per barrel... 23 50 to 24 50
Lard—Tierce .....	per pound... 12 $\frac{1}{2}$ to 13 $\frac{1}{4}$
Keg .....	per do... 14 $\frac{1}{4}$ to 14 $\frac{1}{2}$
Butter—Choice Western .....	per do... 25 to 31
Choice Northern .....	per do... 40 to 42
Common Northern .....	per do... 25 to 30
Cheese—Choice factory .....	per do... 16 to 16 $\frac{1}{2}$
Western Reserve .....	per do... 14 $\frac{1}{2}$ to 15
Cotton—Ordinary .....	per do... 12 to 12 $\frac{1}{2}$
Low middling .....	per do... 14 to 14 $\frac{1}{2}$
Middling .....	per do... 14 $\frac{3}{4}$ to 15
Tobacco—Lugs, light .....	per do... 6 to —
Lugs, heavy .....	per do... 7 to —
Low leaf, light .....	per do... 7 to —
Low leaf, heavy .....	per do... 7 $\frac{1}{2}$ to —
Medium leaf, light .....	per do... 7 $\frac{1}{2}$ to —
Medium leaf, heavy .....	per do... 8 to —
SAN FRANCISCO.	
Flour—State .....	per barrel... 5 75 to 7 25
Oregon .....	per do... 7 00 to 7 25
Wheat—State .....	per bushel... 2 30 to 2 55
Oregon .....	per do... — to —
Corn—White .....	per do... 1 40 to 1 55
Yellow .....	per do... — to —
Barley .....	per do... 1 35 to 1 45
Oats .....	per do... 1 45 to 1 75
Hay—State .....	per ton... 12 50 to 16 00
Pork—Mess .....	per barrel... 24 00 to 28 00
Prime .....	per do... 21 00 to —
Beef—Mess .....	per do... 16 00 to 18 00
Lard—In barrels .....	per pound... 12 $\frac{1}{2}$ to 13 $\frac{1}{2}$
Domestic .....	per do... 11 to 12
Butter—State .....	per do... 40 to 50
Oregon .....	per do... 20 to 25
Overland .....	per do... 15 to 37 $\frac{1}{2}$
Cheese .....	per do... 12 to 17
Wool—Native .....	per do... 13 to 14
California .....	per do... 15 to 18 $\frac{1}{2}$
Oregon .....	per do... 24 to 25

# METEOROLOGY.

## JANUARY, 1871.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY THE OBSERVERS OF THE SMITHSONIAN INSTITUTION.]

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain-fall, (in inches and tenths,) for January, 1871, as reported by the observers at the stations named. Observations daily at 7 a. m. and 2 and 9 p. m. Table from reports received up to February 18; notes from reports received up to February 15.

State and station.	County.	Observer.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
				°		°	°	In.
<b>MAINE.</b>								
Houlton .....	Aroostook .....	Charles H. Fernald .....	6, 14, 16	40	24	-32	87.6	3.70
State Agr. College .....	Penobscot .....	M. C. Fernald .....	16	40	23	-21	13.3	2.60
Surry .....	Hancock .....	Oscar H. Tripp .....	16	48	23	-19	17.4	.....
Williamsburg .....	Piscataquis .....	Edwin Pitman .....	14	40	23	-30	6.7	3.45
West Waterville .....	Kennebec .....	B. F. Wilbur .....	13, 14	42	23	-15	15.8	2.96
Gardiner .....	do .....	R. H. Gardiner .....	13, 14	40	23	-14	16.6	2.11
Lisbon .....	Androscoggin .....	Asa P. Moore .....	14	52	23, 25	-16	16.3	2.00
Standish .....	Cumberland .....	John P. Moulton .....	14	54	23	-16	18.0	3.64
Norway .....	Oxford .....	Howard Smith .....	14	50	8	-20	15.6	2.40
Cornish .....	York .....	Silas West .....	14	52	23	-14	17.4	2.80
Cornishville .....	do .....	G. W. Guptill .....	14	52	23	-16	18.4	3.10
<b>NEW HAMPSHIRE.</b>								
Stratford .....	Coos .....	Branch Brown .....	14	48	23	-26	12.3	2.45
Whitefield .....	do .....	L. D. Kidder .....	14	48	10	-29	12.1	1.73
Gorham .....	do .....	F. Odell .....	31	35	23	-22	.....	.....
Mt. Washington .....	do .....	J. H. Huntingdon .....	13	36	22	-42	6.14	.....
Tamworth .....	Carroll .....	Alfred Brewster .....	14	48	8	-29	14.7	2.40
Cantocookville .....	Merrimack .....	E. D. Couch .....	14	50	23	-15	22.3	.....
Goffstown Center .....	Hillsborough .....	Alfred Colby .....	14	56	23	-13	21.4	1.81
<b>VERMONT.</b>								
Lunenburg .....	Essex .....	H. A. Cutting .....	14, 31	45	23	-30	13.7	2.90
Craftsbury .....	Orleans .....	Rev. E. P. Wild .....	13	43	23	-23	10.3	2.28
South Troy .....	do .....	James C. Kennedy .....	13	52	10	-26	18.6	2.57
Randolph .....	Orange .....	Charles S. Paine .....	13	44	23	-16	17.0	1.27
Woodstock .....	Windsor .....	Doten & Miller .....	13	42	23	-20	14.6	1.96
Near St. Albans .....	Franklin .....	A. H. I. Gilmour .....	13	46	23	-26	12.0	1.90
West Charlotte .....	Chittendon .....	Miss M. E. Wing .....	13	53	23	-18	19.0	1.72
Panton .....	Addison .....	D. C. and M. E. Barto .....	13	50	23	-24	14.7	2.62
Castleton .....	Rutland .....	Rev. R. G. Williams .....	13	49	23	-16	18.6	1.53
<b>MASSACHUSETTS.</b>								
Kingston .....	Plymouth .....	G. S. Newcomb .....	14	62	23	-5	27.8	3.45
Topsfield .....	Essex .....	S. A. Merriam .....	14	50	23	-10	21.9	2.21
Newbury .....	do .....	John H. Caldwell .....	14	62	23	-8	23.5	.....
Lawrence .....	do .....	John Fallon .....	14	55	23	-8	22.3	2.01
Georgetown .....	do .....	Il. M. Nelson .....	14	59	23	-7	23.8	2.12
Milton .....	Norfolk .....	Rev. A. K. Feele .....	14	67	26	-3	26.5	4.40
Cambridge .....	Middlesex .....	Mrs. & Rev. J. B. Perry .....	14	60	23, 26	-6	25.5	.....
North Billerica .....	do .....	Rev. E. & W. W. Nason .....	14	60	25	-10	24.3	.....
New Bedford .....	Bristol .....	Samuel Rodman .....	14	56	23	-5	26.6	2.94
Worcester .....	Worcester .....	D. T. Morrill .....	14	55	26	-7	22.0	4.53
Lunenburg .....	do .....	Geo. A. Cunningham .....	14	59	23	-11	22.6	1.85
Mendon .....	do .....	John G. Metra f, M. D. .....	14	59	26	-9	22.0	1.30
Amherst .....	Hampshire .....	Prof. E. S. Suel .....	13	50	23	-6	23.3	1.96
Richmond .....	Berkshire .....	William Bacon .....	14	56	23	-12	23.4	3.72
Williams College .....	do .....	Prof. A. Hopkins .....	13	55	23	-15	22.2	1.16
Hillsdale .....	do .....	Rev. E. Dewhurst .....	14	57	23	-15	19.8	2.38



Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum tem- perature.	Date.	Minimum tem- perature.	Mean tempera- ture.	Rain and melted snow.
				°		°	°	In.
RHODE ISLAND.								
Newport.....	Newport.....	William A. Barber....	14	56	23	0	29.1	4.97
CONNECTICUT.								
Columbia .....	Tolland.....	William H. Yeomans ..	14	62	23, 26	- 6.	25.1	2.26
Middletown .....	Middlesex .....	H. D. A. Ward .....	14	57	25	- 9	24.2	3.43
Southington .....	Hartford .....	Luman Andrews.....	14	55	26	- 8	24.3	2.93
Round Hill .....	Fairfield.....	W. P. Alcott.....	14	50	23	- 5	23.8	3.09
NEW YORK.								
Moriches .....	Suffolk .....	E. A. Smith & daugh'rs	13	54	25	- 2	24.7	3.66
South Hartford .....	Washington .....	G. M. Ingalsbe .....	13	54	23	-19	20.2	2.78
North Argyle.....	do .....	G. M. Hunt .....	14	45	23	-22	17.5	1.69
Troy.....	Rensselaer.....	John W. Heimstreet ..	13	53	26	- 8	24.0	1.60
Garrison's .....	Putnam.....	Thomas B. Arden.....	13	54	26	- 6	26.0	2.86
Throg's Neck .....	West Chester.....	Miss E. Morris .....	12, 13	50	10	4	27.7	.....
White Plains .....	do .....	Prof. O. R. Willis & drs	14	54	23, 26	2	26.7	.....
Cooper Union .....	New York .....	Prof. O. W. Morris .....	12	59	26	5	29.8	4.37
Brooklyn .....	Kings.....	Isaac P. Mailler .....	14, 16	51	26	4	29.9	4.15
Flatbush.....	do .....	Rev. Eli T. Mack .....	16	51	26	5	27.8	1.71
Glaseo .....	Ulster .....	D. B. Hendricks .....	13	58	26	- 8	18.5	3.45
Newburg .....	Orange .....	James H. Gardiner .....	13	55	26	- 5	26.3	2.53
Minerville .....	Montgomery .....	J. W. Bussing .....	13	46	23	-14	19.7	1.80
Cooperstown .....	Otsego .....	G. Pomeroy Keese .....	13, 14	55	23	-18	20.1	1.14
Gouverneur .....	St. Lawrence.....	C. H. Russell .....	13	53	23	-30	12.7	1.84
North Hammond .....	do .....	C. A. Wooster .....	13	43	23	-22	16.1	1.39
South Trenton .....	Oncida .....	Storrs Barrows .....	13, 14, 15	48	23	-20	17.4	2.20
Cazenovia .....	Madison .....	Prof. William Soule .....	13	54	23	-14	23.0	2.98
Oncida .....	do .....	S. Spooner, M. D .....	13	56	23	-13	26.0	1.14
Depauville .....	Jefferson .....	Henry Haas .....	13	52	23	-21	16.7	2.25
Oswego .....	Oswego .....	William S. Malcolm .....	15	49	23	-16	23.0	1.80
Falermo .....	do .....	E. B. Bartlett .....	13	49	23	-22	20.0	2.70
North Volney .....	do .....	J. M. Patrick .....	13	55	23	-10	21.2	.....
Nichols .....	Tioga .....	Robert Howell .....	14	57	22	- 7	25.6	.....
Newark Valley .....	do .....	Rev. Samuel Johnson ..	15	55	9	- 8	24.0	2.30
Rochester .....	Monroe .....	G. P. Hachenberg, M.D	13	58	23	-10	26.3	1.60
Little Genesee .....	Allegany .....	Daniel Edwards .....	14	58	4	- 7	23.7	3.68
Angelica .....	do .....	C. P. Arnold .....	14	56	22	-10	24.8	.....
Carlton .....	Orleans .....	M. P. Godfrey .....	13	60	23	- 2	25.0	.....
Suspension Bridge .....	Niagara .....	W. Martin Jones .....	13	54	23	- 0	24.3	1.65
Lockport .....	do .....	B. Wheaton Clarke .....	13	59	23	- 2	24.3	1.70
Buffalo .....	Erie .....	William Ives .....	13	56	23	0	26.1	1.82
NEW JERSEY.								
Jersey City .....	Hudson .....	Thomas J. Howard, jr.	13	58	26	7	31.5	.....
Paterson .....	Passaic .....	William Brooks .....	13	50	26	0	26.4	2.81
Newark .....	Essex .....	W. A. Whitehead .....	13	48	26	0	26.7	3.04
South Orange .....	do .....	W. J. Chandler, M. D ..	13	60	26	- 4	25.4	2.10
Trenton .....	Mercer .....	E. R. Cook .....	15	62	26	3	30.5	2.03
Rio Grande .....	Cape May .....	Mrs. J. R. Palmer .....	14	60	10	8	32.4	4.28
Moorestown .....	Burlington.....	Thomas J. Beans .....	15	64	26	3	29.3	3.95
New Germantown .....	do .....	A. B. Noll .....	13	51	25	- 3	26.1	2.77
Greenwich .....	Cumberland .....	Miss R. C. Sheppard .....	15	60	10	9	32.2	2.52
Vineland .....	do .....	John Ingram, M. D .....	14, 15	63	10	1	31.1	6.23
PENNSYLVANIA.								
Nyces .....	Pike .....	John Grathwohl .....	13	61	26	- 4	25.0	2.13
Hamilton .....	Wayne .....	James D. Stocker .....	13, 14	60	23	- 2	26.3	2.05
Dyberry .....	do .....	Theodore Day .....	13	49	10, 22	- 5	21.9	1.97
Fallsington .....	Bucks .....	Ebenezer Hance .....	15	61	26	4	30.0	2.20
Philadelphia .....	Philadelphia .....	Prof. J. A. Kirkpatrick ..	15	64	26	8	32.6	3.61
Germantown .....	do .....	Thomas Meehan .....	15	63	26	3	29.7	.....
Horsham .....	Montgomery .....	Miss Anna Spencer .....	15	55	10, 26	5	28.9	3.30
Plymouth Meeting .....	do .....	Marcus H. Corson .....	15	62	10	1	28.3	4.04
Egypt .....	Leligh .....	Edward Kohler .....	13	51	26	0	27.8	.....
Factoryville .....	Luzerne .....	Rodman Sisson .....	14	57	9, 22, 23	- 2	24.7	2.85
Reading .....	Berks .....	J. Heyl Lasher .....	15	61	26	10	32.1	2.79
West Chester .....	Chester .....	George Martin, M. D .....	15	61	26	4	25.3	3.18
Parkerville .....	do .....	F. Darlington, M. D .....	15	59	10	4	28.4	3.25
Catawissa .....	Columbia .....	A. Curtis .....	15	56	25	4	27.1	.....

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum tem- perature.	Date.	Minimum tem- perature.	Mean tempera- ture.	Rain and melted snow.
				°		°	°	<i>In.</i>
PENN'A.—Cont'd.								
Ephrata	Lancaster	W. H. Spera	14, 15	58	10, 26	4	28.1	3.13
Carlisle	Cumberland	William H. Cook, M. D.	15	57	10, 23, 24	9	29.4	3.05
Fountain Dale	Adams	S. C. Walker	14	59	23	8	30.4	4.00
York S. Springs	York	J. H. Marsden, M. D.	15	57	23	8	29.0	3.40
Tioga	Tioga	E. T. Bentley	13	62	4, 22	—	27.6	1.70
Grampian Hills	Clearfield	Elisha Fenton	13	54	9	—7	22.3	3.57
Johnstown	Cambria	David Peeler	14	56	10	7	28.7	.....
Franklin	Venango	Rev. M. A. Tolman	14	60	9	—6	27.6	3.38
Pittsburg	Allegheny	George Albee	14	64	9	9	32.0	2.70
Connellsville	Fayette	John Taylor	14	66	9	2	32.8	.....
Brownsville	do	J. A. Hubbs, M. D.	14	68	9	9	34.0	.....
New Castle	Lawrence	E. M. McConnell	13, 14	60	25	8	28.9	2.40
Beaver	Beaver	Rev. R. T. Taylor	14	63	9	10	32.3	.....
Canonsburg	Washington	Rev. Wm. Smith, D. D.	13	70	4, 9	0	32.5	2.30
DELAWARE.								
Dover	Kent	J. H. Bateman	15	60	10	8	33.1	4.00
MARYLAND.								
Woodlawn	Cecil	J. O. McCormick	12	60	23, 26	5	29.4	2.20
Fallston	Harford	George G. Curtiss	15	61	24	9	32.6	2.40
Woodstock Coll.	Baltimore	Rev. A. X. Valente	15	60	10	4	30.2	2.49
Mt. St. Mary's	Frederick	C. H. Jourdan	15	55	23, 24	10	30.2	2.82
DIST. COLUMBIA.								
Washington	Washington	Smithsonian Instit'n	15	59	23, 24	16	33.7	2.00
VIRGINIA.								
Johnsontown	Northampton	C. R. Moore	13	64	10	18	38.2	2.19
Hampton	Elizab'th City	J. M. Sherman	15	64	10	18	38.6	2.60
Comorn	King George	E. T. Tayloe	15	66	10	14	35.3	1.49
Mt. Solon	Augusta	Jas. T. Clarke, M. D.	12	62	9	15	35.4	0.70
Vienna	Fairfax	H. C. Williams	10	65	10, 23, 26	12	37.3	3.70
Fairfax C. H.	do	Miss Lillie Thrift	14	70	24, 25	11	30.7	2.00
Accotink	do	C. Dillingham	14, 15	60	10	8	31.9	4.73
Piedmont Station	Fauquier	W. A. Martin	13	69	9	8	32.4	3.00
Piedmont	do	F. Williams	12, 15	58	24	11	32.6	3.05
Keswick Station	Albemarle	D. B. Home	13	62	10	17	32.8	.....
Staunton	Augusta	Professor J. C. Covell	12	60	9	21	35.7	2.81
Lynchburg	Bedford	C. I. Meriwether	14, 15	62	10	20	40.4	2.75
Near Wytheville	Wythe	Rev. J. A. Brown	12	62	3	17	35.7	2.35
NORTH CAROLINA.								
Goldsborough	Wayne	E. W. Adams, A. M.	14	73	10	22	44.6	1.65
Oxford	Granville	W. R. Hicks, M. D.	14	67	9, 11	22	40.0	1.60
Albemarle	Stanley	F. J. Kron	13	73	4	12	39.5	2.16
Statesville	Iredell	T. A. Allison	13, 14	62	4, 10	14	36.2	4.13
Asheville	Buncombe	E. J. Aston	11, 12, 15	60	9	19	39.4	1.13
Do	do	J. T. E. Hardy, M. D.	12	60	4, 9, 19	18	38.8	.....
SOUTH CAROLINA.								
Gowdeysville	Union	Charles Petty	14	69	4	20	45.4	2.13
GEORGIA.								
Berne	Camden	H. L. Hillyer	31	74	4	27	48.9	.....
St. Mary's	do	Ebenezer Barker	31	83	4	28	52.3	0.80
ALABAMA.								
Rockville	Jefferson	J. H. Shields	14	71	4	18	45.1	3.75
Carlowville	Dallas	H. L. Alison	13	72	15	26	49.1	5.24
Moulton	Lawrence	Thos. M. Peters, A. M.	12, 13	64	3	22	44.6	5.17
Greene Springs	Hale	H. Tutwiler, LL. D.	24	70	4	18	46.8	5.95
Coatopa	Sumter	S. K. Jennings, M. D.	13	72	4	18	48.0	5.40
Fish River	Baldwin	W. J. Van Kirk	25	70	4	28	.....	6.50

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
FLORIDA.								
Near Port Orange..	Volusia .....	S. N. Chamberlin .....	6	76	23	34	56.6	1.02
Jacksonville .....	Duval .....	A. S. Baldwin, M. D. ....	31	80	4, 10	33	56.2	0.80
Pilatka .....	Putnam .....	Gen. G. D. Robinson .....	{ 24, 26 27, 31	{ 80	17	36	58.4	1.10
Newport .....	Wakulla .....	Charles Beecher .....	13	73	4	24	51.9	1.85
TEXAS.								
Clarksville .....	Red River .....	Rev. John M. Anderson .....	11	70	14	17	48.9	.....
Houston .....	Harris .....	Miss E. H. Baxter .....	10, 25	80	14	19	54.5	.....
Oakland .....	Colorado .....	F. Simpson .....	10	77	13	24	54.2	2.48
Bluff .....	Fayette .....	Joseph Fietsam .....	11	76	13, 14	24	52.8	1.93
Clinton .....	DeWitt .....	A. C. White .....	{ 5, 11 24, 30	{ 76	13, 14	26	53.5	2.15
Austin .....	Travis .....	J. Van Nostrand .....	11	76	4, 13	24	50.3	2.28
LOUISIANA.								
New Orleans .....	Orleans .....	Robert W. Foster .....	24	80	4, 15	30	53.0	11.15
Ponchatoula .....	Tangipahoa .....	H. C. Collins .....	2	8	4	22	54.4	13.90
MISSISSIPPI.								
Philadelphia .....	Neshoba .....	L. A. Bowden .....	13	68	4	22	46.8	3.40
Grenada .....	Grenada .....	J. S. Payne .....	12	72	3	17	48.3	5.80
Near Brookhaven .....	Lawrence .....	Mrs. W. E. A. Keenan .....	12	77	4	17	49.0	6.10
Clinton College .....	Hinds .....	R. S. Jackson .....	11, 24, 25	70	14	22	49.3	4.85
ARKANSAS.								
Helena .....	Phillips .....	O. F. Russell .....	12	72	3	16	44.5	.....
Mineral Springs .....	Hempstead .....	Harmon Bishop .....	11	68	15	16	43.5	2.09
TENNESSEE.								
Elizabethton .....	Carter .....	C. H. Lewis .....	13	63	3	15	39.2	1.70
Tusculum College .....	Greene .....	S. S. and Rev. W. S. Doak .....	14	63	3	13	38.9	.....
Lookout Mountain .....	Hamilton .....	Rev. C. F. P. Bancroft .....	13	63	7, 9	22	43.5	.....
Clearmont .....	Warren .....	T. P. Wright .....	14	64	3	16	41.6	3.80
Austin .....	Wilson .....	P. B. Calhoun .....	13	68	3	15	40.8	4.80
Clarksville .....	Montgomery .....	Prof. W. M. Stewart .....	12	67	3	16	40.2	4.83
Trenton .....	Gibson .....	W. T. Grigsby .....	1, 12, 13	67	3	18	44.3	4.05
La Grange .....	Fayette .....	W. E. Franklin, M. D. ....	12	69	15	22	43.5	3.20
KENTUCKY.								
Pine Grove .....	Clark .....	Sam'l D. Martin, M. D. ....	13, 14	66	7	12	35.3	3.11
Danville .....	Boyle .....	O. Beatty .....	13	70	3	17	38.9	3.34
Shelby City .....	do .....	Howard Shriver .....	13	68	7	16	37.4	3.12
Near Louisville .....	Jefferson .....	Mrs. L. Young .....	12	67	7, 9	13	36.7	3.05
OHIO.								
Salem .....	Columbiana .....	J. E. Pollock .....	13, 14	65	4	2	29.7	1.53
Steubenville .....	Jefferson .....	Joseph B. Doyle .....	14	61	4	10	32.9	2.20
Martin's Ferry .....	Belmont .....	C. K. and M. B. Shreve .....	19	64	9	6	32.3	.....
Painesville .....	Lake .....	E. J. Ferris .....	12, 13	58	4	9	29.5	7.18
Cleveland .....	Cuyahoga .....	Mr. & Mrs. G. A. Hyde .....	13	63	4	6	29.6	1.27
Wooster .....	Wayne .....	Martin Winger .....	12	68	4	—2	31.6	.....
Pennsville .....	Morgan .....	T. J. Bingman .....	14	64	{ 3, 7, 23, 27, 28	18	32.9	1.90
Gallipolis .....	Gallia .....	A. P. Rogers .....	16	66	4, 27	16	34.8	2.59
Oberlin .....	Lorain .....	S. Herrick .....	12	61	4	0	28.4	1.35
Sandusky .....	Erie .....	Thomas Neill .....	13	62	4	11	31.2	1.19
Carson .....	Huron .....	Mrs. M. M. Marsh .....	13	62	4	8	32.5	0.65
North Fairfield .....	do .....	O. Burras .....	13	64	4, 24	8	31.4	1.36
Gambier .....	Knox .....	F. K. Dunn .....	14	57	24	15	22.4	4.03
Westerville .....	Franklin .....	Prof. John Haywood .....	14	64	4	12	32.0	1.59
Williamsport .....	Pickaway .....	John R. Wilkinson .....	13	76	23	7	30.0	2.17
North Bass Island .....	Ottawa .....	Geo. R. Morton, M. D. ....	12	57	4	11	29.1	0.93
Marion .....	Marion .....	H. A. True, M. D. ....	13	59	4	8	28.8	1.50

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum tem- perature.	Date.	Minimum tem- perature.	Mean tempera- ture.	Rain and melted snow.
OHIO—Continued.								
Hillsboro	Highland	J. McD. Mathews	14	62	7	12	32.1	2.59
Bowling Green	Wood	John Clarke	13	72	4	2	31.7	2.30
Kenton	Hardin	C. H. Smith, M. D.	13	65	23	20	36.5	1.44
Bellefontaine	Logan	William Barringer	13	60	7	8	29.2	1.17
Urbana University	Champaign	M. G. Williams	13	62	4, 7	10	31.3	1.55
Bethel	Clermont	George W. Crane	14	66	7	7	32.9	2.25
Carthage	Mercer	Prof. W. R. Mueller	13	65	7	7	32.0	2.18
Jacksonburg	Butler	L. B. Owsley, M. D.	12	64	7	10	32.1	2.75
Mount Auburn Ins.	Hamilton	Prof. I. H. White	14	67	7	14	34.1	2.52
Cincinnati	do	G. W. Harper	14	70	7	13	34.5	2.34
Do	do	R. C. Phillips	14	66	7	14	34.6	2.43
College Hill	do	John W. Hammitt	14	65	7	9	33.5	3.20
MICHIGAN.								
Detroit	Wayne	F. W. Higgins	12	54	3	-1	26.3	2.61
Monroe	Monroe	Miss H. I. Whelpley	13	66	4	6	30.3	0.97
Ann Arbor	Washtenaw	Mrs. N. H. Winchell	13	58	3	7	27.4	2.41
Macon	Lenawee	David Howell	13	62	3	5	23.9	2.80
Alpena	Alpena	J. W. Paxton	12	42	22	4	22.2	4.49
Olivet College	Eaton	Prof. A. F. Kemp	12	58	23	4	24.2	5.01
Litchfield	Hillsdale	R. Bullard	12	58	3	2	24.1	3.60
Cold Water	Branch	N. L. Southworth	12	60	3, 4	6	25.8	1.58
Grand Rapids	Kent	E. S. Holmes, D. D. S.	12	59	23	6	25.3	.....
Do	do	L. H. Streng	12	60	23	1	26.5	5.34
Northport	Lelenaw	Rev. Geo. N. Smith	12	48	25	4	22.4	2.23
Benzonia	Benzie	William Wilson	12	49	23	6	23.8	3.83
Muskegon	Muskegon	H. A. Pattison	12	56	{ 23, 25, 26, 28 }	{ 10 }	23.3	3.90
Copper Falls	Koewenaw	S. H. Whittlesey	10	32	3	-7	11.3	5.05
Ontonagon	Ontonagon	Edwin Ellis, M. D.	10	40	25	-6	17.3	.....
INDIANA.								
Fort Wayne	Allen	R. S. Robertson	12	62	7	4	28.7	1.80
Vevay	Switzerland	Chas. G. Boerner	14	66	7	14	35.5	2.52
Mt. Carmel	Franklin	J. A. Applegate and daughters.	12, 14	60	7	12	30.3	0.90
Laconia	Harrison	Adam Crozier	13, 14	66	9	14	36.7	2.59
Columbia City	Whitley	Dr. McCoy & Maxwell	12	68	7	6	31.7	2.50
Knightstown	Rush	D. Deem	12	63	7	6	31.6	1.69
Indianapolis	Marion	E. Hadley, M. D.	12	62	7	12	32.5	1.44
Near La Porte	La Porte	F. J. Andrew	12	58	7, 27	10	29.1	4.30
Annapolis	Park	B. C. Williams, M. D.	12	62	6, 27	6	28.0	5.10
Merom	Sullivan	B. F. McHenry	12	66	8	16	35.6	2.30
Kentland	Newton	Daniel Spitzer	11	60	4, 6, 17	10	28.8	5.50
New Harmony	Posey	John Chappellsmith	12	67	18	16	36.4	2.62
ILLINOIS.								
Chicago	Cook	J. G. Langguth, jr	12	66	17	9	29.6	8.77
Near Chicago	do	Samuel Brookes	12	62	7	10	28.3	.....
Evanston	do	Prof. O. Marcy	12	61	17	5	27.4	2.90
Marengo	McHenry	J. W. James	12	58	17	0	22.5	2.82
Charleston	Coles	Charles Gramesley	12	64	27	6	30.6	4.25
Mattoon	do	W. E. Henry	12	63	27	13	31.1	4.75
Louisville	Clay	D. H. Chase, M. D.	12	67	18	12	33.9	3.30
Belvidere	Boone	G. B. Moss	12	61	24	-2	23.4	2.84
Decatur	Macon	Timothy Dudley	12	62	18	6	30.4	4.70
Pana	Christian	Thos. Finley, M. D.	12	64	18	4	30.4	4.50
Rochello	Ogle	Daniel Carey	12	60	27	2	25.5	.....
Wyanet	Bureau	E. S. & Miss Phelps.	12	62	18	-12	25.0	3.32
Tiskilwa	do	Very Aldrich	12	62	27	1	26.4	.....
Hennepin	Putnam	Ethan Osborn	12	62	17	3	26.4	2.59
Peoria	Peoria	Fred. Brendel	12	63	18	2	28.9	2.45
Havana	Mason	Joseph Cochrane	12	62	18	-2	24.9	4.20
Waterloo	Monroe	Chas. Jozefé	12	63	18	7	32.2	5.91
Dubois	Washington	Wm. C. Spencer	12	66	18	10	33.5	3.15
Galesburg	Knox	Prof. W. Livingston	12	67	18	5	28.5	2.80
Manchester	Scott	Dr. J. & C. W. Grant	10	68	18	2	30.9	3.50
Mt. Sterling	Brown	Rev. A. Duncan	12	64	18	-5	31.5	2.65
Andalusia	Rock Island	E. H. Bowman, M. D.	12	63	17	4	27.0	.....

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum tem- perature.	Date.	Minimum tem- perature.	Mean tempera- ture.	Rain and melted snow.
ILLINOIS—Cont'd.								
Oquawka .....	Henderson .....	R. N. Paterson .....	12	66	18	— 8	27.8	2.82
Augusta .....	Hancock .....	S. B. Mead, M. D. ....	12	67	18	—12	28.2	4.49
Warsaw .....	do .....	B. Whittaker .....	12	65	18	— 7	27.9	4.58
WISCONSIN.								
Sturgeon Bay .....	Dove .....	Rufus M. Wright .....	12	49	7	— 5	20.3	2.25
Manitowoc .....	Manitowoc .....	Jacob Lüps .....	12	45	4	— 2	23.5	1.98
Hingham .....	Sheboygan .....	John De Lyser .....	12	54	3, 7	1	23.3	.....
Milwaukee .....	Milwaukee .....	I. A. Lapham, LL. D. ....	12	61	4	4	25.9	3.14
Appleton .....	Outagamie .....	J. C. Foyé .....	12	52	4	0	24.3	.....
Geneva .....	Walworth .....	William H. Whiting .....	12	60	17, 28	— 2	22.3	3.25
Rocky Run .....	Columbia .....	W. W. Curtis .....	12	54	24	— 4	21.0	2.13
Madison .....	Dane .....	W. W. Daniels .....	12	55	18	— 2	20.4	2.32
Edgerton .....	Rock .....	H. J. Shints .....	12	58	18, 24	0	24.2	2.30
Mosinee .....	Marathon .....	John O'Donoghue .....	12	36	3, 18	—13	13.5	3.51
Baraboo .....	Sauk .....	M. C. Waite .....	12	46	18	— 2	20.5	6.13
New Lisbon .....	Juneau .....	J. L. Dungan .....	1	47	25	—12	20.6	.....
Tunnel City .....	Monroe .....	Rev. George Pegler .....	1, 10, 11	44	18	—12	17.2	2.45
Bayfield .....	Bayfield .....	Andrew Tate .....	10	36	18	—10	12.3	.....
MINNESOTA.								
Beaver Bay .....	Lake .....	C. Wieland .....	1, 2, 15	43	22, 28	—16	21.9	4.80
St. Paul .....	Ramsey .....	Rev. A. B. Paterson .....	1	40	18	—15	13.7	1.11
Minneapolis .....	Hennepin .....	William Cheney .....	1	39	18	—23	11.3	1.63
Leech Lake .....	Cass .....	H. McMahon, M. D. ....	10	26	3	—20	5.67	.....
Sibley .....	Sibley .....	C. W. & C. E. Woodbury ..	10	43	18	—18	11.6	0.45
Litchfield .....	Meeker .....	H. L. Wadsworth .....	10	40	18	—13	11.6	0.90
New Ulm .....	Brown .....	Charles Roos .....	1, 10	44	17	—12	12.7	0.58
IOWA.								
Dubuque .....	Dubuque .....	Asa Horr, M. D. ....	11	52	18	— 2	23.3	0.94
Monticello .....	Jones .....	Rufus P. Smith .....	11	51	18	— 6	22.0	1.23
Durant .....	Cedar .....	F. A. Ross .....	12	61	18	— 6	24.7	1.00
Bowen's Prairie .....	Muscatine .....	Samuel Woodworth .....	11	56	18	— 6	21.3	0.60
Fort Madison .....	Lee .....	Daniel McCreedy .....	12	65	18	—10	27.0	5.37
Guttenberg .....	Clayton .....	J. P. Dickerson .....	1	44	24	— 4	19.1	.....
Mount Vernon .....	Linn .....	Prof. A. Collins .....	11	53	18	— 6	22.8	.....
Iowa City .....	Johnson .....	Prof. T. S. Parvin .....	11	61	18	—10	22.1	1.51
Independence .....	Buchanan .....	George Warne, M. D. ....	1, 11	45	18	— 9	19.6	1.20
Near do .....	do .....	Mrs. D. B. Wheaton .....	11	50	18	—10	18.8	0.80
Rockford .....	Floyd .....	H. Wade .....	10	51	18	—11	19.7	1.05
Algona .....	Kossuth .....	James H. Warren .....	10	48	17	—12	15.0	0.40
Webster City .....	Hamilton .....	Clayton I. Croft .....	10	50	17	—10	19.2	.....
Boonesboro' .....	Boone .....	E. Babcock .....	10	50	18	—10	18.3	0.60
Fontanelle .....	Adair .....	A. F. Bryant .....	10	56	18	— 9	22.2	0.63
Grant City .....	Sac .....	Mr. and Mrs. E. Miller .....	1	52	13, 18	—12	18.3	1.05
Sac City .....	do .....	D. B. Nelson .....	10	51	18	— 8	18.3	3.10
Logan .....	Harrison .....	Jacob T. Stern .....	7, 10	50	13, 18	— 8	22.2	0.60
Woodbine .....	do .....	D. R. Witter .....	1	56	12	—14	19.9	0.41
MISSOURI.								
St. Louis .....	St. Louis .....	Rev. F. H. Stuntebeck .....	11, 12	65	12	8	34.8	1.75
Allenton .....	do .....	A. Fendler, M. D. ....	11	71	16	4	34.3	4.26
Hematite .....	Jefferson .....	John M. Smith .....	11, 12	70	15	11	38.9	4.31
Hannibal .....	Marion .....	F. J. Hearne .....	11	66	18	— 2	30.2	3.80
Rolla .....	Phelps .....	Homer Ruggles .....	11	70	16	— 1	34.9	3.23
Jefferson City .....	Cole .....	N. de Wyl .....	12	70	18	3	33.7	.....
Willard .....	Greene .....	R. H. McCord .....	11	69	16	— 4	32.5	4.65
Kansas City .....	Jackson .....	S. W. Salisbury .....	11	64	13	— 3	29.3	1.75
Oregon .....	Holt .....	Wm. Kaucher .....	10	62	18	— 8	26.7	1.27
Corning .....	do .....	Horace Martin .....	10	64	18	—10	25.4	0.98
KANSAS.								
Atchison .....	Atchison .....	Dr. H. B. & Miss Horn .....	10	64	18	— 9	27.6	1.10
Williamsburg .....	Jefferson .....	John M. Cotton .....	11	67	27	— 4	28.2	1.48
Leavenworth .....	Leavenworth .....	Dr. J. Stayman .....	11	67	18	— 8	28.0	2.47
Olathe .....	Johnson .....	Watts Beckwith .....	11	66	13	— 2	28.2	1.1

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum tem- perature.	Date.	Minimum tem- perature.	Mean tempera- ture.	Rain and melted snow.
KANSAS—Continued.								
Paola	Miami	L. D. Walrad	11	69	18	-4	30.2	1.25
Baxter Springs	Cherokee	Ingraham & Hayland	11	68	16	-2	33.6	3.90
Lawrence	Douglass	Prof. F. H. Snow	11	68	18, 27	-5	28.9	1.11
Holton	Jackson	Dr. James Watters	10	62	13	-7	27.0	1.00
Burlingame	Osage	R. M. Hoskisson	10	66	13, 18	-6	33.0	.....
Le Roy	Coffey	J. G. Shoemaker	11	72	13	-3	32.3	1.17
Burlington	do	John D. Parker			18	-2		
State Agr'l Colloge.	Riley	Prof. B. F. Mudge	10	62	18	-7	28.8	0.53
Council Grove	Morris	A. Woodworth, M. D.	10	68	18	-3	30.5	1.20
Girard	Crawford	Percy Daniels	11	70	13	0	32.3	2.75
NEBRASKA.								
Omaha Agency	Blackbird	Rev. Wm. Hamilton	4	56	13, 17	-5	24.0	0.23
De Soto	Washington	Charles Seltz	7	54	14	-9	21.8	0.54
Bellevue	Sarpy	Mrs. E. Caldwell	7	63	18	-10	25.2	0.65
Nebraska City	Otoe	Professor P. Zahner	1, 10	57	13	-8	23.7	1.00
New Castle	Dixon	Louis H. Smith	10	65	16	-10	20.3	.....
UTAH TER.								
Salt Lake City	Salt Lake	W. W. Phelps	10	60	13	10	33.2	.....
Camp Douglas	Summit	A. C. Ford	9	58	13, 14	10	31.5	2.18
Coalville	do	Thomas Bullock	9	54	13	-17	24.9	1.00
CALIFORNIA.								
Monterey	Monterey	C. A. Canfield, M. D.	3	73	12	31	50.0	5.46
Watsonville	Santa Cruz	A. J. Compton	3	79	12	28	56.1	4.92
Cahto	Mendocino	A. W. Thornton, M. D.	25	64	12	30	49.4	10.50
Visalia	Tulare	James W. Blake	9	68	12	25	44.9	0.92
Taylorsville	Plumas	Mary E. Pulsifer	31	56	12	8	39.6	.....
MONTANA TER.								
Deer Lodge City	Deer Lodge	Granville Stuart	9	58	12	-8	30.0	0.46
Missoula	Missoula	Jas. M. Minnesinger	4, 8	52	2, 11, 12	12	34.9	0.76
COLORADO TER.								
Denver	Arapahoe	Byers & Sopris	9	67	12	6	34.3	0.46

## NOTES OF THE WEATHER FOR JANUARY, 1871.

*Houlton, Me.*—Snow two feet deep; sleighing good all the month; cold unusually severe, with high winds.

*Gardiner, Me.*—Month cold and dry, nearly  $2.5^{\circ}$  colder than average of thirty-five years, (18.138 $^{\circ}$ .) Total snow this season, 41 inches.

*West Waterville, Me.*—Mean temperature  $0.46^{\circ}$  above January average of eight years. Snow-fall of the month, 15.5 inches; now 12 inches in woods.

*Oxford, Me.*—First good sleighing 2d; coldest day in three years, 23d. Ponds and streams very low; even some deep wells have failed.

*Cornishville, Me.*—Average January heat for forty years  $17^{\circ}$ ; this year 18.41 $^{\circ}$ .

*Antrim, N. H.*—Little snow; unusually cold, but with three thaws this month.

*Stratford, N. H.*—Drought; some wells frozen; others dry since August.

*Whitefield, N. H.*—Pond ice 14 inches thick; a cake 22 inches square and 9.5 inches thick weighed 232 pounds. But little snow has fallen.

*Goffstown Center, N. H.*—The 23d was  $11^{\circ}$  colder than any day last winter. Many wells yet dry, and drought still severe.

*Contocookville, N. H.*—Sleighing 4th, wheeling again 14th; aurora 13th; month about average temperature, but below zero on nine days.

*Lunenburg, Vt.*—Mild January except one week; little sleighing.

*South Troy, Vt.*—Auroras 3d, 6th, 10th, 13th, 19th, 23d.

*Woodstock, Vt.*—Drought continues; melting snow for family use.

*Randolph, Vt.*—The driest January in six years.

*Kingston, Mass.*—Mean heat  $6^{\circ}$  degrees lower than in 1870. Drought continues.

*New Bedford, Mass.*—Harbor open all season; very little good sleighing.

*Lunenburg, Mass.*—But little sleighing now; 3 inches snow 31st.

*Amherst, Mass.*—First sleighing 27th; gone 31st.

*Middletown, Ct.*—Faint aurora 13th; heavy snow-storm all day, with the thermometer below and at zero till 5 p. m.

*Southington, Ct.*—Streams low or dry again; suffering for water.

*Garrison's, N. Y.*—Streams and springs remain low; river closed since 20th.

*Brooklyn, N. Y.*—Heaviest snow-storm of season; changed to sleet 26th.

*South Trenton, N. Y.*—First thunder 19th. Coldest January for years.

*Newburgh, N. Y.*—River closed 9th; boys skating 10th; river open 13th; closed 23d.

*Depauville, N. Y.*—Thermometer fell from  $24^{\circ}$  to  $8^{\circ}$  in six hours 21st, 22d; coldest day since January 10th, 1859, 23d; from 22d to 26th, (five days,) the mean was  $8^{\circ}$ ; coldest spell on my record for twenty-five years; on fourteen mornings it was near or below zero.

*North Volney, N. Y.*—Mean heat  $6.87^{\circ}$  below last January, and  $5.80^{\circ}$  below January, 1869. Rain or snow fell on twenty-three days.

*Buffalo, N. Y.*—Mean temperature same as for thirteen Januaries, with 11 inches less snow. Snow all gone 30th; rain 30th, 31st.

*Newark, N. J.*—January in 1870,  $7^{\circ}$  above, and in 1871,  $2.4^{\circ}$  below the average of twenty-seven Januaries. Snow-fall on 26th, 6.5 inches; for the month, 16 inches.

*Moorestown, N. J.*—Plowing ground in order 12th to 17th. Wells, &c., very low.

*New Germantown, N. J.*—Auroras 13th, 16th; snow 12 inches 26th.

*Greenwich, N. J.*—First and last ten days cold; middle genial; shad blossom and Shepherd's purse in blossom on 6th; sleighing on four days.

*Vineland, N. J.*—Month severer than usual; some good sleighing.

*Dyberry, Pa.*—Wheeling till 22d; first good sleighing 30th. Drought.

*Fallsington, Pa.*—Delaware closed, second time, 16th; snow-storm 26th.

*Philadelphia, Pa.*—Snow nearly all day 8th, 23d; heavy snow-storm, 10 inches, 26th, and 3 inches 28th, 29th.

*Factoryville, Pa.*—Aurora, with streamers, 13th. Snow-fall of the month 20 inches; ground frozen one foot; many wells yet dry.

*Reading, Pa.*—Winter not severe; sleighing good since 24th.

*Catawissa, Pa.*—Susquehanna opened 17th; closed again 26th.

*Ephrata, Pa.*—Aurora 13th; snow-storms all day 23d, 26th.

*Carlisle, Pa.*—Roads dusty 7th; snows all day 23d, 26th.

*Fountain Dale, Pa.*—Month 5.72° colder than in 1870, yet creeks open all month. Snow-fall 20.25 inches.

*Tioga, Pa.*—River opened 16th, closed again 26th; good sleighing since 24th.

*Grampian Hills, Pa.*—Snow 23d, 6 inches; 26th, 6.5 inches; 28th, 4.5 inches; rain 31st. Cold spells 7th to 10th and 22d to 26th, inclusive.

*Connellsville, Pa.*—Severe storm, sleet, then freezing rain 25th, 26th.

*Franklin, Pa.*—Rain all day 15th, then snow 7 a. m. to 1 p. m. of 16th; moderate snow 23d; a few flakes 27th, a. m.; snow-fall 19.75 inches.

*Beaver, Pa.*—More snow and sleighing than for five years.

*Pittsburg, Pa.*—Fine snow an hour 23d, all night 25th, then misty rain, freezing as it fell, to 3 p. m. 26th. A cool winter month.

*Brownsville, Pa.*—A fine winter month; river opened 17th.

*Woodlawn, Md.*—Aurora 13th; Susquehanna opened 18th; closed again 22d, and remains closed 31st.

*Fallston, Md.*—Unusually cold snow-storms 23d, 26th.

*Emmitsburg, Md.*—Snow 8th, 23d, 28th; great snow-storm 25th, 26th.

*Johnsontown, Va.*—Cedar and "preacher" birds 12th; chicopee bird 25th; thunder shower 16th; rained all day 26th; hail 25th, 27th.

*Hampton, Va.*—Lightning 31st; month 7° colder than in 1870; first half no rain or snow; last week wet; five stormy days, seven wholly clear.

*Piedmont, Va.*—Birds singing 13th; robins 14th. Snow in month, 8 inches.

*Accotink, Va.*—Hail all day 26th. Snow in month 10 inches.

*Wytheville, Va.*—Very little snow; ground hard frozen till recently.

*Albemarle, N. C.*—First rain this year, a thunder-shower, 15th. A dry, cold month; no snow; farmers plowed bottom lands.

*Govdeysville, S. C.*—Fine month for farmers; first frog 31st.

*Carlowville, Ala.*—Thunder-storms 30th, 31st, with heavy wind 26th.

*Moulton, Ala.*—Generally mild and pleasant; rains near the close.

*Rockville, Ala.*—Impending rains induced the frogs to sing, 24th.

*Jacksonville, Fla.*—Orange trees, injured last month, renewing their foliage, and promise crops this year. Thunder-showers; spring weather, and vegetation coming forward.

*Houston, Tex.*—Auroras 7th, 19th, 29th; ponds frozen 14th, 15th.

*Oakland, Tex.*—An inch of sleet 13th; prairie wild flower seen 29th.

*New Orleans, La.*—Continuous thunder-storm, 6.9 inches rain, 25th, 26th.

*Ponchatoula, La.*—Thunder-storm all night 25th; soft-maple blossoms, 26th; thunder and very large hail with rain 30th; thunder-storm 31st.



*Elizabethton, Tenn.*—Month pleasant; blue birds here; plowing.

*Trenton, Tenn.*—Heavy rain with thunder and lightning 30th, p. m.

*La Grange, Tenn.*—Many smoky days; heavy thunder-showers 30th.

*Pine Grove, Ky.*—Sleet and rain 25th, 26th; month's snow and sleet, 3 inches.

*Shelby City, Ky.*—Skating 1st to 10th; robbins 30th; very little snow.

*Martin's Ferry, Ohio.*—Ohio River opened 13th; song sparrows present nearly all the month; snow on six days, rain on one, sleet on one.

*Cleveland, Ohio.*—Average January temperature for sixteen years 26.73°, this year 29.56°; rain-fall 2.22 inches, this year 1.27 inches; snow-fall 12.5 inches, this year 12 inches.

*North Fairfield, Ohio.*—Snow, five inches, 8th; robbins and ravens 13th.

*Hillsboro, Ohio.*—Snow (3 inches) and sleet 25th; thunder and rain 31st.

*Bethel, Ohio.*—Bees flying 11th; great sleet, ice half an inch on twigs, cattle slip and fall, 26th; thunder-shower 31st.

*Urbana, Ohio.*—Snow gone, after twenty-five days, 11th; after seven days, 31st.

*Cincinnati, Ohio.*—Snow-storm, ending in heavy freezing rain, 25th, 26th; made excellent skating on the thick crust.

*College Hill, Ohio.*—Canals closed December 21st; Ohio River, 4th instant.

*Ann Arbor, Mich.*—Cold storm from west; fine freezing rain here 14th, 15th; ended in snow; the icy coating remained until near end of month.

*Litchfield, Mich.*—Cold rain 14th, 15th; iced and broke down trees and shrubbery, and buildings in some places. No fair day this month.

*Coldwater, Mich.*—Freezing rain 13th, 14th; ice remains 29th.

*Grand Rapids, Mich.*—Sleighting twenty-two days; ended 11th. Not severe yet.

*Northport, Mich.*—Mild winter and month; snow 8 to 12 inches deep; Lake Michigan clear of ice as in summer.

*Muskegon, Mich.*—Northeast snow-storm, two feet, severest in three years, 14th, 15th.

*Ontonagon, Mich.*—Every day cloudy; snow on nineteen days; snow-fall 50.5 inches.

*Fort Wayne, Ind.*—Auroras 12th, 18th, 20th; robbins, blue birds, 13th.

*Vevay, Ind.*—Lovely, mild to 5th; plowing; snow-drops 12th; red birds, wrens, 18th; northeast snow-storm, sleet, freezing rain, 25th, 26th.

*Mount Carmel, Ind.*—Pleasant winter; little snow and rain this month.

*Laconia, Ind.*—Heaviest damaging storm of sleet known here, 25th, 25th to 30th.

*Kentland, Ind.*—Very mild January; but fruit generally killed.

*Marengo, Ill.*—Warmest January day known here 12th; great snow-storm (about 13 inches) 13th to 15th; no rain or snow reported on 26th.

*Charleston, Ill.*—Blue birds 6th; freezing grain and sleet 13th to 16th; aurora 19th; snow (2.75 inches) sleet (ice crust  $\frac{1}{8}$  inch) 25th; thunder 30th.

*Belvidere, Ill.*—Freezing rain 13th; snow 14th to evening of 15th, badly drifted, stopping trains; snow 23d, with rain 30th, 31st; good sleighing.

*Tiskilwa, Ill.*—Snow, (about 18 inches, strong wind,) 13th to 15th.

*Dubois, Ill.*—Sleet storms all day 13th, 24th; month 3.53° warmer than average of six years.

*Galesburg, Ill.*—Snow 18 inches, drifted, 13th to 15th, then fine weather.

*Mount Sterling, Ill.*—Drifting snow-storm 13th to 15th; twenty-one days' sleighing.

*Milwaukee, Wis.*—Snow 13th to 15th; drifts 6 to 8 feet high.

*Baraboo, Wis.*—Mild month; good sleighing so far this winter.

*Minneapolis, Minn.*—Pleasant month; no severe cold or storms.

*Litchfield, Minn.*—Ground nearly bare till all-day snow of 23d.

*New Utm, Minn.*—Aurora 13th. Pleasant month, good sleighing.

*Guttenberg, Iowa.*—Little snow, no stormy winds, no rains, bad wheeling all winter. Cisterns dry since November, and creeks remain very low.

*Independence, Iowa.*—A mild month and mild winter.

*Rockford, Iowa.*—Snow (5 inches) 7th; rain, sleet, snow, 12th and 13th. A beautiful winter, just snow enough for good sleighing.

*Boonesboro, Iowa.*—Hail, snow, 12th, icy snow 13th. East of Mississippi a snow blockade, while for five hundred miles west only 2 or 3 inches.

*Fontanelle, Iowa.*—Mist 11th; sleet, snow, 12th; mist, snow, 19th; fog, rain, sleet, snow, 29th; first pewees, 24th.

*St. Louis, Mo.*—Hail all day 13th, then rain all day 14th, a little snow 15th. River closed December 24, opened on 11th instant.

*Hematite, Mo.*—Sleet ( $4\frac{1}{2}$  inches) 13th, then freezing rain all day 14th, icy crust rendering locomotion dangerous; renewed 25th.

*Oregon, Mo.*—Snow, sleet, snow, 12th; good sleighing to 20th.

*Paola, Kans.*—Spring birds and pleasant till the mist, hail, snow, high wind of 12th, then solid winter to 21st. Hard month for stock.

*Lawrence, Kans.*—Mercury  $3.5^{\circ}$  higher on 11th than ever known here in January; in 41 hours sunk  $72^{\circ}$ . Snow-fall 11 inches, 6 inches more than in any previous January.

*Holton, Kans.*—A dry, windy month; but little snow.

*Manhattan, Kans.*—Farmers plowing 10th and 11th, but ground frozen most of month.

*Council Grove, Kans.*—Fine, warm to 12th, wintry to 19th, thawing to 24th, then snow; snow gone 29th, snow 30th, beautiful day 31st.

*Camp Douglas, Utah Ter.*—Average increase of rain-fall for nine years 3.32 inches per year. Great Salt Lake has risen in that time 80 inches, yielding one-tenth less salt than twelve years ago.

*Deer Lodge City, Mont. Ter.*—The warmest January known here; average of three years  $14.3^{\circ}$ ; this year 30th no ice, snow, or sleighing in the valley.

*Missoula, Mont. Ter.*—Plowing between 17th and 25th.

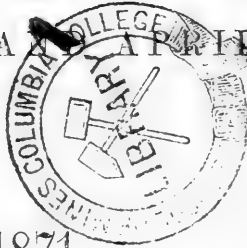
MONTHLY REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR

MARCH AND APRIL.



1871.

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WASHINGTON:  
GOVERNMENT PRINTING OFFICE  
1871.



## MONTHLY REPORT.

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DEPARTMENT OF AGRICULTURE, STATISTICAL DIVISION,  
*April 28, 1871.*

SIR: I present herewith, for publication, a summary of reports on the condition of winter grains, on the condition of farm animals, and on diseases of farm animals. Also a variety of extracts from the correspondence of the Department, and articles upon subjects as follows: Representation of Husbandry; Cinchona-planting in Jamaica; Cost and Profit of the Department of Agriculture; Agriculture and Climate of Oregon; Imports of 1870; Market Prices of Farm-Products; Prices of Middling Cotton for twenty years; English Short-horn Cattle Sales; Agriculture in Portugal; Agricultural Statistics of Great Britain; English Imports of Breadstuffs; British Revenue; Scientific Notes; Meteorology; together with a number of items from various sources.

J. R. DODGE, *Statistician.*

Hon. HORACE CAPRON,  
*Commissioner.*

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### CONDITION OF WINTER GRAIN.

The autumn season was generally favorable for germination and vigorous growth; the winter has been comparatively mild and uniform in temperature; the freezing weather mainly occurred in mid-winter, and found the wheat plants protected by a sufficient covering of snow; the spring has been unusually early, and the growth of grain advanced two to four weeks beyond its accustomed status. There is no State in which winter-killing is not exceptional, and in several it is almost entirely unknown. It may be that future reports, as the season progresses, will be less favorable; they certainly cannot be more flattering. In the following digest of the returns almost every unfavorable statement is presented.

*New England.*—In Maine there has been considerable loss from winter-killing, especially in the counties of Oxford, Piscataquis, and Cumberland, during the variable weather of February and March. Winter-grain looks well in York, and rye is in fine condition in Androscoggin.

The open winter and light covering of snow has left wheat and rye in unpromising condition in Hillsboro, Strafford, and Belknap, in New Hampshire; while Merrimack reports a prospect above the average, and the fields look well in Sullivan. There is little grown in Coos.

Vermont grains have suffered somewhat from open winter. The appearance presented in Windsor County is 40 per cent. below an average upon heavy soils, but very fair upon warm lands late sown.

Reports are quite favorable from Massachusetts and Connecticut,

except from Middlesex, in the latter State. No wheat is grown in Rhode Island, and, indeed, very little in New England.

*The Middle States.*—But three counties in New York, Onondaga, Schuyler, and Washington, report more winter-killing than last year. The warm autumn gave a strong growth in Western New York, and though the covering of snow was light the plants retained their vigor through the winter, and are in more than medium condition. The counties reporting "very good," are Tioga, Westchester, Seneca, Steuben, and Columbia, while Jefferson estimates her area "20 per cent. better than last spring." Three-fourths of the returns indicate merely an average prospect. In Chautauqua the crop is promising, what there is left of it after the autumn's work of the Hessian fly. In Onondaga the plant was small in the highlands in the autumn, and weak and unthrifty in the spring, but looks well in the richest and best-tilled fields.

Of fifteen counties reporting in New Jersey, none present discouraging accounts, but three limit the prospect to an average, two estimate an advantage of ten per cent., three of 20 per cent., and one of 25, while others return the crop "better than for years;" "looking remarkably well;" and in Burlington one correspondent makes it "the strongest and thickest stand he has ever seen."

Forty counties in Pennsylvania send returns, of which only those from Tioga and Union represent an inferior prospect, and fully three-fourths report a more than average luxuriance. It is stated of Cumberland that "there are no poor fields and wheat could not look better;" it is "remarkably fine" in Indiana, "though the fly has destroyed parts of fields;" "the fields of Lehigh present a finer appearance than for thirty years," due in part to the fine weather and absence of cold winds in March; wheat in Beaver is "quite promising, especially the drilled fields, and those injured by the fly have recuperated and may yield well." It is stated in the latter returns that a few fields, on which straw and long manure were spread, were completely destroyed by the mice, which were so abundant that pastures were injured by them.

Wheat and rye look well in Delaware. Every return from Maryland is favorable in comparison with last year. The crop is generally more advanced than usual, and in Washington County it "never before, within the recollection of the oldest inhabitants, had so promising a look."

Of thirty-six returns in Virginia, three (Montgomery, Northumberland, and Dinwiddie) are less favorable than usual; seventeen show great improvement, and the remainder report a medium appearance.

North Carolina makes forty-two favorable returns, while those from Chatham and Haywood declare winter grain "more backward than usual," though in the latter, rye is fine. York, Lexington, and Orangeburg, in South Carolina, do not represent their crops as promising, but the other counties make a favorable report.

Wheat was winter-killed in Morgan County, and is poor in Bartow, Newton, and Pike, but looks well in thirty-six counties reported, and very finely in twelve.

In Lee, Alabama, wheat is very inferior; elsewhere it is generally good, though in some sections the early sown looks much better than the late, which is small, but of good color and a good stand.

A very small area of wheat or rye is sown in Mississippi or Louisiana, except in the latter for winter pasture. Wheat presents a uniformly promising appearance.

The counties in Texas in which the appearance of wheat is poor, are McLennan, Red River, Medina, (greatly injured by drought,) and Ban-

dera; many counties report little sown; the prospect is good in Fayette, Lampasas, Falls, Bexar, Bell, and Anderson, and very promising in Dallas, Fannin, Gillespie, Lamar, Travis, Collin, Grayson, Atascosa, and Kerr.

Winter grain is unpromising in Johnson, Arkansas; "late and backward" in Columbia; better than our correspondent ever saw it in Newton; 50 per cent. better than last year in Benton, and is doing well in three counties.

Wheat was greatly injured by the cold in Davidson, Tennessee, but all other returns are favorable. The season, according to the Giles correspondent, is a month earlier than last year.

Twenty-six counties in West Virginia send reports, all of a promising tenor, several representing winter crops "better than for several years."

Thirty-six counties of Kentucky make favorable returns, and in two, Butler and Christian, wheat has suffered from an open winter. It is two to four weeks earlier than usual.

Full returns from Missouri, fifty-six counties being represented, are unanimous (with the single exception of Clay, in which protracted rains have been injurious) in presenting a very promising appearance of winter grain, and much the larger portion represent the prospect as very flattering. In Shelby, "better than for thirty-five years;" in La Fayette, "better than for fifteen years;" in St. Louis, "better than ever known here;" in Mann, "never better in the history of the State."

Not a county in Illinois reports a poor appearance of winter wheat or rye. It is said of the area in St. Clair that while very promising apparently, "some of it looks yellow, perhaps the result of overcropping and exhaustion of the soil, or perhaps the fly;" in Randolph it is claimed to be 25 per cent. better than at the same date within thirty years;" in Monroe and in Williamson it "has not looked better in thirty years;" in Putnam a similar comparison is made for a period of twenty years; "never appeared better" in Cass, in Knox, or in Madison; "has afforded pasture all winter," in Jersey; "one month earlier than last year," in Clinton; in fact, scarcely a county presents a moderate statement. All circumstances have favored the crop. The fall was characterized by warm rains, the winter brought no freezing till January, when the ground was covered with snow, and since the snow went off only the surface has been slightly frozen. The Cook County correspondent reports no wheat sown in the following crisp terms; "We have long since ceased to speculate in winter wheat and rye, as it is easily shown that every dollar we ever made in winter grain cost us sixteen shillings." The report from Pope is as follows: "Winter wheat looks better than I have ever seen it at this season. There has been no frost to keep the wheat back, since early in February, and the ground has been wet all the time. Wheat is too rank in the top, and I fear there is not root deep enough to sustain the stalk and enable the head to fill with good plump grain, during the dry weather which we usually have before harvest. Rye is in the same condition, looks very well, and I believe will not suffer from a drought in filling as much as will wheat."

Of fifty-two counties reporting in Indiana, none represent winter grain in poor condition, and but five indicate a mere "average" prospect, while more than a third state that the appearance of such crops was never excelled at the same season. In one-fourth of the number represented no rye was sown.

There is some complaint of the ravages of the Hessian fly, in Hancock and Lucas, Ohio, and in Lake County the promise is not as good as usual; in twenty-six counties a condition above an average is reported,

in seven the winter grain looks better than for several years, and in fourteen it "never looked better." Twelve counties do not report rye.

Very general returns from Michigan represent winter grains in superior condition, eleven only giving an average promise, and none lower than average.

In Wisconsin there was some injury in the more northern counties from freezing, six reporting low condition, but the larger number represent the crop as better than usual. But twenty-six counties report winter wheat.

Very little winter grain is grown in Minnesota. Five counties report wheat looking well, and two make unfavorable returns. In a large number winter rye is grown, and is generally looking well.

Less than a tenth of the wheat of Iowa is the winter variety. Only sixteen counties report it, all favorably.

In Kansas the returns from thirty-one counties represent the range of condition of winter grain from "good" to "the finest known," and "an immense yield is expected."

Nebraska is a spring-wheat region, but the winter variety "looks well, what there is of it."

The reports from California are more variable. In Alameda "wheat and other grains do not promise an abundant crop;" in Stanislaus it is "50 per cent. worse than usual, owing to cold, dry weather;" in San Joaquin it was represented that crops would be an almost total failure unless spring rains were enjoyed; an average condition is reported in Santa Clara and Tuolumne; an improvement upon last year is indicated in Napa and San Bernardino; and in Lake and Mendocino all winter crops are in excellent condition.

Accounts are favorable from Oregon, except in Josephine County. Where winter crops are grown in Nevada and the Territories, they are reported in good condition almost without exception.

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## CONDITION OF FARM ANIMALS.

A little foresight, directing the way to judicious management, will often remedy the deficiencies of production. Thus the comparatively short crop of hay of last season, which was seriously light in the East and in portions of the West, led to the husbanding of immense quantities of corn-fodder, and to the utilizing of masses of straw for feeding purposes, so that the animals of the farm, consigned by the timid and the croaking to semi-starvation or the knife, have come forth from their winter quarters in higher flesh and better health than for several years past. It is true that, in sections in which scarcity was most apparent, beesves were sent to the shambles in larger numbers and lighter condition than usual; but the relief came mainly from care in feeding, avoidance of waste, and the use of coarse feeding material, so abundant at all times, and generally so little utilized. Some credit should be given, however, to providential mildness of the winter, which reduced the consumption of fodder, and in some northern latitudes permitted an unaccustomed bite of grass. The past season has furnished new evidences of the capacity of this country as a meat-producer, and the extent of its feeding resources ordinarily wasted; especially has it illustrated the surpassing value of our corn crop.

The returns relative to condition of farm animals bear a remarkable



uniformity in their exemption from croaking and depressing views; and while they exhibit great variety in description of the status of domestic animals, nine-tenths of them indicate a state of health and vigor varying from medium to highest; and care has been taken, in the following digest, to present all the unfavorable statements made.

#### CONDITION OF CATTLE.

In ten counties in Maine cattle are reported in "average" or "good" condition; in Somerset they "came to the barn poor last fall; hay was scarce, and they are therefore thin in flesh."

In all counties reporting in New Hampshire, condition ranges from "fair," "good," "better than common," up to "remarkably fine" in Hillsboro County, where hay was of fine quality, and in consequence of a short crop more grain and attention than usual were bestowed.

Cattle have wintered unusually well in Vermont, no unfavorable report being received. The report from Grand Isle is, "the best I ever knew." The correspondent in Orleans County reports as follows:

Twenty or more years ago cattle were fed very poorly in this region. I have seen cattle driven to the woods in winter to eat the twigs of birch, hemlock, and other trees felled for them to browse upon. I have seen cows so poor that it was necessary to help them up; and it was no disgrace to have two or three that had to be thus aided by lifting at the tail. Now most of the cattle in this county are wintered in stables made so snug that the temperature is raised by animal heat several degrees above freezing, even when the thermometer is at zero or lower. The hay is also of fine quality, and cut earlier than formerly. More grain is fed and less straw; and now it is quite common to have cattle gain in flesh through the winter, and dairy cows are strong and vigorous, and come in in March or April, and are capable of giving a good flow of rich milk. Several herds in the county yielded over two hundred pounds of butter to each cow last year.

The reports from Massachusetts are, "good," "very good," and "never better." Similar statements are made from Rhode Island and Connecticut, except in Fairfield, in the latter State, and Providence, in the former, where cattle are not in as high condition as usual, though healthier.

In New York the counties reporting "good condition" are Broome, Ulster, Oneida, Clinton, Greene, Cattaraugus, Steuben, Suffolk, Schenectady, Fulton, Saratoga, Wyoming, Rockland, Albany, Chenango, Ontario, Jefferson, Onondaga, Franklin, Columbia, Allegany, Dutchess, Seneca, Washington, and Warren; "above an average," Madison, Otsego, Schuylcr. Our correspondent in Warren writes that hay has been high and scarce, but has been freely used, to the great benefit of the stock. He estimates as follows the value of a condimental feed of grain occasionally:

I calculate a bushel of oats, 80 cents, helps a horse as much as a hundred of hay, which costs a dollar; and a bushel of corn ground in the ear, at \$1 25, is equal to two hundred of hay.

The mild weather of the past winter has been extremely favorable to the health and growth of cattle in New Jersey, Ocean County presenting the only report of inferior condition. Delaware makes an equally favorable return.

Pennsylvania reports as follows: "Not so good as usual, owing to scarcity" of feed last fall, in Wyoming County; "good condition when properly cared for," in Beaver; "excellent," with some exceptions, in Berks; "poor," not having recovered from effects of drought last fall," in Susquehanna; "good" in Bradford, Somerset, Washington, Perry, Clinton, Adams, Warren, Montgomery, Union, Juniata, Greene, Chester; "average," Elk, Westmorland; "better than average," Cambria, Franklin, Cumberland, (better than for many years,) Dauphin, Delaware,

Lawrence, Lebanon, Tioga, Fulton, Erie, Clearfield, Crawford, Fayette; "very good" in Cambria, York, Armstrong, Sullivan; and in Butler "remarkably good, the late fall pasture, with abundance of corn and fodder, compensating for inferior quality of hay."

In Baltimore County, Maryland, "cattle are looking thin;" "where proper treatment has been bestowed they wintered well" in Howard; in other counties the reports are all favorable, some of them in a marked degree.

In Virginia, cattle are represented in poor condition in Princess Anne, Northumberland, Stafford, Scott, and in the part of Nelson injured by the flood in the James; about as usual in York, "always poor;" and from "fair" to "fine" in thirty-one other counties reported.

The only counties reporting unfavorably in North Carolina are Sampson, Union, Bladen, and Orange, while forty-one return "better than usual," "in average condition," "remarkably good," or equivalent terms.

South Carolina presents an equally favorable report, except in Martin and Newberry.

Fifty-four counties of Georgia send returns. In McDuffie "a worse condition than for ten years" is reported; "poor" in Baldwin, Terrill, Mason, Heard, and Decatur; "better than for ten years" in Colquitt; "better than at any time since 1860" in Walton; "in unusually fine condition" in Richmond; "in excellent condition" in Towns, Jackson, Schley, Bristow, Clinch, Charlton, Chattanooga, Fulton; and in the remaining thirty-seven counties a condition up to or above an average. Throughout Florida the reports are favorable without exception.

In Butler, Alabama, the record is "poor," but as good as usual in the spring; "poor" in Marengo; as good as usual in Lawrence, Dallas, Tallapoosa, Greene, Lee, Marshall, Clarke, Etowah, Morgan; better than usual in Jefferson and Randolph; very good in DeKalb, Montgomery, Calhoun, and Clay.

In Newton, Mississippi, "some that have been on the range all winter are now fat enough for beef;" in Wilkinson, Winston, Clark, and Carroll, they are poorer than last spring; all other counties report "average," "better than usual," or "very good."

In Louisiana, cattle wintering in canebrakes come out fat. The winter has been favorable, and stock are generally in comparatively fine order. Only one parish, Washington, presents an unfavorable report.

The returns from Texas are quite variable. In Dallas County the winter has been severe on the unfed and unprotected stock, and one-fifth have died; in Uvalde unusually poor; 20 per cent. below average in Bandera; poor in Leon, Milam, Smith, Red River; very poor in Forsythe, Galveston, Washington, and Burleson; poorer than for several years in Refugio, where many have died; in Williamson thinner than usual, but fattening fast; in Kendall, "those that took to the hills and distant grazing grounds are in fine condition, while those in the home ranches are thin;" in Bell, "cattle four years old or upward are in good condition, but old cows and young stock are poor;" in Wharton they have "come out of the bottoms sleek and fat;" in Nueces, the grass starting early, cattle recuperated rapidly, and are selling at \$20 to \$21 each, to fill up immense droves starting for Kansas; in Rusk, Harris, Lampasas, McLennan, Gillespie, and Gonzales, an average is reported; in Lamar, Bee, Lavaca, Bexar, Maverick, Atascosa, Hays, De Witt, Victoria, Austin, Anderson, Fannin, good condition; and in Collin, Hardin, Titus, Travis, fat enough for beef; Matagorda, Falls, Burnet, "very good;" in Blanco "50 per cent. above an average."

Newton County, in Arkansas, makes unfavorable returns of protracted cold weather and weak and feeble cattle; Columbia reports a wet spring and thin stock; Arkansas, early grass and steady improvement in condition; while Monroe, Sebastian, Benton, Clark, Cross, Johnson, Pulaski, and Prairie represent farm animals in fair condition; and Washington, Van Buren, Montgomery, Independence, and Jackson in fine order.

Twenty-four counties in Tennessee report favorably, without exception, in various degrees of thrift, as a result, in part, of a mild winter, though reference is made in Sumner County to "better provision in the way of shelter."

Of twenty-seven counties reporting in West Virginia, only two make unfavorable returns—Wayne, "for want of attention," and Brooke, "for want of roots"—the others representing the condition of stock as "fair," "very good," "better than for years," and "never better."

Reports from thirty-three counties of Kentucky include but one account of poor cattle, (from Gallatin,) owing to the destruction of grass by drought last autumn, while two-thirds of them describe farm-stock as in high condition for the season of the year.

In Missouri, cattle are reported poor in Franklin, Phelps, Vernon, and Washington, from scarcity of food or want of protection; and in average or excellent health and flesh in other counties. Plenty of feed and mild weather are assigned as causes of this favorable state of things.

In Illinois only one county, Marshall, reports cattle in poor condition, as a result of last season's drought and short forage crops; "average," Bureau, Boone, Lawrence, White, Winnebago; "good," Macon, Mercer, Pulaski, Williamson, Logan, Livingston, Stephenson, Menard, Henderson, Sangamon, Washington; "very good," Grundy, Cumberland, De Kalb, (better sheltered than usual,) Jersey, Pike, Stark, Warren, Scott, (never better,) Champaign, (50 per cent. better than common,) Clinton, Effingham, McDonough, Pope, Putnam, Tazewell, Cook, Hancock, Massac, McHenry, Peoria, Randolph, Schuyler, Morgan, Alexander, Cass, Ford, Kankakee. In Winnebago "the finest winter and March in twenty-five years" is reported, and the following statement is made by the Boone correspondent:

Cattle have come out of winter quarters in full average condition, owing to the following causes: 1st. Good pasture last fall. 2d. Weather open till 15th December, giving time to feed standing corn-stalks. 3d. Moderate, even winter. 4th. The unusual amount of corn-stalks cut up and housed for winter use. Probably more stalks were saved last fall than during the entire preceding time since the county was settled, (since 1836.) 5th. Farmers, fearing a scarcity of feed, sold an unusual amount of stock in the fall, so the remainder fared better. 6th. The excellent quality of the hay, though the quantity was very limited indeed, not being more than 33 per cent. of an average, many farmers cutting none at all. 7th. Straw fed instead of being burned. Probably one-half of all straw is burned in the field. This year it has been fed, thus adding to the manure heap. 8th. An economical use of all fodder.

Of fifty-two counties reporting in Indiana, eleven represent the condition of farm stock as good, fifteen as excellent, one as "best in twelve years," one as "best in twenty years," three as "never better," fifteen others as above an average, four "average," and two below an average.

In Vinton County, Ohio, cattle are "looking poorer than for years before;" in Montgomery they appear in "not quite average" condition; in Hancock, thinner than usual in consequence of drought; Hamilton, Madison, Auglaize, Butler, Fairfield, Greene, Ross, Wayne, Warren, Carroll, Holmes, Brown, report "good condition;" while those reporting "fine," "excellent," "unusually good," and equivalent terms, are Noble,

Shelby, Williams, Athens, Tuscarawas, Perry, Clark, (never better,) Erie, Fayette, (better than for ten years,) Henry, Highland, Jackson, Jefferson, Morgan, Morrow, Seneca, Columbiana, Geauga, Lucas, Mahoning, Crawford, Putnam, Richland, Franklin, Stark, Hardin, Marion, Summit. "Fine," Mercer, Lake, Medina, Miami, Miami, Hocking, Union, Wyandot, Champaign, Licking, Logan, and Lorain. Fifty-six counties make specific returns on this point.

Twenty-six counties in Michigan make returns concerning the condition of farm animals, of which eighteen are marked "good," as follows: St. Joseph, Genesee, Van Buren, Tuscola, Alpena, Lapeer, Gratiot, Kalamazoo, Jackson, Berrien, Sanilac, Hillsdale, Montcalm, Monroe, Oakland, Shiawassee, Antrim, Emmett. Cass, Barry, Lenawee, and Washtenaw, report "excellent," and the return from Calhoun is, "strong and healthy."

In Wisconsin twenty-three counties report cattle in good condition, and fourteen returns are still more favorable. No unfavorable returns have been received. In Iowa County, "the winter just closed has been the best for stock of all kinds for many years, being very mild and dry, with a very little snow, requiring less feed this winter than for a long time. They have been able to browse in the woods and prairie."

Of twenty-five counties in Minnesota reporting, but two present evidence of poor condition, ten use the descriptive term "good," and thirteen use adjectives of higher import.

One county in Iowa, Jefferson, returns cattle "thin," owing to a short crop of hay, while fifty-four make favorable returns, fourteen representing the condition as "good," the others characterizing the status of cattle by the words "excellent," "splendid," "never better," "fat enough for beef," (Decatur,) and "better than for many years."

Thirty-three counties in Kansas show a condition almost identical with that of Iowa, all presenting favorable returns, the only modifying statements relating to isolated cases of neglected animals. "Fat and fine" is the return from Crawford; and in Shawnee and Coffey cattle have wintered better than for many years. Washington, Montgomery, Osage, Ottawa, Linn, Jackson, Franklin, Miami, and Nemaha are among those presenting the strongest statements.

Nebraska, fifteen counties reporting, makes returns equally favorable.

California returns are of variable import. In Tuolumne, cattle are in "poor condition, owing to poor pasturage;" in San Joaquin, "poor, because of little rain, unusually cold weather, and poor grass;" in Stanislaus, the loss has been five to ten per cent., owing to severe weather; in Alameda, poorer than usual, from lateness of the spring; in Lake, poor, from cold and open winter; in Napa, five per cent. below average; in Los Angeles and Santa Clara, "fine;" in San Bernardino, "very fair, considering drought last year, and scarcity of winter rain;" and in Mendocino "better than at any former period since the settlement of the county."

In Oregon, returns are generally favorable, yet Douglas reports the condition of stock as the worst in nine years.

The returns from the Territories are remarkably favorable, as far as received.

#### CONDITION OF SHEEP.

Sheep have come from the barn in New England in comparatively good condition. A few exceptions may be noted: Hancock County, Maine, many ewes losing their lambs; Rockingham, New Hampshire;

Dukes, Massachusetts. Frequent mention is made of the fact that farmers find care and feed to pay them better than neglect.

The only reports of bad condition in New York come from Chautauqua, Seneca, and Franklin; in Pennsylvania, from Washington. All other sections of the Middle States report fair or superior condition.

Accounts from Maryland are uniformly favorable, and from thirty-two counties in Virginia a like unanimity is only lost by a slight depreciation in Albemarle. All but three of the forty-four reports from North Carolina illustrate the good condition of sheep, which ranges from "fair" to "fine;" the exceptions are from Union, Stokes, and Person. All returns from South Carolina are favorable. Of fifty counties of Georgia reporting, only Morgan, Clayton, and Baldwin return bad condition; and the same favorable state of things exists through the South, the only exceptions being in Marengo and Etowah, in Alabama; Yazoo, in Mississippi; Dallas, (from severe exposure,) Burleson, (very poor,) Galveston, Kendall, in Texas; Newton, Arkansas, (feeble for want of care.)

Our extensive correspondence in the Western States includes only the following counties in which sheep are not at least in average condition: Wayne, in West Virginia, (from lack of attention;) McCracken, (from want of proper protection,) Butler (poor but healthy,) in Kentucky; Iron, Putnam, Phelps, (from cold storms,) and Henry, Missouri; Bureau and Marshall, in Illinois; Wayne, Marion, (not many alive, owing to disease,) in Iowa; Atchison, in Kansas; La Fayette and Outagamie, in Wisconsin; and Ramsey, in Minnesota. Ohio, Indiana, and Michigan make no return of sheep in inferior condition, and a majority of the reports are very favorable.

In Lake County, California, "many lambs and ewes died from backwardness of grass;" "losses from insufficient feed" are reported in Alameda; in Stanislaus, the severity of the winter has wrought injury; in Tuolumne, sheep are poor, owing to lack of pasture; in Napa, inferior in condition.

The only unfavorable return from Oregon is from Douglas County. The Territories present their flocks in fine condition almost without exception.

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## DISEASES OF FARM ANIMALS.

It has been necessary, on each recurring annual investigation relative to farm stock, to chronicle an amount of animal suffering, disease and death, disagreeable in the recital, burdensome as a tax upon industry, and much of it unnecessary as it is expensive. Neglect and exposure, habitual and almost universal in the barnless sections of the country, and too common in the more recent settlements of the colder Northwest, have cost the farmers of the country millions annually. The past winter has been mild, and more humane and economic views are beginning to obtain; and the record of the present spring is therefore greatly improved. A large preponderance of the returns concur in this view, and many of them bring cheering evidence of more rational practices in the treatment of domestic animals. Even where hay was scarce, as in Grand Isle County, Vermont, "extra care and attention more than offset the reduced quantity of fodder." It is gratifying to notice as one of the reasons for less mortality in the Northwest, "the more general erection of warm shelters," as in Fillmore County, Minnesota. While cattle "do well," as is frequently reported, without any shelter prepared

by the hand of man, even in the Rocky Mountain valleys, there is no certainty of such exemption from suffering and death, either in the Territories, in Texas, or in Louisiana. In the latter, an almost tropical region, the return for Washington Parish says: "The severity of the winter caused considerable disease in stock, and the survivors, depending on the woods, barely lived, as a general thing."

*Losses of the past year.*—The actual mortality from exposure and disease was probably not half as great in 1870 as in 1869. A majority of the counties return a very favorable comparison with the report of last spring; some estimate one-half as much loss, others one-fourth, and several correspondents assert that they have heard of no losses whatever. This is the case in no less than eight counties in Indiana. In Hillsborough, New Hampshire, there has been "less than for five years." The correspondent in Franklin, Pennsylvania, says he "never heard of so little."

A few counties report an increase of mortality; among them, McDuffie, in Georgia; Fayette, (50 per cent. greater from cold rains and scanty pasturage,) Bell, (less in sheep, more in cattle,) Milam, (50 per cent. lost from destruction of grass and drowning,) Galveston, and Leon, in Texas; Benton, Arkansas; Upshur, West Virginia; Marshall, (25 per cent. greater than last year,) Illinois; Barry, (owing to smutty corn,) Michigan; Meeker, Minnesota; Lake, California, (three times as great;) Alameda, (scarcity of food,) Stanislaus, (severity of the winter,) Tuolumne, San Joaquin, in the same State.

#### DISEASES OF CATTLE.

*Splenic fever.*—The "Texas cattle disease" has had few opportunities to display its malignity since the isolation and winter pasturage of droves in Western Kansas. It has been found unprofitable and impracticable to introduce them by boats via New Orleans and the Mississippi River, and the trade has quietly accommodated itself to what was a necessity and at the same time a convenience and economy to itself.

A few facts illustrate the capabilities for mischief of the splenic infection, and show how easily havoc might be spread again among the herds of the West. The following statement is from—

*Lincoln County, Kentucky.* There was a car-load of cattle brought here from Memphis, Tennessee, about the 1st of July, and after being here a few days seven of them died. The cattle in the pasture were taken out and nothing more was heard of the disease until the middle of October, when it again broke out among the native cattle that had been pastured on the same grass, and some sixteen others died, and it again entirely ceased about Christmas. It was supposed that the cattle were partly Texas cattle, and that the disease was Texas fever.

The report from Madison County, Illinois, asserts that a drove of Texas cattle lost about ten head by what was supposed to be Spanish fever. The disease extended to native cattle and to hogs, which are supposed to have eaten of the carcasses of the Texas beeves. This statement is at variance with common experience as to the effects of the diseased meat upon swine. It is not sufficiently explicit.

The correspondent in Floyd County, Indiana, says: "No Spanish fever has prevailed. Notwithstanding all that has been said on the subject, our people believe that the disease was brought here by Texas cattle; for it prevailed terribly year before last, when hundreds of southern cattle grazed in the county. This year we have not had a case."

In Uvalde County, Texas, a loss of 12 per cent. from "Spanish fever" is returned. It is stated that cattle became much diseased in 1863, and

“observation proved the disease to be contagious,” and that change of range tends to restoration to health.

In Clark County, Arkansas, several cattle were lost by being pastured in a field where a drove of Texas cattle had been. No disease was noticed in the drove.

The report from Independence County, while showing exemption from splenic fever during the past year, refers to the fearful ravages in 1868, by which the native cattle were nearly exterminated. Laws prohibiting the passage of Texas cattle have since kept the disease from the county.

A few cases occurred in Butler, Crawford, Montgomery, and Neosho, in Kansas, and a larger number in Johnson.

In Linn, Missouri, ninety-five died from feeding on the track of a drove of Texas cattle. In St. Louis a few cases occurred where Texas cattle had been pastured. A drover in Cole County, who supplied the State penitentiary with beef, drove some Texas cattle from the railroad depot to his pastures a few miles from town. On the way some of the town cattle became mixed with the drove and were driven rapidly to the pasture, where they were separated and set free from the Texas herd. A few days after this occurrence those town cows commenced showing symptoms of Texas fever, and twelve head of them died. The disease was not communicated from these natives to others grazing with them. The drover in question promptly paid the losses without litigation. Another case occurred among the herd of Dr. McWorkman. It was introduced on his place by some Texas steers bought by him for fattening, and caused severe loss. Fifty cases, all fatal, originated from Texan cattle herded and pastured in Pettis County last August. Our correspondent in Vernon makes the following statement:

Two droves inoculated the native cattle. They came into the county in June. One was owned by a citizen, and remained about five weeks; the other was driven through by strangers. Both claimed that their cattle were wintered in the State, but did not show proof of the fact. The drove first mentioned was herded near Nevada, the county seat. As soon as the fever broke out among the native cattle they were shipped, yet the fever continued to spread, through the neighborhood in which they were herded, until frost, killing 225 head, valued at \$9,000, being at or about 80 per cent. of those exposed. The second drove, in attempting to pass through, were stopped near Montevallo, a town eighteen miles east of Nevada, for a day and part of a night. In about four weeks the fever appeared. The loss here was 230 head, mostly oxen and milch cows, valued at \$11,700. Ninety-two per cent. of the cattle exposed died. The excessive drought made the fever more fatal than usual, few or none recovering. The following facts in relation to this fever are well known here; we have been familiar with the fever for seventeen years:

First symptom, several days before any other appearance of sickness, is a dry cough, particularly when not feeding.

Second. More flies collect on them; at this time the breath will have lost its sweetness.

Third. Ears slightly droop; eyes look dull.

Fourth. Nose dry; appetite poor; languor; cough ceases.

Fifth. Fever commences; ears hang; appetite gone; reel in walking in hind parts; do not follow the herd.

Sixth. Eyes sink; a feverish, slaughter-house smell; generally on feet, but seldom move.

Seventh. Hair appears dead, as on a dry hide; death with few struggles.

Some pass bloody water; feces of brown color, but plentiful. In others no change from health can be discovered, excepting the brown color of the feces; while others are costive. In these the feces are very dark, small, and dry.

In Putnam, Illinois, eighteen steers (three years old) died within three days in a pasture which had been occupied by Texas cattle the previous winter. In Bureau County, into which a considerable number of Texas cattle were driven last summer, 125 to 150 fatal cases are reported.

Our correspondent for Jasper County, Iowa, reports a loss of 3 per cent. of their cattle from “Spanish fever.”

In the stock yards of Lake County, Ohio, into which southern and western cattle are brought, deaths have occurred, but it is not certain that they were caused by splenic fever.

In Fauquier, Virginia, the disease followed the introduction of Texas cattle, and large numbers of native cattle died.

The same result followed a like course in Knox County, Tennessee; and the fever is reported also in Surry and Burke, North Carolina, and in a few counties in Northern Georgia.

*Foot and mouth disease.*—Epizootic aptha, brought from Massachusetts, exists in three herds, in a town of Rockingham County. Great care has been exercised, by the use of dry lime on the stall floors, and an application of carbolic acid, to prevent its spread. No fatal cases have occurred. The disease was carried to various points in Massachusetts, from Brighton Market. Prompt and thorough measures were employed in stamping it out, with general success. No fatal cases are reported.

In Rhode Island it has been of a very mild type, yielding readily to remedies. It has been very prevalent, but has now disappeared.

Animals from Albany or Brighton, infected with the virus of epizootic aptha, were brought into Litchfield, Middlesex, Hartford, Fairfield, and other counties in Connecticut, but they were usually isolated very promptly, and effectually treated. There has been no mention of deaths from this disease.

In Westchester County, New York, several cases are reported among cows and oxen, but no deaths. It has been quite prevalent in Dutchess, 1,500 cases being reported, though there were none at the date of the report. None were fatal, yet the milk of course was unfit for use, during the eight or ten days of its continuance.

*Abortion* is reported in Windsor County, Vermont; in Essex and Worcester, Massachusetts; in Otsego and Chenango, (in some herds 10 to 15 cases,) in New York; in Burlington, New Jersey; in Berks and Beaver, Pennsylvania. It is little known in the West and South. The reports of the present year indicate a decrease of losses from this cause in prominent dairy districts.

*Disease from smut in corn.*—A considerable loss has been attributed to smut in corn in several of the Western States. In some instances the exciting cause is assumed to be the eating of large quantities of corn-stalks, without a sufficient supply of water. A herd of 102 steers, all in apparent health, were taken from a poor pasture and put in a fresh stalk field, in Marshall County, Illinois, and fourteen were found dead the next morning, and five more on the following morning. In Dane County, Wisconsin, a number of deaths occurred after the cattle were turned into the stalk fields. In Kansas, losses were heavy from this cause; 200 died in Coffey County, and some in Shawnee and Osage. The report from Jackson, Iowa, attributes losses to the corn-stalks, "causing engorgement of the paunch, and laceration, inflammation, and death;" and similar loss appears in Black Hawk, Bremer, Harrison, Lee, Chickasaw, and Delaware; in the latter, "*post mortem* examination discloses in the folds of the stomach a dark substance, similar to smut, which it is believed to be." In Hillsdale and Barry, Michigan, in Holt, Missouri, and in Houston, Minnesota, similar effects of eating stalks are reported. In Roanoke, Virginia, one-eighth of the young cattle have died, "supposed to be caused by grazing in wheat fields."

*Pleuro-pneumonia*, which has been so fatal in the vicinity of Baltimore and the District of Columbia, and to some extent in the neighborhood of Philadelphia, has been less prevalent during the past season.



*Black leg.*—This disease occasions the death of many young cattle, each spring, in every section of the country, generally attacking those in good condition, and ending in death. It is not reported in New England; in New York a few cases are mentioned in Ontario and Chautauqua; in Albemarle and Highland, Virginia; in Harrison, West Virginia; in Mercer, Ohio, 20 fatal cases; a few deaths in Noble, Ohio; several fatal cases in Winona and McLeod, Minnesota; losses in Chickasaw, Plymouth, and Jackson, the report from the latter stating that the disease usually begins on a foot or leg, and spreads quite rapidly over the affected member, and sometimes over the whole body, autopsy showing the tissues beneath the skin congested and really black; considerable loss among young cattle in Nemaha, Pawnee, and Washington, Nebraska; and many fatal cases in Coffey, Howard, Riley, and Shawnee, Kansas.

*Charbon.*—This virulent disease has nearly disappeared from the South. The report from St. Mary's Parish, Louisiana, says: Malignant pustule, or *charbon*, carried off twelve mules on one plantation. It did not spread.

*Murrain.*—It is to be regretted that a more accurate knowledge of cattle diseases does not exist among the farmers of the country. The use of the words "murrain," "dry murrain," "bloody murrain," and "distemper," is common in the reports, and other meaningless terms are applied to diseases having a great diversity of symptoms. We shall refer to them together, giving whatever of intelligent characterizations may be found in the returns. The following statement, which presents some of the symptoms of splenic fever, is from

*De Kalb County, Georgia.*—A disease called murrain, or distemper, prevails now every year, and nine-tenths of the cattle attacked die; they refuse all food, ears droop, have very high fever, stand all the time, but refuse to move, bowels costive, sometimes urinate blood. Death generally ensues about the fourth day. After death the manifold, or the contents, are dry and hard, almost as hard as if baked in an oven. Small loss the past year—5 per cent.

In Humphreys, Tennessee, a disease has prevailed which is not understood by the farmers. "Cattle when first attacked look sleepy, eyes run and are red, and an eruption of the skin, like nettle rash, appears, which drives them frantic. The number lost is 75 head."

In a small area on Tye River, Nelson County, Virginia, a very fatal disease has prevailed. In Burke County, North Carolina, a disease like Spanish fever has taken off one-fifth of the number of milch cows in some localities, and "distemper" is reported in Caldwell, Person, Randolph, Rutherford, Surry, Wilkes, and Yadkin.

In Webster County, West Virginia, some unknown disease invariably terminates fatally an hour or so after the attack. Symptoms: Loss of appetite and uneasiness manifested by the animal walking about, shaking of the head, lying down and rising frequently.

In Georgia "bloody murrain" is reported in Murry and Walker, "murrain" in Lumpkin, "distemper" in White, and an "unknown disease" in Coweta and Towns.

"Bloody murrain" has prevailed in Hardeman, Tennessee; "dry murrain killed a few" in Meigs, and an "unknown disease" has been very fatal in Humphreys.

A disease terminating fatally in three days, in its features resembling "scours" or "dry murrain," has caused some loss in Clarke, Missouri.

In Tuscola, Michigan, "a few cases of dry murrain" are reported.

In Weeks County, Minnesota, some animals have died from a nameless disease, which causes a swelling and subsequent soreness of the throat.

*Black tongue.*—In Sampson County, North Carolina, a dozen deaths have occurred from “black tongue;” and 5 per cent. of the cows and yearlings of Utah County, Utah, have died from the same disease.

In Washington County, Illinois, “there is a kind of itch, in some respects similar to scab in sheep; the animals afflicted seem as healthy as others. As soon as warm weather begins the cattle commence rubbing, in some cases rubbing the hair entirely off the head and neck. It may be nothing but lice.”

A report from Schuyler County, Illinois, notes the loss of nearly seven hundred cows from a kind of sore mouth, the tongue swelling so that the animal is unable to masticate or swallow food.

In Pulaski a few cattle have died of a strange disease. “In some instances dark venous blood has been voided in the later stages, and after death the alimentary canal is filled with the same dark blood to the exclusion of all fecal matter. In some cases the animal continued to feed without giving indication of disease until within twenty-four hours of death. No evidence of contagion.”

*Milk sickness* is reported from Lorain, Ohio, and “milk fever” from Erie. In Amite County, Mississippi, cattle have been much troubled with lice, which infest them in immense numbers, seriously affecting their health.

The buffalo gnat, which sometimes causes the destruction of cattle in the Southwest, has been very injurious in portions of Arkansas, causing the death of 5 per cent. of the cattle in Arkansas County already, “with six weeks yet for the pest to run if the weather is wet, and three weeks if dry.” It has not appeared at that locality before for years, and has been a worse infliction than ever before.

Among all the diseases named, perhaps *starvation*, with its various aliases, as “general debility,” “hollow horn,” “horn ail,” or “hollow belly,” is productive of greater loss than any other. Neglect, exposure, insufficient or irregular feeding, and no feeding whatever, are prolific causes of weakness, disease, prostration, and death. In Piscataquis County, Maine, a few cases of “horn ail” are reported; also in Holmes, Ohio, in Stafford, Virginia, and in Clark, Mississippi.

Our correspondent in Nueces, Texas, estimates that not less than twenty thousand head of cattle have perished by drought.

It is gratifying, however, to state that the losses from exposure and neglect are far less than in former years. That there is practiced a more sensible economy, if not a higher humanity than formerly, is evident from the repeated mention of improvement in the treatment of farm animals. The correspondent in Windsor County, Vermont, testifies upon this point that “since farmers have generally furnished good protection for their stock the various diseases that formerly prevailed are scarcely heard of.”

#### DISEASES OF HORSES.

Diseases among horses have not been unusually prevalent or fatal. Comparatively few cases are reported from northern latitudes. The most frequent mention is made of “blind staggers,” which has prevailed in Berks County, in Pennsylvania; Calvert and Queen Anne’s, in Maryland; Sampson, Tyrell, Duplin, Hertford, and Orange, North Carolina; Bartow, Richmond, and Walker, Georgia; Calhoun and Etowah, Alabama; Uvalde, Rusk, and Red River, Texas; Benton, Arkansas; Sevier, Meigs, Alabama; Coffee, Monroe, Jefferson, Robertson, and Knox, Tennessee; Butler, Cedar, Newton, and Taney, Missouri.

Lung fever is noticed in Indiana County, Pennsylvania, in the lumbering region, and in Beaver and Montgomery; in Gloucester, New Jersey, with more than usual fatality; in Kent, Maryland, of a mild type; in Princess Anne, Virginia; Cass, Missouri, a few cases; Geauga and Medina, Ohio; Cass and Tuscola, Michigan, and Stearns, Minnesota. In Fulton County, New York, a cartarrhal affection, accompanied by croup, resulted in death in a few cases. Glanders is less known than formerly; a few cases are reported in Nelson, Montgomery, Patrick, and Fauquier, Virginia; in Meriwether, Georgia; in Hardin, Texas, it has been worse than ever before; and in Noble, Ohio, a few cases are returned. In several counties in Texas something like scours, in an epidemic form, has been fatal. It is stated that opium and camphor, administered early, is a very efficient remedy. Three per cent. of the horses of Prairie County, Arkansas, have yielded to the insect pest—the buffalo gnat. In Pike County, Illinois, an unknown disease, which has been fatal in some cases, has for its symptoms stiffness of limbs, sore mouth, and swollen tongue. Many horses in Williamson County, Illinois, are afflicted with blindness. “Distemper” is reported in many places, and isolated cases of tetanus or lockjaw, yellow water, colic, and other forms of disease are reported. The following extracts further illustrate this subject:

*Cumberland, Maine.*—Some horses lost early in the winter by an unusual disease—taken with loss of appetite, general debility, a gradual sinking for several days, and in some cases for several weeks. Most cases fatal. In some cases the animals had the appearance of being poisoned with white lead.

*Hampden, Massachusetts.*—A number of horses have died in one stable in Chicopee. Symptoms: first, loss of appetite, which returns in a few days; bunches as large as walnuts come out on different parts of the body, and break and discharge putrid matter; legs swell; in three or four days there is a discharge at the nose similar to that from the sores. Fatal in five to seven days. No cases of recovery. The disease was introduced by a horse from Canada.

*Washington, Pennsylvania.*—Distemper exists to some extent, also a malady called the “throat disease,” or the “head disease;” six deaths occurred from it. Horses when attacked refused food or drink until half starved, when the throat was much swollen, eyes dull and heavy, head drooping, if forced to move, holding it in one position with nose up and forward as if it pained them to move the head; they would then eat nothing but choice food, swallowing with difficulty. Various horse liniments were used, many cures were effected.

*Elk, Pennsylvania.*—More than the usual number of cases of lung fever, or “catarrh.” Fatal in a majority of cases. Some of the finest horses in the county have died of this disease.

*Doddridge, West Virginia.*—Some unknown disease. Symptoms: swelling of the jaws and head, which terminates in running sores; the animal refuses to eat, loses flesh rapidly, and soon dies; no known remedy.

*Wilkinson, Mississippi.*—A disease called “distemper,” very contagious, malignant, and fatal, has prevailed for three months, and has not yet ceased, in a part of this and Anite Counties, and adjacent parts of Louisiana; the mortality has doubtless been caused in great part by the treatment adopted. My own cases, and my son’s thirty miles away in Louisiana, all recovered as well as all others similarly treated, while others differently treated mostly died. While using my saddle and buggy horses I noticed first some difficulty about putting down the head and drinking, and external swelling over nasal canal, extending from near the opening of the nostril toward the eye and resembling “big head.” The coat became staring and harsh. The glands within the space between the arms of the lower jaw and at its junction with the neck and tonsils swelled; the latter very much; the former in some cases much and in others little. There was also swelling about the larynx and pharynx so obstructing the action of the muscles of deglutition as to render the swallowing of liquids very difficult and in some cases utterly impossible. In attempting to swallow, a part, and as proved by experiments, in some cases, the whole of the fluid escaped by the nostrils, and this, whether the head were held up or down, while drinking. This continued from two to fifteen days, (to attempt to drench in this condition is unwise, cruel, destructive.) The loins were weakened and the hind legs somewhat weakened and defective in action. Opening the external tumors at any stage afforded prompt relief of all the symptoms, and the discharge from a very small tumor was enormous, the pus being diffused extensively

through the loose tissues. When no such opening was made, sooner or later a profuse purulent discharge took place from the nostrils, usually beginning with one, and after two to fifteen days the other. The loose cellular tissue was readily infiltrated with pus, and the glands enlarged all along down the neck to the trunk. The blood infected induced a typhoid or rather pyæmic condition.

Properly managed, no internal treatment is needed, and in most cases is very injurious if attempted. The animal should be kept dry and comfortably warm, but in good weather permitted to run out during the day. Although he may not be able to swallow any liquid, he can readily eat, and should have roots and fruits, and well-moistened hay, fodder, meal, shipstuff, &c. As soon as any tumor appears, bathe well night and morning, till the tumor opens, with kerosene. One, two, or three applications have, in every instance that has come to my knowledge, effected the opening in twenty-four hours from the first bathing, whatever the stage of the malady. If it should not open the tumor, or the symptoms are too urgent to allow delay, open freely with a sharp knife; and every animal so treated will get well promptly, however hopeless the case may seem. Of course, the horse must not be used till convalescent.

*Bea, Texas.*—A kind of farcy has proved quite fatal. It commences under the jaw and spreads over the entire body, accompanied with slow fever. The loin distemper is quite prevalent among horses on the prairies. It is contagious between the sexes.

*Victoria, Texas.*—Several cases of a disease which commenced with a swelling of the head, particularly about the lips; considerable secretion of water from the eyes; wasting of the flesh; no eruptions of the skin. Of six cases, three proved fatal, after lingering six to eight months, losing the hair from their manes and tails several months before death.

*Williamson, Texas.*—For the past three or four years, in this and adjoining counties, at least one-half of the colts have died before two years old. I know of no name or remedy for the disease. It runs through the young stock in the fall, and what it does not then kill generally die in the winter. They become stiff in the legs, and walk with difficulty. Many of them swell about the head and breast, until the swelling breaks and discharges bloody water. At such times, flies are apt to blow the sores, and if not attended to in season the screw worm will kill the animal. Calomel is the best remedy I have used to destroy these worms; one or two applications to the wound will generally suffice.

Horses, cattle, sheep, dogs, and, in fact, all animals, are liable to be destroyed by this pest in the fall season. When wounded, from any cause, the flies soon find the fresh blood, and deposit germs of myriads of worms, which, in a few days, are full grown, and about half an inch long. This is a critical time with the stock-raiser, for if not attended to early the evil is much more difficult to cure.

*Dunn, Wisconsin.*—Last fall the influenza took off a great many colts in some localities. In one neighborhood about thirty died. They were pastured on the common, where there is plenty of unimproved land, and it was supposed by some that the disease originated from the drinking of stagnant water in a lake in the vicinity.

*Waushara, Wisconsin.*—There has been a disease among horses from which quite a number have died. The horse's throat seems to swell and close up the passage. It is a new thing for this county, and no one knows how to treat it successfully.

*Napa, California.*—Dr. Lockwood reports a disease as follows: "A disease, familiarly called the 'crazy disorder,' has prevailed to some extent among common stock horses, coming from the southern counties of this State, where it has existed for some years. It is characterized by a low state of the system, induced by poor feed. Head symptoms are predominant; animals attacked often die, and probably none ever recover their normal condition. One so diseased is worthless; will not repay further care. Mr. N. Coombs has lost fifty head this winter, exclusively among his inferior stock." The horses referred to are what we here call Spanish horses, and are usually left in large bands, without special feed or care, like the wild horse of Mexico.

#### DISEASES OF SHEEP.

Diseases of sheep are less general than for two or three years past, mortality and the slaughtering house (in former years) having reduced the numbers of the weak and diseased victims of neglect.

Foot-rot is still the most prolific source of loss, most abundant in Ohio, severe in portions of Michigan, and found to some extent in other Western and in the Middle States, with very few cases in New England and the South, and none in the Territories and Pacific States. Scab is most general in Texas, is reported in several counties in Missouri, and is occasionally found in all sections east of the Mississippi, though few cases are reported in the Atlantic States east and south of New York.

"Rot" has occasioned some loss in Alabama and Mississippi. "Grub in the head" has been reported in very few counties. A Georgia correspondent (Dooley County) reports five per cent. loss from "a new disease, the sore nose." It is a frequent report that there is no disease among sheep that are well fed and properly treated. Cruel neglect and reckless disregard of the comfort and health of flocks account for nearly all the losses reported. Our correspondent in St. James Parish, Louisiana, has lost about twenty-five sheep from the "mumps, the throat swelling, the disease extending to the head, when death occurs;" and he states that he has lost ten calves from apparently the same disease. The following extracts are made from correspondence:

*Bexar, Texas.*—There are several, but the most alarming and of marked significance is the disease known as the "scab," which is allowed to infect our whole pastoral country. The extent of its ravages in Western Texas, in the counties of Bexar, Bander, Medina, Atascosa, Comal, and all adjoining counties, which are by nature the paradise of pastoral pursuits, the sheep for the last three years have almost entirely vanished. In Kendall County, forming a radius around the town of Boerne, the decrease has been on a moderate average 70 per cent. The flock of the lamented George Wilkins Kendall, once the pride of this section for Merino breeds of sheep, has ceased to exist. This is but a sample of scores of flocks destroyed by this calamity of "scab." In the other counties the ratio of decline has undoubtedly been one-half.

The lombriz is so much on the decrease as to be rarely mentioned last year. The lombriz is now believed to exist in *all* lambs, and *post mortem* examinations of healthy, young lambs, accidentally maimed or killed, have developed in the stomach the veritable reddish hair-like worm, but in small numbers. It is believed that in strong, healthy lambs these internal parasites are thrown off by nature; while in weak, delicate subjects they multiply by millions, until the poor, suffering creature is literally eaten up. The cause of lombriz is to be found in the poor condition of the ewes during winter and at lambing time, and consequent lack of milk to sustain and develop the lamb after birth. The offspring of strong, healthy ewes are never affected by it. Our remedy is equal parts of common salt, sulphur, and copperas, to be given at intervals of several days for three or four times. The preventive is to keep the ewes in good condition.

*Maverick, Texas.*—None die from scab, but the lambs while so diseased do not thrive. After the wool falls off they get well without applying any remedy. I have tried the Magney plant, which grows in some portions of this country; simply roasting it in the fire in order to make it more juicy, then rubbing the diseased parts with it until all the scurf is off; with two or three applications the disease is arrested, and a new, healthy growth of wool follows on the bare places. I am under the impression that the juice of this plant could be made an effectual remedy for the scab.

In Morgan, West Virginia, hoof-rot has existed; Merinos a failure: 1,500 died during the past two years.

In Montgomery, Maryland, native sheep have been healthy; of 1,200 Merinos brought from Ohio here, fully three-fourths have died.

In Marion, South Carolina, lambs dropped last spring became unhealthy, and one-third have died.

In Caldwell, North Carolina, when kept in pasture of small area several successive years, they become affected with *rot* in many cases.

In Washington, Pennsylvania, three-fifths of the sheep have foot-rot; the most successful cure has been to remove the flock, after paring off the diseased part, and dusting over with blue-stone, to a field which has not been pastured by diseased sheep; a hilly, dry, and stony field is preferable; feed small quantities of flour sulphur.

The ravages of dogs are perhaps more injurious to sheep husbandry than any disease named above. The report is full of evidence on this point.

The counties in North Carolina that report the dog disease are as many as those which name ailments of sheep.

In Virginia "dogs are more destructive than all diseases."

In Marshall County, Alabama, the loss is 30 per cent. from "starved dogs."

In Georgia it is stated that "the dog is the worst disease afflicting flocks," and that "few farmers raise sheep on account of dogs."

In Monroe, Tennessee, "the loss by dogs is 300."

Dogs in Missouri have killed more than all diseases combined.

"About 300 head of sheep have been destroyed by dogs the past year" in Sullivan, Indiana.

Our correspondent in Ripley, Indiana, after referring to dogs as the great terror of the wool-growers, says truly: "Our legislators are very cowardly upon the subject of making laws to protect sheep husbandry." Similar statements are made from Wisconsin and Michigan.

#### DISEASES OF SWINE.

The diseases among swine, however various, are popularly referred to "hog cholera," as a rule. Whenever symptoms are detailed in the returns, they are given as aids in determining the character of the malady. The losses reported are less this spring than usual, indicating far greater soundness of health than in some former years. There is still more of disease and death among swine than in any other class of farm animals, and probably less is accurately known of the character of the maladies afflicting the species.

Having superior care and better feed in the Middle and Eastern States, there is comparatively little loss reported in those sections. In York County, Maine, some cases of disease have been reported among improved breeds. The preventive practice of feeding a tablespoonful of spirits of turpentine in milk to a hog over six months old obtains in Chautauqua, New York. Some loss is mentioned in Columbia County. Stock hogs from Indiana have sickened in York, Pennsylvania, and 30 per cent. of that class have died. Abortion has prevailed in Dauphin, attributed to over-feeding with unground corn. Two hundred and fifty pigs under six months old have died in Washington, the remedies applied being salt and alkaline substances; and some fatality is reported in Cumberland, Perry, Indiana, Beaver, Union, Fulton, and Berks; in the latter county the symptoms reported are "loss of appetite, weakness in back and hind legs, with a nervous twitching of the head, which gradually extends to the whole body."

In Montgomery, Maryland, one-half to three-fourths of the hogs of certain neighborhoods have died. The loss in Howard is estimated at 3,000, and slight losses have occurred in Baltimore and Kent.

More attention has been paid to swine in some parts of Virginia than usual. In portions of Gloucester disease has nearly swept away the race of swine; in some instances in Alexandria every individual has been lost; in a portion of Clarke 70 to 80 per cent. have died; loss 25 per cent. in Fairfax; some unknown disease has carried off numbers in Princess Anne, and losses have occurred in Albemarle, Roanoke, Pulaski, Northampton, Cumberland, Nelson, Lee, Prince William, Highland, Lancaster, Surry, Smythe, and Patrick.

A considerable amount of mortality is reported from North Carolina; a loss of 50 per cent. is declared in Watauga County; from 50 to 75 per cent. in certain stocks in Currituck; 40 per cent. in portions of Chowan; large numbers from a new disease, "of a lung fever type," in Gaston; 20 per cent. of the fattening swine in Haywood; 33 per cent. in Rowan; 25 per cent. in Davie; 20 per cent. in Lincoln; 30 per cent. in Greene; nine out of every ten attacked in Yadkin; 20 per cent., mostly near fruit distilleries, in Stanley; 33 per cent. in Alexandria; and smaller losses in Sampson, Union, Surry, Terrell, Duplin, Rockingham, Jackson, Macon,

Caldwell, Rutherford, Wilkes, Hertford, Burke, and Orange. Great fatality, involving three-fourths of the entire stock of Newberry, South Carolina, is reported, and small losses are mentioned in Spartanburg and Lexington, in the same State.

Georgia has suffered little loss; 50 per cent. is reported in Clinch, 30 in Morgan, and small losses in Bartow, McDuffie, Lumpkin, Jackson, Harris, Catoosa, Floyd, Butts, Forsyth, Towns, Pike, Walker, Clay, Milton, Clayton, Putnam, Newton, Pulaski, White, Franklin, and Heard.

Our correspondent in Dallas, Alabama, lost 44 out of 56 old hogs; pigs were not so generally attacked. In Lawrence a loss of 25 per cent. is returned, but the mortality was reported slight in Tallapoosa, Marshall, De Kalb, Calhoun, Clarke, Jefferson, Etowah.

Very little disease among swine is reported in Mississippi; a few cases have occurred in the following counties: Attala, Kemper, Neshoba, Pike, Amite, Tippah, Yalabusha, Yazoo, Lafayette, Winston, and Carroll. In Gonzales, Texas, a disease, assumed to be "an affection of the lungs," carried off most of the pigs and a few hogs. The fattest were first to fall; of a litter of pigs, fat and apparently healthy at night, half would sometimes be found dead in the morning. In Uprshur, a loss of one-tenth of the pigs is credited to carelessness in permitting them to eat *ad libitum* freshly ground cotton-seed. A few losses appear in Austin, Collins, Harris, and DeWitt.

There is scarcely a live pig in Benton County, Arkansas; the result of a cough and wasting away. A loss of 20 per cent. is returned from Newton County. Large losses occurred in Clarke, attributed to "too much cotton, and want of corn." One third of the stock in Jackson County died, generally in full flesh. Losses are also reported in Johnson, Montgomery, Pulaski, Sebastian, and Washington.

Less mortality than usual has occurred in Tennessee; very few counties reporting heavy losses, among which are Humphreys, (60 per cent.,) Smith, (50 per cent. of all hogs since November,) and Greene, (40 per cent.) Smaller losses appear in Sumner, Sevier, Meigs, Williams, Giles, Weakley, Campbell, Coffee, Sullivan, Montgomery, Monroe, Henry, Jefferson, Johnson, Robertson, Hardiman, and Hickman.

In Morgan, West Virginia, half of the pigs and one-fifth of the fattening hogs died last fall, and the disease is commencing its ravages this spring. Losses are also reported in Berkeley, Brooke, Cabell, Fayette, Jefferson, Tyler, and Wayne.

Our correspondent in Fayette, Kentucky, where "hog cholera" has prevailed to a great extent, with heavy losses, sends the following report:

Our club was induced last spring to appoint a committee of scientific members to investigate this disease, which they did by making very thorough post mortem examinations of the hogs that died of the disease. They have not yet made a formal report of their proceedings, nor will they until they make many more examinations, which they will do as opportunity presents. They have observed that there is no constancy in the appearance of organs invaded by the disease. In one the change of structure will be observed in the lung, in another the stomach, another the small intestines, another the large bowels. The microscope, however, revealed a constant change in the blood, the globules being crenated or shrivelled, and a large increase of the colorless globules. The impression was made upon the committee that the seat of the disease was the blood, the constitution of which was changed by some poison acting upon it, of the nature of which they are not yet satisfied. Acting upon this view, they have recommended a treatment and preventive which has been largely used and has generally been very successful, in some cases, however, proving to be apparently insufficient. In the latter cases it is believed that the prescription was used in too small doses. For a preventive they recommend the carbolic acid in strong solutions, (dissolved in glycerine and as strong as possible,) to be given in doses of twenty drops three times per day to each hog or shoat of four months old; younger ones smaller doses. Milk or slop of any kind which the hog will eat, is a good vehicle in which to administer it; say for ten hogs take three teaspoonfuls of the solution, put in two or three gallons

of milk or slop; mix well by stirring; pour into a trough sufficiently long for all the hogs to get to readily; then let them go to it all at once. It will be better where there is a large lot of hogs to bring them to the trough in detachments of not more than twenty. This course, if persevered in for a week, when there are any indications of the disease, it is believed, will arrest it.

The curative treatment is very similar—carbolic acid in the same amount three times per day, adding to each dose a tablespoonful of *sulphite of soda*; if the hog is too sick to eat, catch it, turn it on its back, and pour the medicine into its mouth; in this case a half pint of milk is a good vehicle in which to administer the medicine.

The Spencer Reporter makes the following statement:

Hog cholera has prevailed, and still prevails. Its presence is confined to no particular district or locality, but is spreading in its visitations. When it becomes present on a farm it generally takes off all the young pigs, and from one-fourth to three-fourths of the rest of the swine, leaving the surviving in an unthrifty state. Within the last fifteen years two-thirds of the farms have been visited with it, and some farms more than once. The effect has been to discourage the raising and feeding of hogs, which was a speciality.

In Anderson, Kentucky, the loss is estimated at 500 head; in Hardin, 33 per cent., and the disease still spreading; in Bourbon, \$5,000; in Whiteley, 50 per cent.; very heavy in Clarke, while in Christian the loss is placed at 25 per cent., 20 per cent. in Kenton and Laurel, about the same in Graves, and less in Shelby, Hopkins, Scott, and Warren.

In Clarke, Missouri, the loss is estimated at 50 per cent., "confined principally to pigs up to six months old;" "many deaths from insufficient shelter, but all attributed to cholera," is written from Bates; loss 1,000 head in Holt, 375 in Bates, 200 in Pettis, and small percentages of loss in Benton, Cass, Dent, Butler, De Kalb, Montgomery, Marion, Mercer, and Vernon.

Thirty-six counties in Illinois report losses from diseases of swine, though the damage is comparatively slight, with few exceptions. Our Pulaski correspondent says that some hogs have died, but in most instances it seemed to be the result of poor feeding, or feeding without proper admixture of cooked food or green pasture; and he thinks that hogs cannot be profitably raised under the present careless treatment. The reporter in Williamson attributes their small loss of 5 per cent. to the fact that last year's corn was thoroughly matured, and hogs better cared for than usual; though he thinks that some septic or other external influence, independent of feeding or other treatment, gives rise to hog cholera. In Washington, disease has more generally prevailed, and has been attended with greater loss than for many years. Losses have been quite heavy in portions of Sangamon; are estimated at 3,000 in Cass; 450 head in Clinton; 25 per cent. in Scott; 20 per cent. in White and McDonough; 15 per cent. in Menard; 10 per cent. in Edwards, "prevailing almost exclusively in rolling districts;" and is also reported in Adams, Crawford, Champaign, De Kalb, Franklin, Fulton, Grundy, Hancock, Henderson, Jersey, Knox, Lawrence, Logan, Mercer, Menard, Marion, Madison, Morgan, Pope, Pike, Stephenson, Stark, Piatt, Pulaski, White, and Warren.

The loss from hog cholera or other maladies in Indiana is less than usual. In Union County "disease has entirely disappeared" within the last twelve months; it has almost disappeared in Rush; is found "only in the vicinity of flouring mills and distilleries" in Switzerland; "loss small compared with other years" in Harrison; Vandenburg "has not been so free for twelve years;" has not been so destructive as formerly in Marion, "though one-fifth of all the young die;" since July there has been less complaint in Bartholomew than for several years; loss in Cass has been 200 head; it amounts to one-third of the young in Posey; and losses have occurred in Floyd, Wabash, Howard, Jefferson,



Martin, Newton, Pike, Washington, Carroll, Ripley, Delaware, Clinton, Greene, Parker, Miami, Scott, Spencer, Vermillion, Sullivan, Gibson, and Ohio.

Ohio appears to have been nearly exempt from hog cholera. At a distillery in Lucas from 300 to 400 head died; about one-fifth of the swine brought into Greene from Indiana for fattening have been attacked, and a few cases are reported in Jefferson, Holmes, Warren, Fairfield, and Franklin.

The swine of Michigan are reported healthy, only one county, Cass, returning losses, which have amounted to one or two hundred in a locality.

A disease of the throat is reported in Green County, Wisconsin, where it has prevailed to a limited extent. "The first appearance would be a dark spot or spots on one or both sides of the throat, and the hog being unable to eat. It has usually proved fatal in from 24 to 48 hours; some call it diphtheria." A few cases of hog cholera are mentioned in Dane County, and several fattening hogs in Washington have died suddenly from some unknown cause.

Of twenty counties reporting in Minnesota, Meeker only presents evidences of disease, in which forty pigs were lost, "caused by filth and improper food, and not from any cause beyond the pen in which they were confined."

Small loss is reported in Iowa; in Louisa County, 25 per cent.; 150 head in Lucas; 100 head in Clarke; and in Black Hawk, Lee, Wayne, Fremont, Dallas, Jasper, Tama, Appanoose, Madison, and Bremer, a few cases are mentioned. Only Nemaha and Cass, in Nebraska, report losses, and Leavenworth, in Kansas.

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## EXTRACTS FROM CORRESPONDENCE.

### EXPERIMENTS WITH SEEDS, ETC.

A correspondent, writing from Morgan County, Illinois, says:

My experience this last year with carrots, and especially with *white Silesian sugar beets*, for stock of all kinds, has both surprised and gratified me. The middle of May last, I had a piece of ground on which apple seeds had failed. I sowed a part of it (less than one-quarter of an acre) with beet seeds, with a common drill and weeder, without reploting the ground, which had become beaten down by the rains as hard almost as the road. The drill sows six rows at a time, eight and ten inches apart, and cultivates or weeds in the same way. It took perhaps half an hour to sow the seeds, and half an hour each at different times to cultivate or weed them, and perhaps half a day to thin them out; after that they covered the ground wholly over and needed no more care. The ground was ordinarily rich. With this extreme negligence, I had fifteen wagon loads of the finest beets, being at the rate of over thirty tons to the acre. I sold two and a half tons at \$8 per ton, fed my cow and calf, two hogs, and three horses, all they would eat all winter, and have three tons more than I can use, though we have used no corn at all for anything but the hogs. I fed cut roots, with a pint of wheat bran each mess. I have never before had my horses, hogs, cow, and calf come through the winter so well and free from all symptoms of disease; their hair is as smooth and glossy now as though they had just come off from a clover pasture. I conclude that roots, as part feed at least, are worth much more than their simple value as food in the extra health they insure to the animal, and I now intend to raise them on my farms on a larger scale. I had no idea they could be so easily and abundantly produced. I ought to state, however, that it took me more than a week to teach one horse to eat them, and I did not succeed until I boiled one or two of them, and mashed them in bran and oats so fine that he could not eat one without the other, and after he found it would not poison him, he ate them greedily in the raw state.

A. J. Hamilton, superintendent of Western Experimental Farm, Indiana County, Pennsylvania, writes :

Experiments upon this farm have been carried on with uniformity, and I feel that not a sufficient interest is felt in regard to them. Among the different varieties of wheat sown I may mention the Jennings, Touzelle, Brittany, Talavera, Rough and Ready, Salt, and Shoemaker. They all look remarkably fine. Only one variety of rye is sown, the Bremen, and from its appearance now I think it a standard variety. I have sown the Tappahannock wheat very extensively, and find it the standard variety here. The yield last year was 30 bushels to the acre. Week's White and White Bearded were sown last fall, together, one acre each, ground plowed alike and manured, to test the relative merit of each. I have also sown the French White Chaff Mediterranean wheat; it is next to the Tappahannock in yield. A number of experiments were made last year with potatoes by planting them whole, cut, medium, and small seed. The whole seed showed a greater return, by 25 per cent., over the others. Experiments are also being made in planting the butt and end grains of corn. Nothing very definite has been reached yet in regard to this.

*Dixon County, Nebraska.*—Two years ago I received from the Department of Agriculture one-fourth of a peck of Arnautka spring wheat. It was sown and has done remarkably well, producing at the rate of 25 to 30 bushels per acre, and coming to perfection earlier than the common kind. It has proved itself very suitable for our climate, and most of the farmers that see it desire to obtain it for seed. The introduction of this wheat has conferred a great benefit on this section of the country. I sowed 12 bushels this spring, and sold and gave away 4 bushels; all from the original one-fourth peck. Ere two years elapse, it will be the principal variety sown in Dixon County.

*Miami County, Kansas.*—The experiment made on the culture of hops by W. R. Wagstaff has proved a failure, and has been discontinued. Outlay some \$4,000; income, *nothing*.

#### THE DAIRY BUSINESS.

A Medina County, Ohio, correspondent writes as follows :

A sort of agricultural fever, which may be termed the dairy fever, is just now prevailing in this county. The talk of farmers whenever they meet is of cows, cheese, butter, cheese factories, probable prices, &c. No less than three cheese factories are being built in Hinckley now. This number in a little township of five miles square, containing less than a thousand inhabitants, is altogether in excess of public requirements. Such a raging fever can have no other termination than collapse, fatal to many. If the harm of such a fever was confined to the dairy farmers alone, I would say nothing. But innocent people suffer. While farm is being added to farm, our population is rapidly decreasing. One mechanic after another is leaving for want of sufficient business to support him. The same is true of professional men. Our school-houses are not half filled. The Sabbath is desecrated. Our churches are becoming feeble and dying out. Every interest is injured that this one may prosper. I look upon dairying, in the manner it is now being conducted, as injurious to our best interests.

#### AGRICULTURE IN ARKANSAS.

P. L. Anthony, of Little Rock, disgusted with cotton at low prices, and all other products at high rates, in an agricultural region suited in soil and climate to the growth of everything needed for comfort and luxury, desires to promote immigration and colonization for some purpose beyond mere cotton-growing. He says :

Cotton is the curse of this country. It is produced as a means of procuring everything. Even Indian corn, that can be produced here at less expense than elsewhere in the Union, is imported in large quantities. At gathering time last fall the corn grown on the river above and brought here in the shuck, sold at from \$1 10 to \$1 25 upon our levee. Every steamboat now brings sack-corn, which sells at from \$1 30 to \$1 35 per bushel. We depend wholly upon other States for flour, potatoes, turnips, cabbages, celery, horse-radish, fruit, and a variety of things, at high prices, which might be produced here at a low price. Bacon, beef, butter, lard, and eggs, are among our impor-

tations. To this list of agricultural productions we may also add all sorts of manufactures—sash, doors, window blinds, furniture, wagons, carriages, hubs, spokes, felloes, bows, hames, ax-helves, auger-handles, ox-yokes and bows, and almost everything you can name.

Mechanical labor is worth from \$3 to \$5 per day; farm labor from \$13 to \$25 per month; day laborers in town want from \$1 to \$2 per day. With cotton 11 to 12 cents as the base for these prices, you may well conclude we are fairly on the road to ruin. When I add that potatoes are worth \$1 50 and turnips \$1 per bushel; eggs, 25 to 50 cents per dozen; fowls, 35 to 50 cents apiece; cabbages, 25 to 75 cents per head; and a handful of greens a dime, you may judge there is great need for some one to make endeavors to have these things produced at home. A dish of strawberries and milk for a family of six, say a half-gallon of each, would not cost less than \$1 50 to \$2.

#### WASHINGTON TERRITORY.

Our correspondent in Pierce County, Washington Territory, writes as follows:

Washington Territory contains, in round numbers, seventy thousand square miles, with a great variety of soil, climate, and resources. In this vast region there are less than twenty-five thousand inhabitants. The Cascade Mountains extend northward from Columbia River, which forms the southern boundary of the Territory, to the forty-ninth parallel of latitude, and beyond into British Columbia. The Territory is thus divided into two equal parts; that east of this mountain range being principally a prairie country, with extensive grazing grounds, and rich valleys of arable land; while the portion west of the mountains is in the main timbered lands; yet it too is intersected by many valleys, with fertile alluvial bottoms.

The climate of these two divisions differs as widely as the soil and exposure, the eastern being in the winter comparatively dry and cold; the western, warm and rainy. In the eastern region the autumn and winter are so dry that the rich bunch grass of the Great Columbia plain will actually cure upon the ground, and remain valuable feed, usually enabling the cattle to fatten on the grazing grounds, even during the winter. But on the western slope these seasons are so moist and temperate, that the turnip and the grass commonly grow until the middle of December, and frequently in sheltered places the green grass may be seen all winter. In this division cattle usually require feeding and shelter from the winter storms, but never for more than two or three months.

To speak more particularly of the western division, the northern portion is known as the Puget Sound basin, and the southern as the Chehalis and Cowlitz Valleys. The surface is covered with magnificent forests of evergreen, consisting mainly of the fir, of which there are three varieties. There is found also the white cedar, the hemlock, the spruce, and, in the bottoms, balsam or cottonwood, alder, maple, ash, and crab-apple.

This is emphatically a dairy district. The growth of grass upon these rich lands is almost constant, and the yield is enormous. There is spring water, pure and soft, and abundantly distributed. Add to this the cool nights, and few hot days, and it makes all that is desirable for the successful development of this great interest.

Twelve rivers have their sources upon the western slope of the Cascade Range, and these, with a current rapid at first, but afterward more gentle, deposit rich alluvial wash as they reach the sound. These alluvial bottoms will average two miles in width, while on the adjacent table lands there is a larger area of soil suitable for grass.

After the magnificent forests, the wonder of this region is its climate. Averaging 40° Fahrenheit during the winter, and 63° in the summer, and this up to the forty-ninth parallel, it is not strange that people are incredulous when they hear of this mild climate. In winter the south and southwest winds prevail, and these, with the warm ocean current of the Pacific, corresponding to the Gulf Stream of the Atlantic, give the western coast of the American continent a climate which rivals that of the western shores of Europe.

With resources so numerous and varied; with coal underlying the whole district, iron ore in the mountains, limestone upon two of the islands in the sound, with an inexhaustible store of the most excellent ship-building material, and with the extensive and valuable fisheries of the northwest coast, we may look forward with confidence to the development of a great country on this coast of the American continent.

#### STOCK IN IDAHO.

*Ada County, Idaho Territory.*—Experience is rapidly demonstrating the fact that Idaho possesses natural facilities and advantages for the cheap and successful growing of stock of all kinds not surpassed in any

of the Northern or Western States or Territories. The healthfulness of climate, excellence and abundance of water, the choice quality of native grasses and herbage, which cover the extensive unoccupied table lands, and the mildness of the winter season, combine to render Idaho all that could be desired for stock-growing purposes. It is claimed that no portion of the continent in this latitude and of this altitude is favored with winters so mild. During the past four winters stock have, in many instances, fattened, and in all cases were in good, thrifty condition in the spring, when allowed to forage at large, without prepared food or shelter. Our local markets are supplied with the choicest beef and mutton, fresh from the "range," every month in the year. Stock-growing, as a thorough and systematic business, has been but recently engaged in to any extent worthy of mention.

#### AGRICULTURE AND STOCK-RAISING IN TEXAS.

*Gonzales County, Texas.*—The great mania for driving beef to Kansas is likely, in fact certain, to produce a great revolution in the industrial pursuits of this county. Already about 12,000 beeves have been started from this county, and at least as many more are now in herd and being gathered. It is believed that not less than 30,000 will leave this county this season. Not only all beeves from two to four years old are being driven, but it is estimated that at least one-third of the stock cattle will be disposed of, and perhaps more. Good men of the country rejoice at the fact. They are tired of seeing so fertile and pleasant a country devoted to raising wild cattle upon a plan that demoralizes our youth, retards internal improvements, and that only furnishes room for speculators to enrich themselves upon the labor of others. It is the wish of all that the cattle business be drawn into such limits as to make it profitable to those engaged in it, and enable the owners of stock to have a voice in fixing the value of their property. If four-fifths of the cattle can be taken from the country, the one-fifth left will pay better than the whole.

*Refugio County, Texas.*—A tithe of the capability of this county has not been reached in her best developed interest. Texas has been designated as the meat-house of the United States. If she be so now, what would she be with Ohio, Kentucky, Illinois, and Missouri farmers to develop her capabilities? My opinion, formed from twelve years' experience in Texas, (I was for thirty years a Kentucky farmer,) is, that from the same piece of land, and in one year, three crops may be taken, either of which, judiciously fed, would make as much flesh as a crop of corn in Kentucky or Illinois, similarly fed. You ask what would be the crops. First, corn; after that is laid by, we have a grass here known as buffalo grass, but I regard it as a species of millet, that springs up, making a heavy yield, and equal to the best timothy; after that is taken off, either peas, beans, sorghum, or turnips may be planted; giving, as before stated, three crops, either of which, in our mild climate, would equal a crop of corn in any of the Western States in flesh-making capabilities.

#### FISH OFFAL FOR SWINE.

*Nueces County, Texas.*—Hogs have been healthy the entire year. An extensive hog ranch has lately been established on Padre Island. Immense quantities of fish are taken daily with a seine, cooked in large kettles, and fed to the hogs. Up to this time they have done remarkably well; and, as the supply of fish is inexhaustible, and at no cost but

the labor of catching, the proprietor expects to realize large profits. A great many hogs are being fed at the slaughter-pen, where parties are killing cattle for the hides and tallow—tallow extracted in steam tanks. After the tallow is drawn off, the steamed offal is fed to the hogs. Some of these hogs have been shipped to New Orleans. I have heard no complaint against them, although the offal is very offensive after coming from the tanks.

#### THE FIRE BLIGHT.

*Lucas County, Ohio.*—The fire-blight in pear trees has been very severe this season on clay soils. On sandy soils, which are slightly mixed with rotten or decomposed iron ore, they have almost entirely escaped. Query: Is it not a deficiency of iron in the soil which occasions the disease?

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#### REPRESENTATION OF HUSBANDRY.

Regret is felt by the true friends of agriculture, that so few farmers should be found in the halls of legislation, and especially in Congress. If it is true that national detriment results from the non representation of tenant-farmers in the British House of Commons, an affirmation recently made as a fact to be deprecated, how much greater the loss from lack of agricultural representation in a nation of independent, thrifty, and intelligent farmers! It is not that there is the slightest difficulty in finding men of the breadth and brains of an average Congress among the farmers of any individual State; but farmers are isolated, and unable to combine with facility; they are more independent, and thus in feeling and fact are less inclined to “crook the pregnant hinges of the knee where [political] thrift may follow fawning;” they are comparatively single-minded and conscientious, and are therefore averse to the insincerity and sinuosity of the genus politician. While agriculture is thus unrepresented, its interests suffer. Ambitious lawyers, scheming merchants, speculators, and railroad monopolists, men who do not represent the producing interests, and who are at best the expensive go-betweens of production and consumption, have an impelling personal interest in seeking legislative position, and they, therefore, obtain it. Commerce has yearly had its millions in subsidies, improvements of navigation, light-houses, and other aids; railroads have millions of dollars of money and of acres of land, and their managers are permitted to water their stock and drain the resources of the farmers for double dividends. Now, the farmers want very little money in appropriations in aid of agriculture, but they do need an exemption from adverse legislation—statesmen understanding and conscientiously working for their interests—protection against rings of land monopolies and the tyranny of freight combinations. Farmers have the numbers, wealth, and ability to protect themselves, by acting in concert, in combination against combinations, as a grand “ring,” which shall overwhelm all mercenary “rings” whatever. To the honest masses of the rural population, both on account of integrity and numbers, must the country look for its salvation from unhallowed greed and knavery in legislation. Then let the agricultural classes combine and make sure they are represented in State and national legislatures.

## CINCHONA PLANTING IN JAMAICA.\*

The history of Cinchona culture in the West Indies is thus succinctly stated in the report of the present government botanist, Mr. R. Thomson, for the year 1869:

The first attempt to introduce the Cinchona cultivation into Jamaica, though in the main unsuccessful, is instructive. In 1860, when the Indian government commissioned an expedition to proceed to Peru for the purpose of collecting plants and seeds of various species of Cinchona, for the introduction of their cultivation into that country, the secretary of state for India authorized the collectors to transmit simultaneously seeds to Jamaica. Accordingly a large number of the seeds of *C. succirubra* and *C. micrantha* arrived at the end of that year. Mr. Wilson, my predecessor, succeeded in rearing some four hundred plants by the spring of the following year. In November (1861) several of the plants were set out at Cold Spring, (near Newcastle,) and in the following year a few more. One of them is now twenty-three feet high, with the stem near the ground two feet in circumference, and one or two others are eighteen to twenty feet high. About one hundred plants of *C. micrantha* were also sent, and kept here in pots a year or more, and thence again brought back to Bath, to the number of sixty, in August, 1862, which, together with the plants of *C. succirubra* then at Bath, numbered at least two hundred. At this time Mr. Wilson had, by the sanction of the government, selected and prepared a site for a plantation on a spur of the Blue Mountains above Bath, and the same was planted to the extent of three acres in October of that year. This site proved unfortunate, inasmuch as the soil, a tenacious clay, was opposed to the nature of the plant. Besides, the site was too low—perhaps under three thousand feet—for their perfect development. The consequence was that they soon perished, except six or eight that were transplanted to Cold Spring. While the aforesaid plants in pots lay at Cold Spring, some were procured by coffee planters; hence at Windsor coffee plantation there are ten fine trees, sixteen to twenty feet high, one of which I had the satisfaction, a few weeks ago, of seeing in perfect blossom.

The subsequent progress of this important enterprise is thus detailed in the official report of Mr. Thomson for 1870:

The progress of the forty acres of Cinchonas planted here the end of the year 1868 continues highly satisfactory. The tallest plant of *C. officinalis* is eleven feet, of *C. succirubra* nine feet, and of the other species eight to nine feet. The circumference of the stems near the ground of all the species except *C. officinalis*, which is of more slender habit, is from ten to twelve inches—double what they were twelve months ago. I speak of the finest specimens on the plantations, but all the others have made proportionate progress. The diameter of the branches from side to side in some of the best plants is over six feet. In my report for 1869 I observed that these plants had withstood the severe drought, which lasted nearly five months, in the most satisfactory manner. I have now to announce that the opposite extreme of wet weather has prevailed in the past year. From the beginning of August till the end of the year it rained on an average four days a week. I regret that I was not in a position to keep a record of the rain-fall, together with other meteorological observations of the past seasons, owing to my only occupying the new plantation-house near the end of September.

By way, however, of indicating the excessive rain-fall experienced in these months, I would remark that the extraordinary fall of twenty-four inches occurred in thirty hours on the 17th and 18th November.

I have good reason to believe from this and other isolated measurements that during the five months above referred to the rain-fall must have considerably exceeded one hundred and fifty inches. Frequently recurring with the rain-fall violent winds prevailed, which in these higher altitudes almost approach to a hurricane, but from which the plants have sustained very little injury. The incessant rains, however, have caused several ugly land slips, sometimes forming gullies to a depth of about twelve feet, cutting across roads, thereby necessitating the alteration of their course to the extent of nearly a mile. The total damage done to the plantations in this way, and by the consequent rolling of huge stones and roots down the steep mountain slopes, has resulted in the loss of about five hundred to six hundred fine trees. When, however, it is borne in mind that this has been an exceptionally rainy year and that the land is steep in some places and newly under cultivation from a state of nature—the surface denuded, the forest roots decaying, and the soil loosened—the powerful action of tropical rains may be easily conceived, and the extent of injury must be considered as under these circumstances trivial. The plants have thus passed satisfactorily the ordeal of two

\* A report of a visit to the Cinchona plantations in Jamaica, West Indies, March, 1871, by C. C. Parry, botanist Agricultural Department, attached to San Domingo Commission.

years, exhibiting the most marked extremes of seasons to which tropical countries are liable.

The forty acres of forest land alluded to in my report for 1869 as having then been prepared for the extension of the plantations, were planted out, except ten acres in December, 1869, in the months of February, March, and April. The plants were placed six and seven feet apart, which gives approximately one thousand plants per acre—forty thousand plants. The average height of these plants is now two to three feet, in a healthy and promising condition. The principle of planting six and seven feet apart (the previous year's planting being ten feet apart) has occurred to me from a similar system of close planting recently adopted in the Cinchona plantations of India—there, indeed, planted four and five feet apart. The prospective result of this close planting is the securing of rapid returns, a few years sufficing to cover the intervening spaces. Each alternate tree is then cut down and the bark sent to market. The operation of cutting down creates room for the spread of the surviving trees, which, in a few more years, again approach and impede each other, and in like manner have to be thinned as before. This extremely thick planting of trees is objectionable, inasmuch as the trees possess a spreading habit. For example, those planted at five feet or at seven feet apart occupy the interspaces in three or four years. At this stage of growth the plant would hardly, I conceive, be worth stripping, as the yield per plant probably could not exceed one pound of dried bark, (value say 2s.) Whereas trees six or seven years old, under favorable circumstances, must each yield five or six pounds of dry bark. On the other hand, however, this system of thick planting has its advantages. The close planting costs but little additional, and the plants are readily propagated. When found too close, they are easily cut down to allow for the expansion of the remaining trees. When thus planted close they keep down the weeds, and hence their culture expenses are lessened.

The entire area of ground planted with Cinchonas is nearly ninety acres. The severe rainy weather of the past year prevented the enlargement of this area by at least twenty acres, for which plants were in readiness. Including these twenty acres, about eighty acres of the forest were felled and partly cleared for the extension of the plantations. This land will be completely prepared for the reception of the plants in a few months.

In May I hope to have forty acres planted (about one thousand plants per acre) with *C. succirubra*, and near the end of the year the other forty acres, together with fifty additional acres proposed to be cleared, planted with *C. calisaya*—the two most precious species. The number of plants permanently planted out is sixty thousand, the number of seedlings in pots forty thousand, and of seedlings in nursery beds ten thousand; total, one hundred and ten thousand. I had intended that the plants required for the extension of the plantations, to the extent of one hundred and thirty acres above alluded to as under preparation for being planted out in the year 1871, should be propagated chiefly from cuttings. But most fortunately two fine trees, at Cold Spring, of *C. succirubra* (one of which is a magnificent tree nine years old and thirty feet high) yielded seeds for the first time in Jamaica, from which, through the generosity of John McLean, esq., I procured in the beginning of September nearly fifty thousand excellent seeds, the result now being forty thousand healthy seedlings. Better plants are produced by seeds than from cuttings. It is also gratifying to state that several young trees in the government plantations have a good crop of seeds ripening and others are coming into flower. The number of seeds likely to be obtained from these young trees in a few months can hardly be under one hundred thousand. Thus the fifty thousand seedlings in course of treatment, and those now ripening on the trees, will suffice to plant all the land proposed to be prepared to the end of 1871, making a total of two hundred and twenty acres, containing about two hundred thousand plants.

I expect shortly to have the honor of submitting samples of Cinchona bark, of the different kinds, to the island chemist for analysis, in order to ascertain the percentage of alkaloids. This operation is more accurately performed when the bark is in a fresh state. It has been recently discovered that the effects of the sun's rays falling on the bark while in a green state is prejudicial to the alkaloids.

In view of the interest felt in this subject by the United States Government, as evidenced in various reports of the Department of Agriculture, the writer availed himself of an opportunity, while connected with the recent explorations of the San Domingo commission, to visit the plantations above referred to, located in the Blue Mountain range, twenty-three miles northeast from Kingston, leaving the latter place on the morning of March 13. The route to the base of the mountains, about seven miles distant, is over an excellent macadamized road, traversing an arid, barren district. The sparsely cultivated fields on either side of the road, occupied by occasional spacious country residences,

are securely fenced in by close growths of the arborescent columnar cactus, (*Cereus eriophorus*;) other cactuses are also frequent, including several *scandent* species, intertwined among the dense thickets of *Acacia*, and other thorny shrubbery, and especially conspicuous, with its bright pink blossoms, the *Opuntia coccinellifera*, on which the cochineal insect feeds.

Further in the interior, the *Cacti* give place to shrubbery of different kinds; an attractive feature in the cultivated landscape being presented in clumps of *lignumvitæ*, (*Guaiacum officinale*,) now showy with a profusion of bright blue flowers, which form a pleasing contrast with its deep, glossy green foliage.

Entering among the foot-hills of the mountain range, the road winds at the foot of rocky spurs overlooking the bed of a clear mountain stream, which is frequently crossed by substantial bridges built of arched masonry. The shrubbery occupying the steep rocky slopes is of a varied character, conspicuous among which are the large orange-colored panicles of the *Agave Antillarum*, now in full flower.

At a distance of nine miles from Kingston the smooth wagon-road is exchanged for a rude mountain trail. In making the ascent frequent small settlements are passed on either hand, the country generally presenting an arid aspect, its native timber-growth having been long since destroyed. The cultivation is here mainly confined to small patches of coffee, now just forming its fruit; while in the vicinity of rudely thatched houses we invariably meet with plantains, yams, and occasional orange or mango groves.

Passing the settlement known as Guava Ridge, by dint of industrious questioning I was enabled, out of a confused maze of mountain trails, to select the one leading to what is generally known as the "Quinine Gardens." After crossing a considerable mountain valley, whose water-course now, in the height of the dry season, is contracted to a small brook, but showing in its wide pebbly bed the high-water mark of the rainy season, the road commences at once the steep ascent of the principal mountain ridge towering far above. By a succession of sharp zig-zags the ascent is gradually effected, the increasing elevation being plainly shown not only by the extended views, but also by a marked change in the character of the vegetation. Here wild roses, mountain blackberries, and ordinary white clover take the place of the more ordinary tropical forms which everywhere border the roadsides at lower elevations.

At an elevation of 4,000 feet above the sea a marked coolness of the atmosphere is experienced, accompanied by frequent showers and fogs throughout the season. Above this point the profitable cultivation of coffee ceases, though plants can be grown up to 5,000 feet; here northern fruits and vegetables flourish and produce abundantly, the winter season barely sufficing to check ordinary growth, the temperature ranging from 40° to 75° Fahrenheit through the entire year.

On this mountain eyrie, at an elevation of over 5,000 feet above the sea, and commanding an extensive view of the adjoining lowlands and the distant ocean, is located the permanent residence of Mr. R. Thomson, the superintendent of the *Cinchona* plantations, a truly enviable location for a botanist, and worthily occupied by Mr. T. and his hospitable family.

Refreshed by a comfortable night's rest after the fatigues of the previous day's journey, in company with Mr. Thomson I made an early start to the *Cinchona* grounds. The path led along the edge of a steep



mountain slope by a narrow artificial terrace, following all the sinuosities of the ridge, and occasionally bringing to view land-slips and precipices terminating in deep gorges below. Stretches of the original mountain forest here disclose their deep sombre shade, heavy with moisture and rank with a dense undergrowth. The shrubbery is here frequently festooned with gray and yellow lichens, indicating a perennial moisture, while the familiar forms of northern club-mosses are strangely associated with tree-ferns and trailing grasses.

The first *Cinchona* plants are set out at the foot of a steep slope rising at an angle of  $45^{\circ}$ , and extending upward over the recent forest clearing to an elevation of 6,000 feet above the sea. The trees, now commencing the third year from planting out or the fourth from seed, look very vigorous and thrifty, having a smooth, clean, stocky stem, often two inches in diameter at base, and rising to a height of four to twelve feet. Their ability to withstand the ordinary vicissitudes of this climate has been tested by an alternation of unusually dry and wet seasons since planting out, and their survival of harsh treatment from bruises, land slips, and fierce winds is evidenced in frequent distorted specimens scattered over the ground, the vitality of which remains apparently uninjured notwithstanding this harsh treatment. Of the species here growing, including *C. officinalis*, *C. calisaya*, *C. succirubra*, *C. micrantha*, and *C. pahudiana*, the former two have flowered for the first time this season, and I was, fortunately, just in time to secure flowering specimens with early-forming fruit. This early flowering is confined to a few specimens out of many thousands, most of the plants being in too vigorous a stage of growth to allow the process of reproduction. In succeeding years, however, this proportion of flowering and seeding plants will increase rapidly, so that seed to any desired amount can be procured from this source for distribution.

The soil is a rich loam, intermixed with small comminuted fragments of the underlying rock, and enriched on the surface by the vegetable mold of the decaying forest. It has been suggested by Mr. Thomson that small forest clearings, at suitable points, might be planted out with different species of cinchona, and after attaining a fair growth be left to propagate themselves in the form of natural *Cinchona* forests. Mr. Thomson, whose judicious selection of this first successful *Cinchona* plantation in the western world entitles his opinions to great respect, is prosecuting this enterprise with unwearied industry, and expects to add about fifty acres annually to this Government plantation, extending to various elevations, and fully testing the particular qualities of the various species, both as to their adaptation to different soils and climates, and also as to their relative productiveness in the percentage of quinine.

These experiments being directly applicable to any future enterprise in this line in the West India mountain region, renders the results so far obtained of great value; in addition to which the facilities offered in the procuring of seeds and plants from this convenient source greatly enhances its prospective advantages.

Regretting that the short time at my disposal allowed only a limited view of this interesting mountain district, I took leave of Mr. Thomson, and, retracing more rapidly on the descending grade the mountain road passed over on the previous day, reached Kingston late on the evening of March 14.

The practical application of the facts here brought to view may be thus briefly stated:

1. That the peculiar conditions of soil and climate suitable for the

growth of the best varieties of Cinchona plants cannot be found within the present limits of the United States, where no suitable elevations possessing an equable moist, cool climate, free from frost, can be met with.

2. That the island of San Domingo, located within the tropics and traversed by extensive mountain ranges attaining elevations of over 6,000 feet above the sea, presents a larger scope of country especially adapted to the growth of Cinchonas than any other insular region in the western hemisphere.

3. That the existence of successful Cinchona plantations in Jamaica, within two days' sail from San Domingo, will afford the material for stocking new plantations in the latter island at the least possible expense of time and labor.

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## THE COST AND PROFIT OF THE DEPARTMENT OF AGRICULTURE.

No department of the Government appears to be more strongly intrenched in the affections of the people than that of agriculture. It is the uniform testimony of all informed and unprejudiced minds that its meager appropriations have contributed in larger proportionate measure to the general wealth than the average of the most judicious expenditures of the Government. The evidence on this point is of the most convincing character. It has excited no political antagonism, aiming only to secure the progress of agriculture and the increase of its production, and it enjoys the confidence and secures the coöperation of "the administration" and "the opposition" alike. Occasionally some individual, more solicitous of private than of public advantage, failing to obtain coveted but unmerited favor, is moved to misrepresentation and even vituperation. There are "ax-grinders" constantly attempting the exercise of their vocation, whose disappointment must naturally take the form of opposition; and there is ignorance and prejudice ready to echo faintly the cry of baffled greed.

The accompanying remarks of Mr. Welker, of Ohio, which are placed upon record to show how small an amount of money has been expended by this Department, are suggested by the following petition:

*To the honorable the Senate and the House of Representatives:*

The undersigned memorialists, citizens of New Jersey and Pennsylvania, would respectfully represent to your honorable body the inutility of the Department of Agriculture as a national institution.

Therefore, in consideration of the following reasons, as set forth by your petitioners, we would most earnestly request that action may be taken at an early day whereby that institution may be discontinued.

It has already cost the Government more than three millions of dollars, and without accomplishing any benefit whatever.

Its locality is not in any way suited for the propagation of such tropical plants and seeds, from whence are derived the greater portion of our imported productions of the soil.

It is contrary to the laws of nature for the climate of the District of Columbia to reproduce tropical or semi-tropical plants, &c.

Furthermore, to cultivate or experiment on such plants, in the green-house, is not only expensive but impracticable, and never can be of any commercial value to the nation. Hence the inutility of the Department of Agriculture.

Rare seeds and practical works on agriculture (in all its bearings) are obtainable at most of the reliable seed stores.

By a speedy and due consideration of the foregoing, your memorialists will ever pray, &c.

The following names of men and boys of Camden (New Jersey) and vicinity are

appended: Chas. S. Ayres, M. West, George Channell; Alex. Wood, Jos. E. Ballinger, C. P. Shivers, U. W. Condit, Henry C. Garrison, Chas. D. Lippincott, John F. Musgrave, James Cheatham, W. C. Cluly, Geo. F. Turner, Wm. T. McDanel, Thomas McDonald, Robt. W. Dickson, Henry E. Robertson, John M. Fine, Edward I. Gigham, J. Ashbrook, jr., Ezekiel Pullen, Reuben W. Clark, D. R. Clark.

This memorial was referred to the Committee on Retrenchment, the chairman of which, on the part of the House, Hon. Martin Welker, of Ohio, in reporting adversely to the prayer of the petitioners, took occasion to remark as follows relative to the functions, uses, and expenditures of this Department:

MR. SPEAKER: At the last session of Congress a memorial signed by citizens of New Jersey and Pennsylvania, asking the abolition of the Agricultural Department, was referred to the Joint Committee on Retrenchment, of the House part of which I have the honor to be chairman. Supposing the committee will have no opportunity to report upon the memorial at this session, I take this occasion to make some remarks against the prayer of the memorialists.

Desirous as I am to retrench the expenses of the Government in every possible way, fully recognizing the fact that the heavy burdens of the people demand relief from taxation wherever it can be accomplished, yet I believe this Department, in view of the public good, cannot be dispensed with, and that it would not be wise economy to abolish it. I regard it as a very important branch of the public service and entitled to the liberal support of the Government.

Much of the legislation of Congress has been in the interest of manufactures, finance, and general commerce. Immense Government machinery in the different departments is brought to bear upon these great interests. Until the establishment of the Agricultural Department, the farming and producing interests were almost entirely neglected, or allowed to take care of themselves as best they could under the care of the States. Agriculture is a national interest. The importance of this branch of industry, the great interests to develop, the wide field for improvement, demand the fostering care of the General Government. Our people are an agricultural people. With the most productive lands, every variety of soil and climate, growing the products of almost every land, we have the capacity to develop the greatest agricultural resources of any country of the globe.

This Department is organized in the interest of labor. This interest, as well as capital, must be taken care of by the Government. There is no need of any conflict in this country between labor and capital. They are coworkers; the one cannot dispense with the other, and both must be fostered. Capital is, however, more able to take care of itself than labor. In the old countries of Europe capital is supreme and labor subordinate. Not so in this country. Here it is reversed, and labor is the great foundation of our national prosperity and advancement.

The Department of Agriculture has been established but a short time. It may be considered an off-shoot of the Patent Office. It had its beginning there. Prior to 1838 some attention had been given to agricultural interests in connection with inventions of labor-saving and valuable machinery. In that year Mr. Ellsworth, then Commissioner of Patents, impressed with the importance of the subject, suggested that Government should recognize the claims of agriculture, and give a more definite character and encouragement to the measures he had commenced, on a limited scale, toward collecting statistics, and introducing a few new seeds and plants, and particularly new varieties of wheat. The next year Congress appropriated \$1,000 from the patent fund for this purpose; and with it a few new plants were introduced, and about thirty thousand packages of seed distributed.

These suggestions of the Commissioner induced Congress to make small annual appropriations for several years, and led to the adoption of schedules for the collection of statistics in agriculture, which were used for the first time in the census of 1840, and have been carried out more fully at each census since with increased satisfaction. The Department was organized by act of Congress, May 15, 1862. Its purpose was stated in the law to be "for acquiring and diffusing among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word, and to procure, propagate, and distribute among the people new and valuable seeds and plants."

In order fully to understand and appreciate the importance of the Department, and its practical and beneficial workings, allow me to call attention to its present organization, and describe the scope and purpose of each of its divisions. From this some correct idea can be formed of the great advantages the country will derive from its fostering care by legislation of the General Government. As now organized, it comprises several divisions:

## 1. DIVISION OF STATISTICS.

This is the office of publication, whence are issued the annual reports of the Department of nearly a quarter of a million copies and a monthly report of twenty-five thousand copies, embracing official data from thousands of correspondents located in nearly every county in the Union, regarding the modes of cultivation and prospects of crops. These reports, annual as well as monthly, are the most popular and most desired of any of the public documents printed by the Government. They are sought for and distributed by the foreign legations resident in this country to all the European Governments. A much larger number of the annual report should be printed for circulation among our people, as now half the demand for them cannot be supplied by members of Congress or the Department.

## 2. DIVISION OF AGRICULTURAL CHEMISTRY.

1. This division affords a medium of correspondence and information between the various agricultural societies and farmers; answering queries on samples forwarded, as ores, minerals, waters; making chemical examinations of natural products and fertilizers, as marls, peats, &c., and giving advice upon the same. Many hundreds of letters are answered every year on these subjects.

2. It is a means through which any new vegetable products, valuable through their chemical constitution, may be examined and brought before public notice as worthy of growth in the States.

3. It is a means whereby large and useful manufactures not existing in this country may be brought under the notice of farmers. In this way the growth of the beet for sugar has been recommended, and is becoming adopted. Comparatively few experiments in its growth had been tried before the Department entered on the consideration of the subject.

4. By its means chemical examinations of the value and composition of vegetable products grown for food in the United States may be conducted on that scale which, embracing the area of the whole country, will lead to more valuable and truthful results than those undertaken by a single State or institution not possessing the extensive communication and correspondence which the Department has. Of this nature is the determination of the nutritive value of cereals grown in the several States, which has just been commenced, and which no doubt will yield valuable results.

## 3. DIVISION OF BOTANY.

The purpose of this division is to give a scientific basis, derived from an accurate knowledge of the ascertained laws of vegetable growth, on which alone any successful system of progressive agriculture can be founded. This is being accomplished in this division by bringing together as far as possible all the varied forms of plants, either in a living state or in the preserved form of herbarium specimens. These are so arranged that any particular plant or class of plants can be readily found, and the relation to allied plants, whether as to uses or capacity for cultivation, can be ascertained with the least labor. By this arrangement, in connection with works of reference giving full accounts of habit, mode of growth, native location, geographical distribution, changes by cultivation, and uses either for food, medicine, or in the arts, there will be accumulated a fund of reliable information, exceedingly valuable in directing culture or indicating sources of supplies of desired materials in medicine or the arts. It is intended by this division to secure the active coöperation of all working botanists in this country and abroad, by a proper system of correspondence and exchange, and thus to furnish valuable information on the progress of botanical research in its direct relation to horticulture and agriculture.

## 4. DIVISION OF NATURAL HISTORY.

The principal feature of this division is the museum of natural history. This is an economic collection, exhibiting the process of manufacture of the raw products of agricultural industry, in which the textile arts, the making of sugars and dyes, and the utilization and extension of the primitive products of the earth are illustrated; also illustrations of the various transformations of insects, both favorable and inimical to vegetation. In this museum are models of the various fruits and specimens of grain, &c., of this country. They are intended to represent type specimens of such varieties, and to show which kinds are particularly adapted to any particular region, climate, or soil. It is intended to represent each State by sections of cases, containing the different varieties of fruits, grains, &c., that have been recommended by State boards of agriculture as especially adapted for culture in their particular States, thus saving years of labor and probable loss to the new settler by exhibiting at one view those varieties which have been experimented upon and found to succeed the best. Duplicate collec-

tions can thus be obtained by each State desiring the specimens for agricultural colleges or State cabinets.

In the collection of native birds the specimens are labeled to show at a glance which are the friends of the farmer by destroying injurious insects, or which are the enemies that prey upon his crops. The plates of insects are especially designed to show such insects as are destructive to vegetation, so that the farmer or fruit grower may recognize them at a glance. Then, by referring to a manuscript work by Professor Glover, the entomologist of the Department, he can immediately learn all that is known of their habits, and the best means to exterminate them. All inquiries relative to noxious insects of the farm made by agriculturists or others desiring such information can be readily answered and the best known remedies recommended.

In the cases devoted to the animal and vegetable fibers they are shown in all their stages, from the seed to the manufactured articles, or from the raw material, as in the case of wool, to the various fabrics made from it.

The collection of domestic poultry shows type specimens of such as are recommended as best for market, laying eggs, or for any particular purpose. The design of the economic collection of flours manufactured from cereals, dye-stuffs, gums, oils, &c., is to show what can be made from various native materials, or to suggest the various products imported from abroad that should be grown in this country.

#### 5. DIVISION OF HORTICULTURE.

This consists of an experimental garden with the *arboretum*, and is devoted to the introduction of new and valuable and promising plants, shrubs, and trees, native and foreign, suitable to the various sections of the Union. What is known as the Botanical Garden has no connection with this division or the Department.

#### WHAT IT HAS ACCOMPLISHED.

Now, Mr. Speaker, what has the Department accomplished? Since the claims of agriculture have been recognized and fostered by Government, the excellence and variety of its machinery and implements have surpassed those of all other nations.

In 1847 the number of agricultural patents granted was but 47; in 1863 it had increased to 390; in 1865 to 642; in 1866 to 1,778; and for each of the last two years it has reached nearly 2,000. These improvements are rapidly revolutionizing the agriculture of the West, and reducing to the lowest point ever attained the proportion of manual labor employed in the operations of farming, saving at least fifty per cent. of the manual labor required in agricultural pursuits.

Under its present able head the Department has distributed the last year nearly six hundred thousand packages of seed, including upward of thirty thousand sacks of winter wheat imported by the Commissioner, besides new varieties of oats and other cereals, which have been sent into every congressional district in the Union; thus affording at once a more general diffusion of new and valuable kinds of grain than would or could be done by private enterprise in many years. As the result of this distribution of seed by the Department from year to year, there are now raised hundreds of thousands of bushels of oats, incomparably superior to the old varieties, and in many instances nearly doubling the crop. And so of the increased quantity and superior quality of the wheat in many of the States. The same might be said of several of our other products. This increase has contributed millions to the wealth of the country, and alone establishes the utility and great benefits resulting from this Department.

It is said that he who makes two blades of grass grow where one did before is a public benefactor. This Department has done this, and more, in many varieties of agricultural products. It has established relations with organized associations for agricultural improvements, whether governmental or otherwise, making exchanges of seeds, plants, and publications. Through an extended correspondence with foreign societies and our consuls abroad it is searching the world for new and valuable plants to acclimatize, new varieties of cereals to test, and, when found valuable, to distribute, thus finding and introducing into our agriculture the valuable products of all countries suitable and profitable for our cultivation.

Agriculture is the great civilizer of the world. Its improvements and advancements mark national as well as individual progress. Whatever will add to its success, furnish it with valuable inventions and discoveries, are so many steps toward accomplishing the highest forms of civilization and human happiness. In this country, with its broad and fertile acres, the cultivator of the soil is generally its owner. So large a proportion of our population being engaged in this pursuit it must ever be a leading occupation. The great extent of our country and its capabilities make it necessary that there shall always be a great diversity of agricultural labor. To give direction to this diversified agriculture is one great purpose of the Department, and it will be able to lead the way in processes of culture, as well as selection of products and their varieties, in the different localities, and thus enabling farmers to give attention to that culture which promises and secures the best results and rewards.

Another thing: Agricultural colleges, under the liberal land grants of Congress, are being established in different States, under State control. This Department, as a common head, can and will furnish great assistance in the farm education proposed in these colleges.

Like the Bureau of Education, but recently established to concentrate statistics and lead and give information and direction to educational interests in the States, this Department will be able to give the same, and perhaps much greater, facilities in the direction of agricultural education among the people.

#### PUBLIC LANDS.

Intimately connected with this subject is the land policy of the Government, about which I desire to make a few additional remarks. In the early days of the Republic our public lands were regarded as a source of revenue. It was expected from their sale to pay a large proportion of the expenses of the Government; but in later days it was found that, with expense of survey and sale, these expectations were not realized, and a new policy was adopted, and large quantities of the public domain have been used in constructing railroads, endowing colleges, rewarding military services, and stimulating immigration by giving homesteads to all persons who will live on and improve them.

In this way this heritage of the people has largely contributed to the material development of our country. These grants have not always been wisely made, and in many respects have no doubt been great outrages upon the rights of the people. The future policy of the Government should be to so provide by legislation that our public lands should be preserved for actual settlers, and thereby furnish free homes to the landless. Concentration of large quantities in the hands of monopolists and speculators is the great curse of most of the Western States, and has and does impede agricultural improvement and development.

Of our public lands about seventy-eight million acres have been granted for schools and colleges, over ten millions of which have been given to agricultural colleges. Two hundred million acres have been appropriated and given to build railroads and other improvements. About seventy-three million acres have been given to our soldiers, their widows and children. The Government still owns about a thousand million acres. This vast domain as fast as it is surveyed is open to settlement under our homestead laws, which give every man or unmarried woman one hundred and sixty acres for the cost of survey and entry, upon living upon and improving the same for the time limited, which is five years, except a soldier, who, under the bill passed by the House, is allowed to count three years of his term of service in the Army, or whatever term under that period he has served, as part of the five years' residence.

In the year 1869, about two and a half million acres were given to homestead and preëmption settlers. In the same year about eight million acres were converted from wild lands into farms, making some sixty thousand farms. We now have over six million real-estate owners, being one in about every six of our population, and nearly one-half of our whole population are engaged in the pursuit of agriculture.

The whole landed property of England is now owned by thirty thousand persons, making one in every six hundred and fifty of its population. One-half of its soil is now owned by about one hundred and fifty persons. Nineteen and a half million acres in Scotland are owned by twelve proprietors. In this country this extensive ownership of the soil, the sense of proprietorship resulting therefrom, encouraging independence of action and thought, constitute the corner-stone of our Republic. The multiplication of these free homes for the people, instilling into their minds the spirit of agriculture and mechanical progress, and education, and moral development, and improvement, will secure freedom, equality, and prosperity among our people, and perpetuity to our Government.

In this grand work, with such support as should be and no doubt will be given to it, the Agricultural Department, in the future as in the past, will be an efficient and important aid to the other branches of the Government. The memorial to which I have alluded alleges that over three million dollars have already been expended upon the Department without any corresponding benefits. Having stated its great benefits in the past, and what it is expected to accomplish in the future, I append to these remarks a statement showing the several appropriations for each year from 1839, the first one made, to and including 1870:

1839, (first appropriation for the promotion of agriculture, from Patent Office fund) .....	\$1, 000
1842, (from Patent Office fund) .....	1, 000
1843, (from Patent Office fund) .....	2, 000
1844, (from Patent Office fund) .....	2, 000
1845, (from Patent Office fund) .....	3, 000
1846, (from Patent Office fund) .....	
1847, (from Patent Office fund) .....	3, 000

1848, (from Patent Office fund).....	\$3,500
1849, (from Patent Office fund).....	3,500
1850, (from Patent Office fund).....	4,500
1851, (from Patent Office fund).....	5,500
1852, (from Patent Office fund).....	5,000
1853, (from Patent Office fund).....	5,000
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Total from Patent Office fund, (reimbursed in 1855) .....	39,000
1854 .....	35,000
1855 .....	25,000
1856 .....	105,000
1857 .....	60,000
1858 .....	60,000
1859 .....	40,000
1860 .....	60,000
1861 .....	60,000
1862 .....	60,000
1863, (including \$20,000 to test the practicability of cultivating and preparing flax and hemp as a substitute for cotton).....	185,000
1864 .....	151,370
1865 .....	155,300
1866 .....	149,100
1867 .....	179,020
1867, (transferred from the Bureau of Freedmen, Refugees and Abandoned Lands, for seeds for Southern States) .....	50,000
1868 .....	120,068
1868, (to pay claims against the Department contracted prior to June 1, 1867).....	40,000
1869 .....	141,440
1870 .....	145,370
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Total .....	1,810,668
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*For permanent improvements, including the erection of the new building, furnishing, finishing, &c.*

1867, (for the erection of the new Department building).....	\$100,000
1868, (for heating, water, and gas apparatus, furniture, cases for museum, library, apparatus for laboratory, &c.).....	52,525
1870, (for new conservatory).....	25,000
For improvement of agricultural grounds.....	16,700
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Total .....	194,225
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## AGRICULTURE AND CLIMATE OF OREGON.

The secretary of the Oregon State Agricultural Society sends to the Department, under date of January 18, 1871, a lengthy report, from which we cull the following items of information relative to the agriculture, climate, and growth of that State:

The early portion of the season of 1870 was very promising for farmers, but heavy rains in the latter part of June, succeeded by extraordinarily hot days and nights, arrested the filling of grain. The wheat harvest was scarcely an average yield; the oats crop was one-fifth below the average; late potatoes did not yield three-fourths of an average crop. Early potatoes, however, did better, and there was a heavy crop of hay, perhaps one-half above the average. Rust, unusual in the history of the State, affected the growing grain. One farmer had a field of oats entirely destroyed by the red rust, so common in the Eastern States, but heretofore unknown in Oregon. Our correspondent believes that the damage to the growing crops was caused more by the warm nights of July than by any other cause. Usually an Oregon summer day is succeeded by a cool night, but in the season referred to warm nights succeeded the warm days. To the same influence is ascribed the prevalence during the year of ague and other miasmatic diseases. He had not known up to 1870 of a single case of ague during an experience of twenty-six years in that State.

Notwithstanding the drawbacks of 1870, the general condition and prospects of the

Oregon farmer are encouraging. The price of wheat has advanced, and the means of moving heavy products to market have improved. Wheat was selling in January at \$1 a bushel. The export trade of Oregon, consisting mainly of agricultural productions, is steadily growing. During the sixteen months ending October 31, 1870, there were exported to foreign countries, chiefly to British Columbia, flour, grain, provisions, salmon, lumber, &c., amounting in value to \$371,355. A large trade also exists with the Territories north and east of Oregon. The shipments to California largely exceed all other shipments combined. Her people take breadstuffs, oats, butter, eggs, and other provisions, wool, lumber, coal, and fruit, and, together with Washington, Idaho, Montana, and Nevada Territories, and British Columbia, all the live stock Oregon can spare, and more than she ought to spare. For Oregon horses California is the principal market.

The indications in January were that all kinds of stock were passing through the winter in good condition, except in the Umpqua and Rogue River Valleys, where there was a scarcity of grass last summer and autumn, in consequence of prolonged drought. Winter wheat presented a favorable appearance. Owing to the open winter, preparations for spring planting were further advanced than usual.

Of several varieties of wheat received from the Department and tested upon his own farm, bur correspondent expresses a preference for the white variety, known as Oregon white winter wheat. The crop of winter wheat which received the first premium awarded by the Oregon State Agricultural Society at its fair for 1870 was of this variety. It was raised by Mr. T. W. Davenport, of Marion County, and yielded 912 bushels, weighing 63 pounds to the measured bushel, from 20 acres—more than 45½ bushels to the acre. Premiums for spring wheat were awarded to Calvin Neal, who raised 31 bushels of Russian or ninety-days wheat to the acre; and to James Finlayson, who raised 33 bushels of White Chili to the acre.

Two extraordinary crops of oats are reported. Joseph Hamilton raised on ten acres of bottom land, without manure, 820 bushels of winter oats. The land had been under cultivation for twenty-two years. J. H. Robbins raised on two and a half acres of red hill land 250 bushels of Russian oats.

The following weather record for 1870 was kept by Mr. T. Pearce, of Eola, in latitude 44° 51', and longitude 123° 5':

Months.	Maximum temperature each month.	Minimum temperature.	Mean temperature.	Number of rainy days.	Rain-fall in inches.	Clear days.	Cloudy days.	Foggy days.	Partially foggy.
January .....	48	20	37	17	4.35	9	2	3	2
February .....	47	33	39	15	5.63	4	8	0	4
March .....	47	24	39	16	5.77	9	6	0	2
April .....	60	38	47	12	5.52	11	7		
May .....	66	44	52	10	2.46	9	12		
June .....	68	47	59	7	2.26	14	8		
July .....	81	52	71			27	4		
August .....	83	57	68	2	0.08	24	5		
September .....	73	54	59	3	0.71	16	10	1	6
October .....	59	39	46	3	0.90	27	1		7
November .....	48	36	42	11	5.05	8	10	2	6
December .....	50	20	33	9	4.38	12	5	3	2
				105	37.31	170	78	9	29



## IMPORTS OF 1870.

The following is from the official statement of quantities and values of imports for the year ending December 31, 1870, in comparison with a similar statement of the imports of 1869.

	Quantities.		Value.	
	1870.	1869.	1870.	1869.
Articles in a crude state used in dyeing and tanning.....			\$406, 101	\$511, 021
Barilla and kelp..... lbs.		1, 396, 833		12, 956
Cochineal..... do.	1, 446, 672	1, 404, 158	1, 026, 945	927, 946
Cotton, raw..... do.	1, 928, 309	1, 348, 331	331, 185	339, 384
Dyewoods, in sticks..... cwt.	974, 591	1, 853, 288	635, 666	1, 099, 384
Gold and silver:				
Gold bullion.....			833, 689	751, 821
Silver bullion.....			127, 928	97, 829
Gold coin.....			9, 596, 872	15, 829, 763
Silver coin.....			15, 014, 874	8, 289, 114
Guano, except from American islands..... tons.	50, 875	14, 914	2, 888, 413	295, 721
Gypsum, or plaster of Paris, unground..... do.	94, 635	139, 124	83, 708	130, 432
Madder:				
Ground or prepared..... lbs.	5, 435, 955	20, 935, 291	614, 511	2, 543, 734
Root..... do.	56, 012	355, 045	7, 008	46, 237
Rags of cotton and linen for manufacture of paper..... lbs.	89, 282, 250	83, 795, 662	3, 254, 035	3, 154, 552
Silk, raw, or as reeled from the cocoon..... do.	738, 381	614, 625	3, 897, 875	3, 079, 409
Wood, all cabinet, unmanufactured.....			717, 045	661, 227
Animals, living, of all kinds.....			7, 303, 294	4, 124, 360
Breadstuffs:				
Barley..... bush.	5, 605, 291	6, 594, 665	4, 030, 567	5, 324, 972
Bread and biscuit..... lbs.	1, 109, 347	706, 351	129, 996	49, 043
Indian corn..... bush.	89, 897	87, 002	77, 391	72, 959
Indian meal..... bbls.	121	288	473	901
Oats..... bush.	2, 259, 036	555, 702	733, 949	205, 678
Rice..... lbs.	46, 065, 129	46, 112, 450	1, 223, 120	1, 079, 760
Rye..... bush.	320, 964	263, 976	202, 388	175, 781
Rye flour..... bbls.	3	224	19	773
Wheat..... bush.	1, 048, 205	640, 663	1, 168, 177	684, 532
Wheat flour..... bbls.	75, 321	88, 114	333, 056	400, 370
Potatoes..... bush.	156, 679	105, 758	77, 344	64, 113
All other preparations from breadstuffs, used as food.....			346, 214	448, 058
Books, pamphlets, maps, engravings, and other publications.....			1, 758, 589	1, 746, 728
Chicory, ground or prepared, and root..... lbs.	1, 928, 053	3, 521, 469	58, 826	124, 833
Clothing, except when of silk:				
Cut and sewed together.....			1, 721, 836	1, 020, 276
Articles of wear not specified.....			1, 045, 636	865, 988
Coal, bituminous..... tons.	456, 959	423, 659	1, 156, 854	1, 160, 364
Cocoa..... lbs.	5, 105, 244	2, 483, 960	602, 842	234, 847
Coffee..... do.	275, 242, 736	293, 925, 725	27, 615, 262	23, 834, 854
Copper:				
Ore..... cwt.	59, 765	140, 463	48, 868	518, 383
Copper..... lbs.	304, 276	323, 721	32, 299	39, 652
Manufactures of.....			562, 762	250, 696
Cotton, and manufactures of:				
Bleached and unbleached..... sq. yds.	30, 708, 032	27, 761, 136	3, 972, 678	3, 633, 063
Printed, painted, or colored..... do.	30, 871, 050	24, 428, 970	3, 945, 419	3, 386, 797
Hosiery, shirts, and drawers.....			4, 627, 227	4, 655, 154
Jeans, denims, drillings, &c..... sq. yds.	5, 561, 214	7, 186, 143	796, 107	1, 024, 581
Manufactures not specified.....			12, 568, 930	9, 506, 419
Chemicals, drugs, medicines, and dyes not specified.....			6, 618, 554	7, 421, 857
Earthen, stone, and China ware.....			4, 251, 375	4, 688, 573
Fancy goods.....			4, 244, 541	3, 600, 267
Fish, fresh and cured, not of American fisheries.....			2, 724, 213	2, 276, 159
Flax and manufactures of:				
Flax, raw..... tons.	2, 557	1, 954	599, 670	642, 498
By yard.....			12, 335, 697	14, 079, 307
Other manufactures.....			4, 455, 671	2, 976, 752
Fruit of all kinds, (including nuts).....			7, 338, 492	8, 047, 893
Furs and fur skins.....			2, 367, 372	2, 865, 696
Glass and glasswares:				
Cylinder, crown, or common window..... lbs.	33, 090, 388	36, 591, 177	1, 380, 237	1, 539, 849
Cylinder and crown, polished..... sq. ft.	58, 464	53, 852	16, 754	18, 481
Fluted, rolled, or rough plate..... do.	479, 328	215, 261	25, 264	27, 442
Cast polished plate, not silvered..... do.	1, 580, 112	1, 246, 821	885, 034	684, 688
Cast polished plate, silvered..... do.	2, 492, 721	2, 334, 388	644, 334	610, 817
Manufactures not specified.....			1, 059, 084	1, 223, 135
Gums.....	8, 200, 359	9, 540, 392	1, 249, 826	1, 331, 687

## Official statement of quantities and values of imports, &amp;c.—Continued.

	Quantities.		Value.	
	1870.	1869.	1870.	1869.
Hemp and manufactures of:				
Raw..... tons..	20,239	19,057	\$4,031,874	\$3,103,008
Manufactures by yards..... sq. yds..	1,011,275	907,029	144,217	142,928
Other manufactures of.....			311,212	227,716
Hides and skins, other than furs.....			14,528,988	14,204,009
India-rubber and gutta-percha:				
Unmanufactured..... lbs..	9,266,790	9,972,706	3,485,866	3,235,184
Manufactured.....			913,768	792,868
Iron and steel, and manufactures of:				
Pig iron..... lbs..	314,630,384	350,269,170	2,401,993	2,484,173
Castings..... do..	4,324,095	1,201,906	32,006	27,767
Bar iron..... do..	174,578,066	186,119,940	3,416,718	3,664,445
Boiler iron..... do..	2,003,134	1,157,401	48,836	33,148
Band, hoop and scroll iron..... do..	14,651,896	15,557,761	308,335	315,522
Railroad bars or rails..... lbs..	798,306,761	626,326,597	13,322,170	9,092,343
Sheet iron..... do..	22,536,563	27,395,521	662,210	1,098,000
Old and scrap iron..... tons..	150,194	149,391	3,471,590	3,025,131
Hardware.....			164,118	293,605
Anchors, cables, & chains of all kinds. lbs..	10,335,618	12,719,656	431,272	489,376
Machinery.....			909,141	1,036,208
Muskets, pistols, rifles, and sporting guns.....			805,359	472,205
Steel ingots, bars, sheets, and wires.....			3,310,686	2,769,140
Cutlery.....			1,755,499	1,731,132
Files.....			559,248	607,267
Saws and tools.....			220,733	155,077
Manufactures of iron and steel not specified.....			5,601,316	5,496,350
Jute and other grasses, and cocoa fiber, and manufactures of:				
Raw..... tons..	25,849	19,614	2,143,714	1,243,586
Manufactures of, by yards..... yds..	3,348,119	1,594,568	347,394	113,367
Gunny cloth, gunny bags, and other manufactures of, used for bagging..... lbs..	22,172,265	10,146,679	1,060,621	300,058
Other manufactures.....			1,164,343	1,233,527
Lead and manufactures of:				
Pig, bars, and old..... lbs..	84,955,916	91,829,077	3,485,703	3,759,602
Manufactures of.....			13,391	35,132
Leather and leather goods:				
Leather of all kinds..... lbs..	9,931,135	7,834,872	5,938,598	5,265,392
Gloves of kid and chéveril..... doz. prs..	446,684	345,725	2,964,150	2,354,976
All other gloves of skin or leather..... do..	138,226	114,837	586,651	463,268
All other manufactures of.....			700,103	690,039
Oils:				
Whale and fish, not of American fisheries..... galls..	395,011	634,143	220,582	520,573
Olive, salad..... galls..	154,489	187,126	291,455	342,123
not salad..... galls..	69,469	329,439	59,599	272,640
All other fixed oils..... galls..	6,595,046	4,006,458	1,768,374	1,207,933
Volatile or essential..... lbs..	253,746	278,925	389,512	440,613
Opium, and extract of..... lbs..	272,401	177,445	1,857,185	1,294,299
Paper, and manufactures of:				
Printing paper.....			77,206	75,352
Writing paper.....			34,882	198,608
Other paper.....			505,292	236,201
Papier-maché and all other manufactures of paper, and including parchment.....			610,192	555,567
Perfumery and cosmetics.....			284,044	272,764
Precious stones.....			1,909,305	2,079,213
Provisions, including peas, beans, and vegetables.....			4,421,163	3,107,531
Salt..... lbs..	605,596,772	733,634,412	1,202,809	1,416,488
Salt-peter, (nitrate of potash)..... lbs..	12,366,480	7,625,575	503,371	294,557
Silk, manufactures of:				
Dress and piece goods.....			14,902,727	11,923,359
Hosiery, shirts, and drawers.....			38,561	38,047
Manufactures not specified.....			12,182,079	11,271,709
Soda, and salts of:				
Bicarbonate..... lbs..	15,608,413	14,003,068	326,470	353,238
Carbonate, including sal-soda and soda ash..... lbs..	154,343,498	152,266,721	2,299,880	2,493,616
Caustic soda..... lbs..	26,098,533	18,158,595	805,200	552,769
Nitrate, acetate, sulphate, phosphate, and all other salts of soda..... lbs..	33,683,085	32,058,338	884,247	737,292
Spices of all kinds, including ginger, pepper, and mustard..... lbs..	20,571,942	18,172,580	1,857,007	1,514,408
Sugar and molasses:				
Brown..... lbs..	1,115,348,643	1,258,569,350	52,995,434	62,497,271

## Official statement of quantities and values of imports, &amp;c.—Continued.

	Quantities.		Value.	
	1870.	1869.	1870.	1869.
Sugar and molasses :				
Refined .....	lbs.. 259,947	1,023,971	\$13,365	\$70,045
Molasses .....	galls.. 50,058,182	53,958,904	11,487,910	12,351,211
Melada and sirup of sugar-cane. 1.....	lbs.. 33,083,038	21,065,819	1,315,840	726,071
Candy and confectionery .....	do.. 56,536	48,694	13,629	13,974
Tea .....	do.. 49,359,803	46,999,296	15,053,465	14,056,678
Tin, and manufactures of :				
In bars, blocks, or pigs .....	cwt.. 100,709	78,026	2,669,456	1,993,981
In plates .....	do.. 1,419,354	1,591,346	8,405,377	8,703,417
Manufactures of .....			66,903	42,857
Tobacco, and manufactures of :				
Leaf .....	lbs.. 7,180,500	5,849,733	2,849,093	2,259,492
Cigars .....	do.. 668,533	475,045	2,108,022	1,471,819
Snuff .....	do.. 17,255	18,668	5,284	6,251
Other manufactures of .....			31,025	14,252
Watches, and watch movements and materials .....			3,194,828	2,693,404
Wines, spirits, and cordials :				
Spirits and cordials in casks .....	pf. galls.. 1,387,173	1,812,642	1,670,129	1,573,436
Spirits and cordials in bottles .....	doz.. 56,654	32,934	266,290	155,340
Wine in casks .....	galls.. 9,495,984	8,659,556	3,306,179	3,134,804
Wine in bottles .....	doz.. 577,572	394,808	2,592,924	2,466,620
Wool, sheep's; goats' and camels' hair, and manufactures of :				
Raw and fleece .....	lbs.. 50,230,518	49,629,419	7,278,745	7,170,495
Cloths and cassimeres .....			9,543,911	7,688,348
Woolen rags, shoddy, mungo, waste, and flocks .....	lbs.. 703,026	795,652	65,864	69,317
Shawls .....			2,033,502	1,942,793
Blankets .....			17,481	22,854
Carpets .....	yds.. 3,974,548	3,887,730	4,041,971	4,261,258
Dress goods .....	do.. 67,490,126	63,278,264	16,552,393	15,463,942
Hosiery, shirts, and drawers .....			506,209	466,368
Manufactures not elsewhere specified .....			5,479,122	4,938,730

The commodities named are the principal but not the only ones reported. The total aggregate of imports of 1869 is \$463,424,421; of 1870, \$486,695,673. The portion brought in American vessels in 1869 was \$146,343,209; in 1870, \$154,912,888—a little less than one-third.

## MARKET PRICES OF FARM PRODUCTS.

Articles.	March.	April.
NEW YORK.		
Flour, State.....per barrel..	\$6 00 to \$7 35	\$6 00 to \$7 10
western.....do.....	6 00 to 8 75	6 00 to 9 00
Wheat, No. 1 spring.....per bushel..	1 56	1 56 to 1 61
No. 2 spring.....do.....	1 45	1 45 to 1 53
winter and amber western.....do.....	1 61 to 1 64	1 54 to 1 68
Corn, new western mixed.....do.....	84 to 85	83 to 83½
old western mixed.....do.....	85½ to 86½	83½ to 84
Rye.....do.....	1 12½	1 12½
Barley.....do.....	1 05 to 1 18	95
Oats, western mixed.....do.....	66 to 70	67½ to 71
State.....do.....		
Hay, shipping qualities.....per ton..	24 00	24 00
prime.....do.....	25 00 to 30 00	25 00 to 30 00
Pork, mess.....per barrel..	21 50 to 22 75	21 25
prime mess.....do.....	19 00 to 22 00	18 00 to 20 00
Beef, mess.....do.....	10 00 to 15 00	10 00 to 15 00
extra.....do.....	15 00 to 17 50	15 00 to 17 50
Lard.....per pound..	12½ to 13½	11½ to 11½
Butter, western.....do.....	15 to 25	12 to 20
State.....do.....	30 to 48	20 to 45
Cheese, dairy.....do.....	7 to 14	7 to 14
factory.....do.....	13 to 16½	12 to 16½
Cotton, ordinary.....do.....	12½ to 14	10½ to 13½
middling.....do.....	14½ to 17½	14 to 17½
Tobacco, sound lugs, light grades.....do.....	6½ to 7½	6 to 6½
sound lugs, heavy grades.....do.....	7½ to 8½	7 to 7½
common leaf, light grades.....do.....	7½ to 8½	7 to 7½
common leaf, heavy grades.....do.....	8½ to 09	7¾ to 8½
Wool, combing fleece.....do.....	42½ to 50	50 to 58
extra pulled.....do.....	47½ to 50	44½ to 51
Texas, common to medium.....do.....	24 to 30	34
California, common.....do.....	23 to 36	25
BOSTON.		
Flour, western superfine.....per barrel..		6 25 to 6 50
western extra.....do.....		6 75 to 8 00
western choice.....do.....		8 50 to 10 50
Wheat.....per bushel..		
Corn, yellow.....do.....		87 to 88
mixed.....do.....		84 to 86
Oats.....do.....		68 to 73
Rye.....do.....		1 10 to 1 20
Barley.....do.....		95 to 1 20
Pork, mess.....per barrel..		20 50 to 21 00
prime.....do.....		17 50 to 18 00
Beef, mess.....do.....		12 00 to 16 00
extra mess.....do.....		16 00 to 18 00
Lard.....per pound..		12½ to 13
Butter, New York and Vermont.....do.....		25 to 40
Canada.....do.....		18 to 25
western.....do.....		12 to 20
Cheese, eastern factory.....do.....		6 to 16
Ohio factory.....do.....		13 to 15½
Hay, prime.....per ton..		20 00 to 29 00
Wool, western.....per pound..		48½ to 57½
combing and de laine fleeces.....do.....		55 to 56½
tub.....do.....		56 to 97½
pulled.....do.....		50 to 57

Articles.	March.	April.	
CHICAGO.			
Flour, winter, extras .....	per barrel..	\$6 50 to \$8 25	\$7 75
spring .....	do.....	4 00 to 7 37½	\$4 75 to 6 25
Wheat, No. 1 spring .....	per bushel..	1 20 to 1 25½	1 27½ to 1 28
No. 2 spring .....	do.....	1 19¼ to 1 20¾	1 27
No. 3 spring .....	do.....	1 15 to 1 20	1 20¼ to 1 22
Corn, No. 2 .....	do.....	48½ to 51	51½ to 54½
rejected .....	do.....	46 to 49½	53 to 53½
Oats, No. 2 .....	do.....	48½ to 49¼	48 to 51
rejected .....	do.....	47	47¼ to 48
Hay, timothy and clover, (on track) .....	per ton..	15 00 to 16 00	15 00 to 16 00
prairie .....	do.....	11 00 to 16 00	10 00 to 13 00
Pork, mess .....	per barrel..	21 37½ to 21 50	20 00 to 20 50
prime mess .....	do.....	16 50 to 17 00	16 00 to 19 00
Beef, mess .....	do.....	10 00 to 11 50	11 00 to 13 00
extra mess .....	do.....	13 00 to 13 50	14 50 to 15 00
Lard .....	per pound..	15 to 15½	14½ to 15
Butter, firkin and tub .....	do.....	13 to 25	8 to 22
extra .....	do.....	25 to 28	25 to 23
Cheese, New York factory .....	do.....	18 to 19	18 to 19
western factory .....	do.....	15 to 16	15 to 16
western reserve .....	do.....	15 to 16	15 to 16
Wool, medium fleece .....	do.....	35 to 45	38 to 48
unwashed medium .....	do.....	26 to 30	30 to 35
tub .....	do.....	45 to 50	45 to 50
CINCINNATI.			
Flour, family .....	per barrel..	\$6 50 to \$6 75	\$6 35 to \$6 50
extra .....	do.....	6 25 to 6 50	6 25 to 6 35
superfine .....	do.....	5 35 to 5 65	5 50 to 5 75
low grades .....	do.....	4 50 to 5 00	5 00 to 5 40
Wheat, No. 1 white .....	per bushel..	1 45	1 45 to 1 50
No. 2 white .....	do.....		
No. 1 red .....	do.....	1 37 to 1 38	1 38 to 1 40
No. 2 red .....	do.....	1 35	1 35 to 1 38
Corn, No. 1 .....	do.....	57	59
new ear .....	do.....	56	57
Rye, No. 1 .....	do.....	1 05	1 13 to 1 15
No. 2 .....	do.....	1 00	1 10 to 1 12
rejected .....	do.....		
Barley, No. 1 .....	do.....	1 00	90 to 95
No. 1 State .....	do.....		80
Oats, No. 1 mixed .....	do.....	50 to 52	53 to 54
No. 2 mixed .....	do.....	48 to 50	50 to 52
Hay, tight-pressed .....	per ton..	16 00 to 19 00	16 00 to 19 00
loose .....	do.....	18 00 to 23 00	18 00 to 21 00
Pork, mess .....	per barrel..	21 25 to 22 00	21 00
prime mess .....	do.....		
Lard, prime steam .....	per pound..	12¼	11½ to 11¾
Butter, choice Ohio .....	do.....	26 to 28	26 to 32
fair to good .....	do.....	20 to 22	20 to 22
Cheese, western reserve .....	do.....	13½ to 14½	13 to 14
factory .....	do.....	14½ to 16	15 to 16½
Cotton, ordinary .....	do.....	9 to 13	9 to 12¼
middling .....	do.....	13½ to 14¾	13 to 14½
Tobacco, lugs, West Virginia .....	do.....	4 to 12	5½ to 8
lugs, Kentucky .....	do.....	7 to 15	7 to 10
common to medium leaf, West Virginia .....	per pound..	8 to 12	8 to 20
common to medium leaf, Ky. .....	do.....	10 to 15	10 to 14
Wool, tub-washed .....	do.....	48 to 50	48 to 50
fleece-washed .....	do.....	42 to 44	42 to 44
unwashed .....	do.....	30 to 36	30 to 36
pulled .....	do.....	36 to 38	36 to 38

Articles.	March.	April.
ST. LOUIS.		
Flour, superfine..... per barrel..	\$5 00 to \$5 75	\$5 00 to \$5 50
extras..... do.....	5 75 to 7 25	5 25
choice..... do.....	7 50 to 9 00	7 50 to 9 50
Wheat, spring..... per bushel..		1 20 to 1 33
winter No. 1..... do.....	1 65	
winter No. 2..... do.....	1 52½	1 55 to 1 58
winter No. 3..... do.....	1 40	1 37½ to 1 42
red..... do.....	1 55 to 1 57½	
Corn, mixed..... do.....	49 to 59	50 to 62
yellow..... do.....	58 to 59	51½ to 53½
Rye..... do.....	90 to 93	98 to 1 00
Barley, winter..... do.....	95 to 1 10	75 to 1 05
spring..... do.....	65 to 75	98 to 1 10
Oats, mixed..... do.....	48 to 54	50 to 54
white..... do.....	58 to 60	55 to 56½
Hay..... per ton.....	21 00	16 00 to 22 00
Pork, mess..... per barrel..	21 75 to 22 00	20 00 to 20 50
Lard, tierce..... per pound..	12	11¾ to 12
keg..... do.....	12	12¼ to 13
Butter, choice..... do.....	28 to 30	28 to 30
fair to medium..... do.....	12 to 23	15 to 22
Cheese, factory..... do.....	15 to 24	15½ to 23
Cotton, middling..... do.....	13½ to 14	13½ to 14
Tobacco, sound lug..... per cwt..	3 75 to 6 00	3 80 to 6 00
common leaf..... do.....	5 50 to 7 50	6 25 to 7 50
medium leaf..... do.....	7 50 to 8 50	7 50 to 8 75
Wool, tub-washed..... per pound..	42 to 51	42 to 45
fleece-washed..... do.....	32 to 43	37 to 43
combing..... do.....	38 to 40	38 to 40
pulled..... do.....	32 to 36	33 to 36
NEW ORLEANS.		
Flour, superfine..... per barrel..	6 62½ to 6 75	6 75.....
extras, (according to grade)..... do.....	7 00 to 9 00	6 87½ to 8 00
Corn, mixed..... per bushel..	71	70
yellow..... do.....	71 to 72	70
white..... do.....	73 to 75	70 to 71
Oats, choice..... do.....	73	65 to 68
Hay, choice..... per ton.....	26 50 to 28 50	25 00 to 26 00
prime..... do.....	24 00 to 26 00	23 00 to 24 00
Pork, mess..... per barrel..	23 50 to 24 25	21 00 to 23 00
Lard, tierce..... per pound..	12½ to 13	12 to 12½
keg..... do.....	14 to 14½	13½ to 12¾
Butter, choice western..... do.....	25 to 28	25 to 28
choice northern..... do.....	40 to 43	43 to 44
common northern..... do.....	25 to 30	25 to 30
Cheese, choice factory..... do.....	15 to 15½	15 to 15½
western reserve..... do.....	13½	13 to 13½
Cotton, ordinary..... do.....	12¼ to 12¾	8½ to 13½
low middling..... do.....	13½ to 13¾	
middling..... do.....	14½ to 14¾	14½ to 15½
Tobacco, lugs, light..... do.....	5½ to 7	5½ to 7
lugs, heavy..... do.....		
low leaf, light..... do.....	7 to 7½	7 to 7½
low leaf, heavy..... do.....		
medium leaf, light..... do.....	8 to 9	7½ to 8
medium leaf, heavy..... do.....		

Articles.	March.	April.
SAN FRANCISCO.		
Flour, superfine..... per barrel..	\$5 50 to \$5 75	\$5 75 to \$7 25
extras..... do.....	6 00 to 7 00	
Wheat, State..... per cental..	2 35 to 2 40	2 45 to 2 50
Oregon..... do.....	2 35 to 2 40	2 45 to 2 50
Corn, white..... do.....	1 50	1 65 to 1 70
yellow..... do.....	1 50	1 65 to 1 70
Barley..... do.....	1 25 to 1 40	1 35 to 1 60
Oats..... do.....	1 50 to 1 70	1 60 to 1 75
Hay, State..... per ton..	13 00 to 15 50	12 00 to 14 50
Pork, mess..... per barrel..		26 00
prime..... do.....		21 00 to 22 00
Beef, mess..... do.....		14 00 to 18 00
Lard, in barrels..... per pound..	13 to 15	14½ to 15½
domestic..... do.....	14 to 14½	14 to 14½
Butter, State..... do.....	27½ to 35	25 to 30
Oregon..... do.....		
overland..... do.....		
Cheese..... do.....	10 to 14	10 to 14
Wool, native..... do.....	20 to 23	18 to 27½
California..... do.....	20 to 23	18 to 27½
Oregon..... do.....		

### PRICES OF MIDDLING COTTON.

The following statement of the prices of middling cotton, at the first of each month of the past twenty years, prepared by the editor of the New York Shipping and Commercial List, will be found useful for reference:

YEARS.	QUOTATIONS.												Average of year.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
1871.....	Cts. 15¼	Cts. 15½	Cts. 15¼	Cts. 15½	Cts. 23½	Cts. 22½	Cts. 20¼	Cts. 20	Cts. 19½	Cts. 16½	Cts. 17	Cts. 16½	Cts. 21.02
1870.....	Cts. 27½	Cts. 25½	Cts. 23½	Cts. 23½	Cts. 28½	Cts. 29½	Cts. 34½	Cts. 34½	Cts. 35	Cts. 27½	Cts. 26¼	Cts. 25¼	Cts. 29.60
1869.....	Cts. 20½	Cts. 20½	Cts. 20½	Cts. 25½	Cts. 32½	Cts. 31	Cts. 33	Cts. 30½	Cts. 30½	Cts. 26½	Cts. 25¼	Cts. 25¼	Cts. 26.79
1868.....	Cts. 16½	Cts. 19½	Cts. 23	Cts. 23	Cts. 27½	Cts. 27½	Cts. 26½	Cts. 28	Cts. 26½	Cts. 21½	Cts. 19	Cts. 16	Cts. 26.94
1867.....	Cts. 35	Cts. 33	Cts. 32	Cts. 30½	Cts. 27½	Cts. 27½	Cts. 26½	Cts. 28	Cts. 33	Cts. 42	Cts. 39	Cts. 34	Cts. 39.66
1866.....	Cts. 51½	Cts. 48	Cts. 44	Cts. 40	Cts. 34	Cts. 38½	Cts. 36	Cts. 36	Cts. 43	Cts. 42	Cts. 39	Cts. 34	Cts. 39.66
1865.....	Cts. 120	Cts. 83	Cts. 83	Cts. 45	Cts. 45	Cts. 46	Cts. 44	Cts. 48	Cts. 43	Cts. 44½	Cts. 56	Cts. 50	Cts. 58.96
1864.....	Cts. 81¼	Cts. 84½	Cts. 76	Cts. 71	Cts. 83½	Cts. 107	Cts. 155	Cts. 164	Cts. 185	Cts. 125	Cts. 128	Cts. 128	Cts. 115.71
1863.....	Cts. 68	Cts. 88	Cts. 89	Cts. 77	Cts. 66	Cts. 52½	Cts. 73	Cts. 63½	Cts. 60½	Cts. 81	Cts. 86½	Cts. 80	Cts. 74.26
1862.....	Cts. 37	Cts. 31	Cts. 23	Cts. 28	Cts. 26	Cts. 31½	Cts. 35½	Cts. 47	Cts. 48	Cts. 56	Cts. 60	Cts. 67½	Cts. 41.13
1861.....	Cts. 12¼	Cts. 13	Cts. 12½	Cts. 13½	Cts. 14½	Cts. 14½	Cts. 15	Cts. 16	Cts. 20½	Cts. 22	Cts. 22½	Cts. 27½	Cts. 17.06
1860.....	Cts. 11½	Cts. 12	Cts. 12	Cts. 11½	Cts. 12	Cts. 12½	Cts. 12½	Cts. 12	Cts. 12	Cts. 11½	Cts. 12½	Cts. 11½	Cts. 11.98
1859.....	Cts. 12½	Cts. 12½	Cts. 12½	Cts. 13	Cts. 12½	Cts. 11½	Cts. 12½	Cts. 13	Cts. 12½	Cts. 12½	Cts. 12½	Cts. 11½	Cts. 12.42
1858.....	Cts. 9½	Cts. 11½	Cts. 12½	Cts. 12½	Cts. 13½	Cts. 12½	Cts. 13	Cts. 13½	Cts. 13½	Cts. 13½	Cts. 12½	Cts. 12½	Cts. 12.48
1857.....	Cts. 13½	Cts. 13½	Cts. 14½	Cts. 14½	Cts. 14½	Cts. 14	Cts. 14½	Cts. 15½	Cts. 15½	Cts. 15½	Cts. 12½	Cts. 11½	Cts. 14.09
1856.....	Cts. 9½	Cts. 9½	Cts. 10½	Cts. 10½	Cts. 11½	Cts. 11	Cts. 11½	Cts. 12	Cts. 11½	Cts. 12½	Cts. 12½	Cts. 12½	Cts. 11.29
1855.....	Cts. 9½	Cts. 9½	Cts. 9½	Cts. 9½	Cts. 10	Cts. 11	Cts. 11½	Cts. 11½	Cts. 11½	Cts. 10½	Cts. 9½	Cts. 10	Cts. 10.14
1854.....	Cts. 10½	Cts. 10½	Cts. 10½	Cts. 10½	Cts. 9½	Cts. 9½	Cts. 9½	Cts. 9½	Cts. 9½	Cts. 9½	Cts. 9½	Cts. 9½	Cts. 9.87
1853.....	Cts. 9½	Cts. 10½	Cts. 9½	Cts. 10½	Cts. 10½	Cts. 11	Cts. 11	Cts. 11	Cts. 11	Cts. 11	Cts. 10½	Cts. 10½	Cts. 10.60
1852.....	Cts. 8½	Cts. 8½	Cts. 8½	Cts. 8	Cts. 8	Cts. 10	Cts. 9½	Cts. 9½	Cts. 10½	Cts. 10½	Cts. 10	Cts. 9½	Cts. 9.20
1851.....	Cts. 12½	Cts. 13½	Cts. 10½	Cts. 11½	Cts. 11	Cts. 9½	Cts. 9½	Cts. 7½	Cts. 8½	Cts. 9½	Cts. 8½	Cts. 8½	Cts. 9.98

## ENGLISH SHORT-HORN CATTLE SALES.

Thornton's Circular for January, 1871, contains a record of sales of short-horns for the preceding quarter, and much other information of interest to American stockbreeders. From its pages we compile the following:

Short-horn sale of Messrs. Garne & Son, and Mr. George Garne, at Churchill Heath, October 4, 1870:

	£	s.	d.
54 cows and heifers, at an average of £36 2s. 11d.....	1,951	19	0
3 bulls, at an average of £37 9s.....	112	7	0
57 averaged £36 4s. 3d. Total.....	2,064	6	0

Three cows brought respectively 77, 75, and 85 guineas; the best bull, 50 guineas. The lowest sale was that of a two-year old heifer, at 19 guineas.

Short-horn sale of the entire herd of William Butler, at Badminton, October 5, 1870:

	£	s.	d.
62 cows and heifers, at an average of £39 9s. 2d.....	2,446	10	0
12 bulls and calves, at an average of £32 2s. 3d.....	385	7	0
74 averaged £38 5s. 4d. Total.....	2,831	17	0

The tribe of Darlingsons, comprising 11 animals, averaged £85 3s., the highest, a two-year old heifer, bringing 155 guineas.

Short-horn sale of selected stock from the herd of Lady Pigot, at Branche's Park, Newmarket, October 7, 1870:

	£	s.	d.
21 cows and heifers, at an average of £46 12s.....	978	12	0
9 bulls and calves, at an average of £21 14s.....	195	6	0
30 averaged £39 2s. 7d. Total.....	1,173	18	0

Short-horn sale of Sir George R. Philips, at Weston Park farm, Warwickshire, October 18, 1870, comprising several entire tribes:

	£	s.	d.
38 cows and heifers, at an average of £48.....	1,824	7	6
9 bulls, at an average of £28.....	252	0	0
47 averaged £44 3s. 7d. Total.....	2,076	7	6

Thirteen Sylphs and Knightleys averaged £83 16s. 9d.; 11 Welcomes averaged £33 4s. 4d.; 7 Gwyneths averaged £26 2s. The highest in the whole lot, a two-year old heifer, brought 205 guineas.

Six short-horn bulls from the Brailes herd, the property of H. J. Sheldon, esq., sold at the Weston Park farm sale for £264 12s., averaging £44 2s.



Short-horn sale of John Lynn, at Stroxtun, near Grantham, October 27, 1870:

	£	s.	d.
32 cows and heifers, at an average of £46 8s. ....	1,484	14	0
7 bulls and calves, at an average of £45 15s .....	320	5	0
39 averaged £46 5s. 7d. Total.....	1,804	19	0

Short-horn sale of the entire herd of Wm. Cox, esq., at Brailsford Hall, near Derby, November 9, 1870:

	£	s.	d.
26 cows and heifers, at an average of £29 6s. 4d.....	762	6	0
14 bulls and calves, at an average of £20 4s. 3d.....	282	19	6
40 averaged £26 2s. 7d. Total.....	1,045	5	6

The large herd of short-horns belonging to the late Mr. W. Hewer, at Sevenhampton, was sold October 6, 86 head, 25 of which were calves, averaging only £22 5s. 9d. The cattle were not in good condition. Mr. Hewer's Berkshire pigs were celebrated, and brought high prices, the stock of 40 head averaging £11 10s., several being but a few weeks old.

The entire herd belonging to Mr. W. Caless was sold October 12, at Bodicote House, Banbury. The average of the entire herd of 49 head was £24 8s. 7d. The stock was only in fair store condition, and the day was unfavorable.

About 50 head from the herd of J. Fawcett, esq., of Scaleby Castle, Carlisle, were sold under unfavorable circumstances October 20, averaging £24 7s. 10d. Five young bulls, bred by the Right Hon. Lord Kenlis, were sold at an average of £37 7s. 7d.

The late Mr. W. A. Provis's herd was sold November 25, at the Grange, Ellesmere, Salop, but, being in low store order, averaged only £18 7s. 6d. for 30 head.

During the week of the Birmingham cattle show, Mr. B. Wainman, of Whitley Manor, Salop, sold 27 head of short-horns at an average of £23 14s. One four-year old Darlington cow was sold for 110 guineas.

During the week of the York fat cattle show, Mr. Dodds offered for sale at York, December 8, 23 bulls and 17 cows and heifers. Forty-six guineas was the highest price given for a prize yearling bull. Lady Fortunate, a six-year-old cow, and the winner of upward of twenty prizes, was sold for 71 guineas, and Industry, another prize cow, four years old, was sold for 62 guineas. Emily, a yearling heifer, brought 50 guineas.

#### SUMMARY OF SHORT-HORN AUCTION SALES IN 1870.

A table is given showing the number of lots of short-horn cattle sold in 1870, the highest, lowest, and average prices obtained for them, and the total sum realized from each sale. We glean from it the following particulars: Total number of sales, 42; number of cattle sold, 1,853; highest price obtained, 800 guineas; lowest price, 4 guineas; average of all the sales, £37 19s. 6d.; aggregate of all the sales, £70,363 13s. These figures do not include the Irish and Scotch draft sales, nor the Birmingham and York collective sales, nor a few drafted animals from different herds, most of which were young bulls, offered at stock sales and markets in England; yet they exhibit a most favorable contrast with

the results obtained in 1869 throughout the United Kingdom. There is one-fourth increase in the number of head sold—1,477 against 1,853, over £2 increase in the average price per head, and nearly £18,000 increase in the total sum realized. Eighty-three animals were sold for 100 guineas and above, averaging about £180, against 30 animals in 1868, and 52 in 1869. The highest price, 800 guineas, was given for a heifer, but, as she has since failed to breed, a large portion of this sum has since been returned. The next highest sum paid was 500 guineas for a two-year-old heifer. Only 9 of the 83 were bulls, the highest bringing 240 guineas. Most of the trade for bulls, however, is transacted privately, when higher prices prevail.

The table to which reference has been made is merely a summary of public sales. Much business is done privately, at high prices. The sale of 14 animals from the Aylesby herd for 2,000 guineas is quoted; also the sale of Captain Gunter's 2 Duchess heifers for 2,500 guineas, and of 7 animals from the Warlaby herd for 5,000 guineas, for exportation to America, Australia, and Canada.

At the Irish draft sales, there has been a great increase in prices. Mr. Welsted's 14 averaged £34 1s. 10d.; Earl Fitzwilliams's 14 averaged £31 4s. 9d., and Mr. Crosbie's 26 averaged £23 13s. 1d. In Scotland prices have been similar to those of last year; three lots averaging £32, £32 13s., and £30 7s., respectively.

An enormous foreign trade has been transacted; much of which was done privately, Mr. Cochrane, of Canada, alone spending nearly £15,000 in pure-bred animals.

#### AMERICAN SHORT-HORNS.

The editor gives a detailed account of a visit, during the past winter, to the United States and Canada, during which he saw several of the leading American herds. Some of these are very minutely and favorably described. Complimentary allusion is made to the fact that the re-importation of short-horns from America into England has been successfully inaugurated within the past few years. He says: "Short-horn breeders, ere this, have been able to form their own judgment upon the cattle that have, since 1861, been sent back into this country, and their offspring have, by their own merit, shown that the blood has suffered little if any degeneracy, even under a change of climate, and on different soil and food."

The following reference is made to the Bates stock of short-horns:

Few strains of blood have created of past years more attention than that of the Duchess tribe; the scarcity and demand for it in this country led to its re-importation from America, where, consequently, it has drawn forth as much, or even more, notice. Although Duchess 34th, generally admitted to be one of the finest of the tribe, was offered by Mr. Bates, in 1835, (whilst in calf, with Duke of Northumberland 1,940, by Belvedere,) to the Ohio Company for 150 guineas, she was not purchased; and the first exportation of Duchesses was made by Mr. Thorne from Earl Duic's sale in 1853. A period of depression in America ensued afterward, and it is considered that Thorn-dale, Duchess County, New York, situated in a cold, hilly district, near the Hudson River, in its deficiency of limestone, was unfitted for the growth and development of short-horns. Mr. Thorne sold most of his herd to Mr. Sheldon, whose estate at White Springs Farms, Geneva, is in a good grass region, has a fine wheat soil, and is thoroughly adapted for cattle. Here the tribe increased, but domestic circumstances led to the sale of Mr. Sheldon's herd to Messrs. Walcott and Campbell, of New York Mills, Utica, where this branch of the tribe is at present located. Here are (December, 1870) ten cows and heifers, varying from two to ten years old; two heifer-calves; one three-year-old bull, and four bull-calves; but all these cows and heifers are not in a breeding state. There is at the present time great demand for the *pure* pedigree; the word *pure* is here used technically, and is intended to con-

vey the blood of the successive bulls used on the family since the death of Mr. Bates in 1850. It may further interest the uninitiated breeder to know that after Mr. Bates obtained the tribe in 1810, he used Ketton second 710, (whose dam was by a grandson of Favorite 252, out of a cow by J. Brown's Red Bull;) then a *pure* bull, the Earl 646, bred from the Duchess tribe, who in his turn was succeeded by three bulls, of different strains, viz: Second Hubback 1,423, of the Red Rose tribe; Belvedere 1,706, of the Princess tribe; and Norfolk 2,377, bred by Mr. Whitaker, from Nonpareil, with the blood of North Star, Punch, and Hubback; and these three bulls, be it remembered, were all of Robert Colling's best blood. The Cleveland Lad 3,407, (a bull with three crosses,) now generally known as the Oxford cross, was introduced a few years before Mr. Bates's death, and it is only this cross now that is admitted as *pure*. Since the tribe has been in America, some of the animals have been kept *pure*, and the blood of the others has been intermingled with three different families, viz: the Booth blood, through Third Duke of Thorndale 17,749, and Third Duke of Airdrie 23,717; the Knightly blood, through Imperial Duke 18,083; and the Burgley or Romeo 13,619 blood, through Second Duke of Geneva 23,752. It is considered that the Booth and the Knightly crosses are failures, because being very closely or strongly bred tribes, with a fixed type, they disturbed the strong current of the Duchess blood; but Romeo was looked upon as being rather a loosely bred bull, so he therefore seems to have invigorated the tribe without disturbing their good qualities. Romeo was first used with the Oxfords, and produced a very fine cow, whose son, Oxford Lad 24,713, was the sire of Third Duchess of Geneva, the dam of Second Duke of Geneva 23,752. This strain occurs also in Messrs. Leney's Seventh Duchess of Geneva, and Mr. McIntosh's Third Duke of Geneva 23,753, re-imported and sold at Winslow in 1867. It may be possible that this blood being introduced in an indirect and diluted form, was more beneficial than the others introduced more directly.

## AGRICULTURE IN PORTUGAL.

Portugal now contains, as is estimated, a population of four millions, distributed over twenty-two millions of acres. Not more than five millions of acres are under cultivation, and of these more than one-half is devoted to cereals, Indian corn being the staple. Next to the cereals, olives and grapes are the leading agricultural products. The grain crop has been valued at \$28,750,000, the wine crop at \$10,000,000, the olive crop at \$2,500,000, and other fruits and vegetables at \$9,000,000. The annual value of all vegetable products is estimated at \$90,000,000, and animal products at \$25,500,000, or a total annual value of agricultural products of \$115,000,000. Northern Portugal greatly surpassed the other divisions in rural activity, wealth, and density of population. The breeding and exportation of cattle are here upon the increase. Stall-feeding is much practiced. The famous wine-growing district of the Duoro, with Oporto as its central mart, is in this division. In Southern Portugal, where the soil is poor and the climate dry and hot, oranges, lemons, and fruits of all kinds are grown for export.

Farming in Northern Portugal is conducted almost exclusively on a contracted scale. Farms of fifty acres are not common, the average size being less than fifteen acres. Farming operations are conducted on a primitive scale. Plows differ very little from those in use by the Romans; the smaller kind, the one most used, can easily be carried by a laborer. The harrow used is also of rude construction. The hoe is indispensable. Root crops are but seldom grown, and potatoes are almost unknown. Women work habitually in the fields from childhood. Country life, heretofore much neglected, is becoming more attractive and remunerative.

AGRICULTURAL STATISTICS OF GREAT BRITAIN.

	Years.	England.	Wales.	Scotland.	Total for Great Britain.	Ireland.	Isle of Man.	CHANNEL ISLANDS.		Total for United Kingdom.
								Jersey.	Guernsey, &c.	
Total population.....	1870	22,090,163		3,232,837	25,313,000	5,525,210	180,000	148,250	17,967	30,986,460
Total area, (in statute acres).....	1870	32,590,397	4,734,486	19,636,377	56,964,260	20,322,641		28,717		77,513,585
ABSTRACT OF ACREAGE:										
Under all kinds of crops, bare fallow and grass.....	{ 1869	23,370,502	2,530,639	4,438,137	30,339,278	15,643,701	84,537	19,018	13,619	46,100,153
	1870	23,469,318	3,547,717	4,490,544	30,407,579	13,632,878	86,502	19,031	11,680	46,177,370
Corn crops, (including beans and pease).....	{ 1869	7,785,033	555,898	4,117,176	9,758,037	2,207,970	28,585	3,411	2,098	12,000,111
	1870	7,570,379	553,501	1,434,261	9,548,041	2,173,109	25,222	3,694	1,967	11,755,053
Green crops.....	{ 1869	2,759,098	137,452	688,517	3,575,067	1,468,593	12,406	5,836	3,729	5,065,933
	1870	2,759,826	130,203	696,701	3,586,730	1,498,719	12,688	5,749	3,240	5,107,135
Bare fallow.....	{ 1869	644,107	58,786	35,943	738,836	20,981	420	530	612	761,369
	1870	549,201	37,864	23,362	610,517	19,054	384	150	189	630,294
GRASS:										
Clover, &c., under rotation.....	{ 1869	2,004,902	260,899	1,182,925	3,448,726	1,669,800	26,256	4,069	701	5,149,552
	1870	2,766,777	308,282	1,339,825	4,504,884	1,775,835	32,175	6,362	870	6,320,126
Permanent pasturage.....	{ 1869	10,098,094	1,527,534	1,112,269	12,735,897	10,046,877	16,800	5,182	0,468	22,811,284
	1870	3,680,211	1,427,649	964,996	12,072,856	9,990,368	13,031	3,055	5,385	22,085,295
ABSTRACT OF LIVE STOCK RETURNED:										
Total number of horses*.....	1870	977,707	116,131	172,871	1,266,709	531,306	5,810	2,340	1,875	1,808,040
Total number of cattle.....	{ 1869	3,706,641	589,108	1,017,734	5,313,473	3,727,794	18,158	11,788	7,099	9,078,282
	1870	3,757,134	604,749	1,041,434	5,403,317	3,796,380	17,403	11,073	6,879	9,235,052
Total number of sheep.....	{ 1869	19,821,863	2,720,941	6,995,337	29,538,141	4,648,158	62,108	598	1,177	34,250,272
	1870	18,940,256	2,706,479	6,750,884	28,397,589	4,333,984	53,565	655	990	32,786,783
Total number of pigs.....	{ 1869	1,620,550	171,675	129,227	1,930,452	1,079,793	4,668	7,176	6,305	3,028,384
	1870	1,813,901	198,547	158,630	2,171,138	1,459,332	6,332	7,450	6,478	3,650,730
NUMBER TO EVERY 100 ACRES UNDER CROPS, FALLOW AND GRASS:										
Horses*.....	1870	4.2	4.6	3.9	4.2	3.4	6.7	12.3	16.1	3.9
Cattle.....	{ 1869	13.9	23.3	22.9	17.0	23.8	21.5	61.8	52.1	19.7
	1870	16.0	23.7	23.4	17.8	24.3	20.1	58.2	58.9	20.0
Sheep.....	{ 1869	84.8	107.5	137.6	97.8	39.7	73.6	3.1	8.6	74.3
	1870	80.9	106.2	151.7	93.4	27.7	61.9	3.4	8.5	71.0
Pigs.....	{ 1869	7.0	6.8	2.9	6.3	7.0	3.5	37.7	46.3	6.6
	1870	7.7	7.8	3.6	7.1	9.3	7.3	39.1	55.5	7.9
NUMBER OF RETURNS OBTAINED:										
From occupiers of land.....	1870	393,569	55,978	79,603	529,150	.....	2,328	2,107	1,812	.....
From owners of live stock only.....	1870	4,977	314	2,865	8,156	.....	194	101	70	.....

\* In Great Britain only horses used for agriculture, unbroken horses, and mares kept solely for breeding are included in the returns; the number of other horses, subject to license duty, can be otherwise obtained. In Ireland all descriptions of horses are included in the returns.

## ENGLISH IMPORTS OF BREADSTUFFS.

A comparative table of the imports of the United Kingdom for the months of January and February, 1870 and 1871, shows that the late Franco-Prussian war almost entirely arrested the importation of breadstuffs from France and Germany during the latter period, and proportionally increased like importations from the United States. Following are the official figures :

Imports in cwts.	1870.	1871.
Wheat from Germany.....	333,047	32,555
Wheat from France.....	8,431	28,286
Wheat from United States.....	1,897,645	2,517,113
Wheatmeal and flour from Germany.....	160,027	24,917
Wheatmeal and flour from France.....	190,395	1,170
Wheatmeal and flour from United States.....	356,232	534,699
Total.....	2,945,777	3,138,740

## BRITISH REVENUE.

The revenue of the British government for the year 1870 was £75,434,252, obtained from the following sources :

Customs.....	£21,529,000
Excise.....	21,763,000
Stamps.....	9,248,000
Taxes.....	4,500,000
Property tax.....	10,044,000
Post office.....	4,670,000
Telegraph service.....	100,000
Crown lands.....	375,000
Miscellaneous.....	3,205,252
Total.....	75,434,252

## SCIENTIFIC NOTES.

WEATHERING OF COAL.—An important communication has lately been made by Dr. Richters to a German journal, upon the influence of atmospheric agencies on stone coal exposed to the air in coal yards and other localities. In this memoir he states that the property which coal has of taking up oxygen, when heated gently, (as to 375° F.) is modified essentially by its percentage of disposable hydrogen. This first of all becomes oxidized together with a certain portion of the carbon; since on the one hand water is formed and on the other hand the oxygen enters directly into combination with the coal. Also, that the carbon of stone coal possesses, at a temperature of about 375° F., a variable affinity to oxygen; as the smaller portion (5 or 6 per cent. of the total amount) combines with it and forms carbonic acid, while the rest, at the given temperature, shows little or no affinity for oxygen. While these two propositions respecting the oxidation of coal when heated, can be established, our author adduces experiments to show that they apply equally well at the ordinary atmospheric temperatures.

The so-called weathering of coal he ascribes to the absorption of oxygen, which in one case oxidizes a portion of the carbon and hydrogen of the coal, converting it into carbonic acid and water; in the other, entering directly into the composition of the coal. If then the coal becomes heated in any way, a more or less energetic chemical action, varying in proportion to the elevation of the temperature, takes place upon the combustible substance of the coal; but on the other hand the process of oxidation proceeds so slowly that the changes occurring within the period of a year can scarcely be established with certainty, either technically or analytically.

Moisture, as such, seems to have no accelerating influence upon the weathering of the coal, the positive effect being generally appreciable in coal containing a large amount of sulphuret of iron or pyrites, the decomposition of which is accelerated by the water.

Another proposition of our author is, that pure coal, heaped up for nine months or a year, unprotected from the weather and not allowed to become heated, is changed no more than it would have been in a perfectly dry locality. As long as any increase of temperature does not exceed certain bounds, as from  $340^{\circ}$  F. to  $375^{\circ}$ , there is no appreciable loss of weight by the weathering; and, in fact, there should be a slight increase in consequence of the absorption of oxygen. The decrease in value for combustible purposes, and for other technical applications, which coal experiences by the weathering, is produced by a slight decrease of carbon and hydrogen, and an absolute increase of oxygen in consequence of the exposure.

**INJURY TO VEGETATION FROM GAS.**—It is by no means an uncommon assumption that illuminating gas, in escaping from pipes into the soil, exercises a poisonous influence upon vegetation; and a suit was recently brought at Aix-la-Chapelle, by the city authorities, against a gas company for recovery of supposed damage to the shade trees of the city, resulting from their careless method of laying the pipes. This was the cause of a detailed series of experiments in regard to the assumed fact, and somewhat to the surprise of every one it was ascertained that purified illuminating gas had really little or no injurious effect of the kind asserted. The experiments were conducted by eminent chemists, and included trials with pure hydrogen, light carburetted hydrogen, and heavy carburetted hydrogen, as well as purified illuminating gas. A discharge, during an entire day, of these various gaseous substances into the soil of vessels containing growing plants was found to produce little, if any, hurtful result. It was different, however, when these same gases were impregnated with the constituents of coal tar, especially with carbolic acid, in which case, after a few days, a very decided injury to the vegetation was found to have taken place. The effect seemed to be that these impurities, coming in contact with the roots of the plants, deposit tarry matter upon them which ultimately caused death by a kind of asphyxia. The smallest quantity of carbolic acid was found to have a very decided influence; so that the principal caution to be observed, as far as injurious results are concerned, is to see that the carbolic acid is entirely eliminated. In one experiment a discharge of gas was allowed to take place for three hours daily, for a period of an entire year, and the effect, if anything, was to secure a fuller development of the plant.

All that those experiments appear to prove, however, is that perfectly pure illuminating gas is not injurious to the roots of vegetation, the fact remaining demonstrable that ordinary gas does have a marked noxious effect. The elaborate communication in 1858 to the Philadel-

phia Academy of Natural Sciences, by Mr. Fahnstock, shows this very clearly in a case where the contents of a large green-house were destroyed. In another instance a stroke of lightning, passing along the street gas-mains in Racine, in 1867, disturbed their joints and caused a leakage which resulted in the death of nearly all the shade trees along an entire square.

**SIEMENS' STEEL.**—Among the various methods of preparing steel, that of Siemens, so well known in connection with an improvement of the smelting furnaces, is likely, it is said, to attain considerable prominence, possessing various advantages, both as to economy and the character of the product, over many others in common use. For its preparation good hæmatite ore and spathic ore are mixed and treated with carbonaceous materials, by which their total or partial reduction into metallic iron is effected. This metallic iron is then subjected to very intense heat on the open hearth of a Siemens regenerative gas-furnace, and is dropped in certain given quantities or series of instalments into a bath of cast-iron, previously prepared in the furnace. This operation is continued until the requisite degree of decarbonization is arrived at; the manganese is added in the form of ore or spiegeleisen. The quantity of molten metal thus produced in one charge is about four tons. It is dipped into a ladle and poured into iron molds in the usual way, and forms steel of the highest quality. To those acquainted with the ordinary way of making steel, the superiority of this process will be manifest, while as regards cost it effects a great saving. One ton of steel ingots may be produced with a ton and a half of cheap small coal. The ordinary Sheffield process requires from five to six tons of fuel for one ton of steel.

**COLORS FROM WILD PLANTS.**—A German writer shows that a great variety of colors and dyes can be readily obtained from common plants found almost everywhere, the method consisting principally in boiling them in water at a high temperature, so as to produce a strong decoction. Thus, for instance, the well-known huckleberry, or blueberry, (*Vaccinium*,) when boiled down, with an addition of a little alum and a solution of copperas, will develop an excellent blue color. The same treatment, with a solution of nut-galls, produces a clean dark-brown tint; while, with alum, verdigris, and sal-ammoniac, various shades of purple and red can be obtained. The fruit of the elder, (*Sambucus niger*,) so frequently used for coloring spirituous liquors, will also produce a blue color when treated with alum. The privet (*Ligustrum vulgare*,) boiled in a solution of salt, will furnish an excellent color; while the over-ripe berries yield a scarlet-red. The seeds of the common burning-bush, (*Euonymus*,) when treated with sal-ammoniac, produce a beautiful purple-red; while the juice of the currant, pressed out and mixed with a solution of alum, will furnish a bright-red color. The bark treated in the same way produces a brown. Yellow can be obtained from the bark of the apple-tree, the box, the ash, the buckthorn, the poplar, elm, &c., when boiled in water and treated with alum. A lively green is furnished by the broom-corn, (*Spartium scoparium*;) and brownish-green by the genista.

**THE AILANTHUS TREE.**—The disagreeable smell of the ailanthus tree while in blossom need be no objection to the planting of it on a large scale as a timber tree, since, as is well known, it is dioecious, and the male tree alone possesses the unpleasant peculiarity. It is only necessary to propagate the female tree, therefore, in order to have an equally fine grove without the practical inconvenience referred to. It so happened

that on the first introduction of the tree into this country, the male tree alone was propagated. The female, however, is coming more rapidly into use, and may readily be known by the clusters of seeds it bears, similar to those of some species of the ash family.

There are few trees more valuable for timber than the ailanthus. The wood has much of the same properties as the chestnut, and is equally durable, grows with as great rapidity, and in its native country obtains a height of between two and three hundred feet. It is said to be well adapted to growth on the western prairies, and will undoubtedly perform an important part in clothing them with forest vegetation.

**PURIFICATION OF OIL.**—Of various methods adopted for the purification of burning-oils, that of Michaud is recommended as the most satisfactory. This consists in introducing sulphuric acid into the oil in numerous thin streams, while air is forced in at the same time, so as to throw the liquid into an active movement. The air bubbles which mix with the oil give it a milky appearance, and carry the impurities with them to the surface and form a copious scum, which is removed from time to time. After each skimming air is introduced anew until the surface continues entirely clear.

For the purpose of freeing the oil from sulphuric acid it is then to be placed in a copper kettle, and steam introduced until it is heated to 212°. At this temperature it is kept for half or three-quarters of an hour, during which it becomes sufficiently clear to be filtered. The oil is then drawn off and allowed to cool down to half the temperature mentioned, either by allowing it to stand for twenty-four hours, or taking it through a cooling tube and then filtering it. It is said that oil, treated in this way, exceeds in illuminating power and transparency that prepared by any other method, while the process is neither costly nor protracted.

**DARLINGTONIA CALIFORNICA.**—Mr. Worthington G. Smith calls attention in "Nature" to certain living plants of *Darlingtonia Californica*, or the American pitcher plant, described many years ago in the Smithsonian Contributions, by Dr. Torrey, from specimens brought by General Frémont from what is now Nevada. According to Mr. Smith, the plant possesses an irresistible attraction to insects, the nature of which is entirely unaccountable. When in bloom the flower is said to resemble the upraised head and body of the cobra, with mouth expanded, and prepared for a spring, the head being at right angles with the hollow, vertical body, and apparently presenting no opening by which an insect can enter. Blue-bottle or blow flies are said to make their way immediately to this plant whenever they come into a room where it is growing, and alighting on a portion of the flower, they fly upward into the previously unseen entrance to the tube, and from this they descend the hollow body, and apparently never return alive, keeping up a buzzing noise for half an hour and then dying. This cavity of the plant soon becomes entirely filled with dead flies, so that, as a consequence, the walls decay and the insects drop out.

**LEACHED ASHES AS A MANURE.**—An agricultural journal of Germany calls renewed attention to the great value, as a manure, of soap-boilers' leached ashes, which, as is well known, are prepared by mixing wood-ashes with fresh burnt lime, and boiling or leaching the two together for the purpose of obtaining a caustic lye. Although the soluble salts are removed from these ashes, the insoluble parts remain, namely, the carbonates, sulphates, and phosphates, principally lime salts, accompanied generally by a little caustic lime. Experience has shown that



there is no substance equal to leached ashes of this kind for manure, not excepting even the richest guanos; the vegetation of the cereals becoming broader than common by its use, and the stalks more tubular, while the leaves grow of a dark, bluish green. The value of this application is seen more particularly in meadows, where, curiously enough, nearly all the ordinary grass disappears in consequence, and instead of it a thick vegetation of red clover is met with, which will be renewed year by year for a long time, without additional supply.

**PRESERVATION OF DEAD SALMON FOR AN INDEFINITE TIME.**—Of late years salmon have been quite abundant in our markets throughout the winter season, a period when previously they were unknown, owing to the fact of their being then, with few exceptions, in the deep waters of the sea. For this purpose they are taken in the summer months, when the fish are in the rivers and in best condition, and are packed in snow as soon as caught, and in that condition carried to the establishments where they are to be preserved. They are first overhauled and sorted, and then put into a room where, by means of a mixture of ice and salt placed between zinc plates, the temperature is kept many degrees below the freezing point. The fish are soon frozen, and can be kept in that state many months and even years, provided the temperature be kept steadily down to the proper degree. In the winter season, the salmon thus frozen are shipped, properly packed in ice, being carried in that condition all over the country. It is said that the taste of these fish, if cooked directly after having been thawed, is fully equal to what it would be if eaten at the time of capture.

**TREATMENT OF WOOD FOR PAPER PULP.**—Mr. Manè informs us that the proper method of treating wood to make it a suitable material for the manufacture of paper consists in first reducing it to a state of shavings or sawdust, and then placing it for a time (the duration of this depending upon the nature and state of division of the wood) into water, and leaving it there to rest, as is done with flax. By this treatment a great many substances are removed from the wood, which is consequently afterward more readily reduced to pulp. The rotting in water has the effect of disintegrating, and partly decomposing the nitrogenous matter of the woods, which is also afterward more readily bleached; not demanding the use of chlorine, as is the case where these matters have been left in the wood. The rotted wood, previous to any other treatment, is to be thoroughly washed with boiling water and steamed, and next treated with an alkali.

**EFFECT OF MANURE ON PLANTS.**—A communication, illustrated by diagrams, was lately presented to the Horticultural Society of London, in reference to the effect of manures upon plants in the experimental grounds at Chiswick. As a general rule, plants in unmanured boxes were less vigorous than in those manured; and while purely mineral manures had little effect upon the grasses, they produced a marked improvement in the case of the clovers. Experiments with solutions of ammonia salts and with nitrate of soda, showed specific differences in the results in the case of almost all the different species of plants, and it was found that a plant affected favorably by one of these groups of salts was influenced in quite the opposite manner by the other.

**THE COMPASS PLANT.**—Many travelers and residents in the West have called attention to a peculiarity of the so-called "compass plant," (*Silphium laciniatum*), of the western prairies, which is alleged to possess the remarkable tendency to have the plane of its leaves directed

north and south to such a degree that these points of the compass can readily be determined from their examination. This statement has, however, been contradicted by others, who are unable to find any tendency of the kind in question. In a recent paper by Mr. Meehan, of Philadelphia, the discrepancy is reconciled by stating that the peculiarity is only appreciable in the young plants and when they first come up, since, after becoming large and heavy, they are moved out of place by the wind and rain, and unable to regain their original position.

**USES OF THE "WATER-PEST" PLANT.**—Much alarm has been caused in Europe by the spread of a certain plant, living in running water, called the water-pest, (*Elodea canadensis*), and said to have been introduced from America. By its very rapid growth it speedily chokes up the channel-ways, thus impeding the flow of water in mill-races, and interfering also with fishing. A recent German writer, however, finds consolation in the fact, which he thinks he has ascertained, that this "water-pest" exercises a very important function in purifying the water, and that if planted in streams which form the drainage of sewers, it will take up entirely and destroy any disagreeable smell, as also the noxious properties of ordinary sewerage. The composition of its ashes is said to be extremely complicated, and the plant itself is recommended as furnishing a manure of the greatest value. It has also been tried with success in paper-making.

**CIRCULATION IN PLANTS.**—In conducting experiments upon the transpiration of fluid by leaves, it is a matter of importance to determine the rapidity of ascent of the fluid. Professor Church suggests for this case the use of lithium citrate, a salt easily taken up by plants, and one which can be detected with the greatest readiness by means of the spectroscope. Its advantages consist in its containing an organic acid, and in not being likely to meet with any obstruction to its passage from the tissues. An experiment has lately been made with this liquid, as suggested, with great success; in one instance the fluid having risen nine inches in thirty minutes, in another five and a half inches in ten minutes. This is thought superior to the use of coloring matters, which seemed to experience considerable resistance in their passage through the vessels.

**PRESERVATION OF MILK IN RAILWAY TRANSPORTATION.**—Among the precautions taken by an extensive milk company, near London, to insure the safe transportation of milk and cream by railway, that to which the most importance is attached consists in the cooling of it to the temperature of 50° to 59° Fahrenheit before filling the cans. Should the milk be placed in the cans at a higher temperature, as from 70° to 82°, the motion of the cars will cause the butter to separate as well as to produce a deposit of caseine, which change need not be apprehended when milk is at the lower temperature indicated. A further requirement is to have the vessels completely filled with the milk, and closely fastened. Sometimes a small proportion of bicarbonate of soda is added to the milk in hot weather, with important results in preventing it from turning sour.

**DESTROYING LARVÆ OF COCK-CHAFFER.**—It is said that the destructive larvæ of the cock-chaffer, which, both in this country and in Europe, does so much damage to pastures, by devouring the roots of grass and causing the death of the sod, may be exterminated by applying to the places affected water in which petroleum has been stirred. The same treatment is also recommended in other instances where it is desirable to keep down the ravages of insects on plants. Applied in this way

there is no danger of injuring the plant, and a small quantity of petroleum appears to impart its antagonistic qualities to a considerable amount of water.

**THE HEATON AND BESSEMER PROCESSES.**—A careful report by an eminent iron-master in France upon the respective merits of the Heaton and Bessemer processes of refining iron, presents the conclusion that while the former is not likely to replace the latter for the manufacture of steel, yet it is the best hitherto invented for the purification of ordinary cast iron. It may be remembered that the Heaton process consists, essentially, in the addition of nitrate of soda to the melted metal, by which all the impurities, such as carbon, sulphur, phosphorus, &c., become chemically combined with the nitrate and pass off with a loud deflagration in the form of vapor, leaving the metal in a state of extraordinary purity.

**SEASONING OF WOOD.**—A writer in an English journal informs us that small pieces of non-resinous wood can be seasoned perfectly by boiling four or five hours—the process taking the sap out of the wood, which shrinks nearly one-tenth in the operation. The same writer states that trees felled in full leaf, in June or July, and allowed to lie until every leaf has fallen will then be nearly dry, as the leaves will not drop of themselves until they have drawn up and exhausted all the sap of the tree. The time required is from a month to six weeks, according to the dryness or wetness of the weather. The floor of a mill laid with poplar so treated, and cut up and put in place in less than a month after the leaves fell, has never shown the slightest shrinkage.

**WATERING PLANTS WITH HOT WATER.**—It has lately been shown, by careful experiment, that sickly potted plants, even some that have almost died out, can be greatly benefited, and sometimes, indeed, entirely restored to vigor, by applying warm water to them instead of cold. In certain cases, oleanders which had never bloomed, or did so only imperfectly, after being treated with luke-warm water, increasing the temperature gradually from 140° up to 170° F., produced the most magnificent luxuriance of bloom. Similar results occurred with an old plant of Hoya; and also with an India-rubber tree which had nearly withered away. In all these cases the application of water heated to about 110° F., without any other precaution, caused a new and flourishing growth.

**TRANSPIRATION OF LEAVES.**—Von Pettenkofer, in the course of recent researches upon the amount of evaporation which takes place from the foliage of plants, ascertained in the case of an oak tree that this increased gradually from May to July, and then decreased till October. The number of leaves on the tree were estimated at about 751,600, and the total amount of evaporation in the year at 539 cubic centimeters of water for the whole area of the leaves. As the average rain-fall for the same period was only 65 centimeters, the amount of evaporation is thus eight and a half times greater than that of the rain-fall. This excess must, of course, be drawn up by the roots from a great depth. The inference is derived from the above that trees prevent the gradual drying of a climate by restoring to the air the moisture which would otherwise be carried off by drainage.

**CATTLE PLAGUE ENTOZOA IN CEYLON.**—In the course of an examination of the muscles of animals dying at Ceylon of the cattle plague disease of that country, Mr. Boyd Morse discovered certain remarkable organisms, of which he has lately published an account in the London

Microscopical Journal. He suggests the inquiry as to their relationship to the entozoa, described by Dr. Lionel Beale as found in the muscles of animals dying of the same disease, and thinks they may be their ova. They lie loose among the muscular fibers of the heart, sometimes in great numbers and at other times singly. There are several characteristic forms, all well figured in the article referred to.

**FOOD FOR YOUNG TROUT.**—According to Dr. Slack, the well-known proprietor of the Troutdale fish-breeding establishment, in New Jersey, the best substance with which to feed embryo trout hatched out artificially consists of beef's heart, prepared by first being opened that the coagulated blood may be washed away thoroughly, and then using only the pure muscular fiber. This is to be finely chopped into minute fragments, so as almost to form a pulp; and then, mixed with a little water, it is to be washed through a fine sieve of twenty-four threads to the inch, to prevent any minute particles from passing through.

**SEASON FOR CUTTING TIMBER.**—According to Dr. Hartig, March and April are the most favorable months for cutting timber intended to be used by builders and carpenters, the average per cent. of moisture being less than 47, while in the three following months the average is 48; and in the three winter months, 51. He states that properly-seasoned timber contains from 20 to 25 per cent. of water, and never less than about 10 per cent., and if the moisture is entirely removed by artificial means the wood loses its elasticity and flexibility, and becomes brittle. Any artificial seasoning of wood should be carried on very gradually; the temperature at the beginning being low, and the process not conducted too far.

**QUERCITRON.**—Among the drugs and dye-stuffs of American origin, quercitron, or the inner bark of the common black oak, occupies a conspicuous place. Lately a new treatment has been devised in England in preparing it for the market, in consequence of which its value has risen considerably, so that it now brings about \$3 per hundred-weight. Of the various brands in the market, that of Philadelphia is most sought for on account of its supposed superiority over the others.

**CATTELL'S METHOD OF PREPARING VEGETABLE FIBER.**—A system of utilizing vegetable fibers that does not involve the practice of rotting, has lately been devised by Dr. Cattell, and is said to be coming rapidly into use. The special superiority of the fiber prepared by this system is said to be that it possesses a greater degree of strength, estimated at 20 per cent. over the rotted article. The yield of fiber is also considerably greater from the same weight of material, while its divisibility can be carried to much more than the ordinary degree, and the whole labor accomplished in much shorter time.

**STIMULATING HENS TO LAY WHILE MOULTING.**—According to a good authority in poultry-raising, it is considered inexpedient to encourage hens to lay while moulting. When new feathers are forming the ovary usually remains perfectly dormant, and in fact sometimes becomes greatly reduced in size. When, however, the feathers are renewed, if a hen be judiciously fed, and in good health, the production of eggs will soon recommence.

**NEW CATERPILLAR DISEASE.**—In a late paper by Dr. Cohn, of Breslau, upon a new disease affecting certain caterpillars, during which the skin turns black, a coal-black pigment appears in the blood, and the caterpillar becomes a wrinkled and brittle mummy, he ascribes the phe-

nomenon to the development of a fungus which he calls *Tarichium*, and which has a strong relationship to *Empusa*.

**POISONING OF CATTLE BY ACORNS.**—It is stated that cattle died by scores in Gloucestershire, England, during the past fall, from having eaten acorns that had fallen off during a gale. When once taken ill, death followed more or less quickly in each case, no remedy being sufficient to allay the resulting inflammation. The poison appeared to induce a blackening and rotting away of the mucous membrane.

**CALOMEL A POISON FOR MICE.**—A preparation of one part calomel, five parts of wheat flour, one part of sugar, and one-tenth of a part of ultramarine, all mixed together in fine powder and placed in a dish, is said to be a most efficient poison for mice.

**GLYCONIN.**—A mixture of five parts of glycerine and four parts of yolk of egg, under the name of glyconin, has been used to some advantage for the healing of wounds, the mixture forming a varnish over the skin impenetrable to air and moisture.

**GIANT MARMONT POTATO.**—A potato known as the Giant Marmont is much praised by late German writers, as occupying the very first rank among potatoes, in consequence of various excellent peculiarities. A single tuber was said to have produced a weight of twenty pounds.

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#### ITEMS FROM VARIOUS SOURCES.

**COAL IN WYOMING TERRITORY.**—A correspondent of the New York Evening Post writing from Cheyenne concerning the coal deposit of Wyoming, says that an analysis of the Evanston coal shows that in one hundred parts there are, of carbon, 72.16; ashes, 2.50; sulphur, none; water, 3.34; volatile matter, 22. This coal is supposed to be the purest found in the Territory. The Hallville mine, in Carter County, on the line of the Union Pacific, contains two veins, with a stratum of soapstone lying between. The upper vein is ten feet and the lower six feet in thickness. Fifteen thousand tons from this mine have been used in Omaha during the past year. It is used principally for domestic purposes. The Vandyke mine, forty miles west of Hallville, produces coal which is used mainly for steam and blacksmithing purposes. Of this coal 80,000 tons were sold in Omaha in 1870, and the remainder of the year's production was distributed throughout the Western Territories for manufacturing purposes. The Carbon mines, recently burned, are on the railroad one hundred and forty miles west of Cheyenne. The coal is reached by a perpendicular shaft, seventy feet deep. The vein is from six to nine feet thick. Before the explosion it produced 300 tons daily, and the Denver division of the Kansas Pacific Railroad was supplied from it. The Rock Spring mine, three hundred and fifteen miles west of Cheyenne, is eight feet in height, and is reached by an open drift in the side of the hill. The product of this mine in 1870 was about 2,000 tons per month. Explorations lately made show that the coal deposits of Wyoming cover a very large area. Many of the best veins have not yet been worked. The lignite deposits of the Laramie Plains, in beds from five to eleven feet thick, have been traced ten miles east of Rock Creek, a branch of Medicine Bow River, and crop out along the North Platte, Muddy

Creek, Bitter Creek, Echo Cañon, Weber River, and west as far as the borders of Utah. The same deposits have been found eighty miles above Fort Laramie. The whole product of the Wyoming coal mines is now estimated to be about 20,000 tons per month.

THE SELF-PURIFICATION OF RIVERS has recently attracted the attention of scientific men in England. The discharge of sewage into rivers in the vicinity of densely populated communities, it has been claimed, is not an evil, because the rivers possess the property of self-purification in exposure to the action of the atmosphere, and in the precipitation of impurities to their bottoms. The clear appearance of water after it has been polluted, and has flowed for a short distance, is alleged to be proof of purification. But this theory of the unscientific public has been refuted by experiments made by an English commission, appointed for the purpose of testing its truth. The results indicate very closely the effect which would be produced by the flow of a river or stream containing 10 per cent. of sewage for ninety-six and one hundred and two miles respectively, at a rate per hour of one mile. The percentage reduction of the organic carbon in the first distance would be 6.4, and of organic nitrogen, 28.4. For the latter distance the corresponding figures are 25.1 and 33.3. As the temperature during this experiment was nearly 70° Fahrenheit, it demonstrates that the oxidation of the animal organic matters in sewage proceeds very slowly. It was also demonstrated, by another experiment on the rate of oxidation of sewage, that supposing a river polluted with the above proportions of sewage received no further contamination for a distance of one hundred and eighty-six miles, it would then lose about 62.3 per cent. of its injurious and offensive properties. But most streams which are polluted by animal or vegetable matter receive the pollution near to the cities and towns which use them; hence, no stream which supplies cities and towns with water can be regarded as even approximately pure, unless the emptying into it of all sewage and manufacturing refuse is prohibited.

THE NUTRITIVE VALUE OF MILK.—Dr. Oliver C. Wiggin, of Providence, Rhode Island, bears the following testimony to the value of milk :

The nutritive value of milk, as compared with other kinds of animal food, is not generally appreciated. There is less difference between the economical value of milk and beefsteak (or eggs or fish) than is commonly supposed. The quantity of water in a good quality of milk is 86 per cent., in round steak 75 per cent., in fatter beef 60 per cent., in eggs about 68 per cent. From several analyses, made last winter, I estimated sirloin steak, (reckoning loss from bone,) at 35 cents a pound, as dear as milk at 24 cents a quart; round steak, at 20 cents a pound, as dear as milk at 14 cents a quart; eggs, at 30 cents a dozen, as dear as milk at 20 cents a quart. Many laborers who pay 17 cents for corned beef would consider themselves hardly able to pay 10 cents for milk, when, in fact, they could as well afford to pay 15 cents. Milk is a most wholesome and economical food for either the rich or poor. It ought to be more largely used. If the money expended for veal and pork were expended for milk, I doubt not it would be an advantage both to the stomach and pocket, especially during the warm season. Relatively speaking, then, milk at 10 cents, or even 12 cents a quart is the cheapest animal food that can be used. Whether farmers can afford to produce it cheaper is a matter for them to decide. It is very probable that were they to ask 12 cents a very large number of poor people would refrain from its use from mistaken notions of economy, notwithstanding they are excessive meat-eaters.

CENTENNIAL EXHIBITION.—The Forty-first Congress, at its third session, passed an act "to provide for celebrating the one hundredth anniversary of American Independence, by holding an international exhibition of arts, manufactures, and products of the soil and mine, in the city of Philadelphia, in the year 1876." The act specifies that this exhibition shall be held under the auspices of the Government of the

United States, which shall be represented by a commission composed of one delegate from each State and Territory, to be appointed, within one year from the passage of the act, by the President of the United States, upon the nomination of the governors of the States and Territories, respectively. This commission is empowered to prescribe all necessary regulations for holding the exhibition, and these regulations the President is authorized to make public by proclamation and to communicate to the diplomatic representatives of all nations. The exhibition will present an opportunity for a comparison of progress in the arts of civilization accomplished in a single century in this country with the best results of human effort elsewhere.

**PROPOSED DOG LAW IN ILLINOIS.**—A bill introduced in the legislature of Illinois, provides stringent regulations concerning dogs. It declares that every owner of a dog shall, on or before the 1st of September, procure from the town clerk, and cause to be worn, a collar for each dog he may own; the clerk to keep a record and description of all dogs for which collars are obtained, with the names of their owners. For each dog registered he is to be paid a fee of \$1. Any dog not wearing a collar and registered is to be considered as abandoned, and it shall be lawful for any person to slay such dog as he would a wild animal. The assessors shall procure lists of all registered dogs, and shall also make return of all abandoned dogs, with the names of persons who harbor them. A tax of \$1 shall be paid for each registered male dog, and a tax of \$2 for each registered female dog. Owners of dogs are made liable for all injuries the latter may inflict. Any person may kill a dog which makes a sudden assault upon him outside the inclosure of his owner or keeper, and any person may kill a dog found outside the inclosure or immediate care of its keeper worrying, wounding, or killing any domestic animal.

**ALMOND TREES IN CALIFORNIA.**—A record of the growth of an almond stock, reported by the editor of the Santa Barbara (California) Press, illustrates the adaptability of that favored region to the production of this valuable fruit. Early in 1869 he made several grafts, all of which are now promising. One of these, a terminal bud of the Languedoc variety, made February 22, was measured three months afterward, when the new stock above the old wood was found to be an inch and a half in circumference and three feet high, with six or eight branches averaging eighteen inches in length. On the 22d of March last, exactly two years and one month from the day of grafting, the tree measured nine and three-fourths inches in circumference at the ground, and was ten and a half feet high, with twenty flourishing branches within four feet of the ground, and over thirty in all. Up to that date it had furnished more than a thousand buds and several hundred grafts. A three-year old seedling, planted also by Mr. Johnson, now measures fourteen and a half inches in circumference, and was fifteen feet high when recently cut off for grafting.

**SEWAGE IRRIGATION.**—Dr. Spencer Cobbold, of England, has microscopically demonstrated the presence of thousands of entozoa in pork which had been fed upon the produce of lands irrigated with sewage. The introduction into the human system of countless entozoa, through the medium of cattle fed upon sewage-irrigation grass, and swine fed upon other food similarly produced, is regarded as a new danger with which the public health is threatened. It is the deliberate opinion of Dr. Cobbold that thousands of cattle in England are thus rendered unfit to be used as food.

THE MARVELOUS GROWTH of some of our Western States and Territories is well exemplified in the history of Jackson County, Kansas. Below is a comparison of the census returns of agriculture, &c., for that county for 1860 and 1870:

	1860.	1870.	Increase.
Population .....	1,936	6,053	4,117
Acres of improved land.....	5,294	41,388	36,094
Cash value of farms.....	\$210,900	\$2,305,240	\$2,094,340
Value of farming implements and machinery .....	\$12,515	\$84,995	\$72,480
Whole number of live stock .....	4,755	21,334	16,579
Value of live stock.....	\$58,091	\$685,064	\$626,973
Number of bushels of farm products.....	204,042	697,865	493,823
Number of pounds of butter, cheese, and wool..	23,830	144,859	121,029
Tons of hay.....	519	16,763	16,244
Gallons of molasses .....	590	18,150	17,560
Total valuation of farms, farm implements, machinery, and live stock.	\$281,506	\$3,075,299	\$2,793,793

Up to 1867 only one-half of the county was open for settlement.

GLUT OF JAPANESE SILK-WORM EGGS.—Last year a number of French and Italian agents passed through San Francisco for Japan to purchase silk-worm eggs. Their credit was estimated at \$5,000,000 to \$6,000,000. The usual purchases ran as high as 2,000,000 cartoons, but the war ensuing not more than 150,000 cartoons were really taken. This left the Japanese egg-trade in a bad condition, and resulted in the sending of some lots to San Francisco, 150,000 cartoons recently arriving. Unfortunately for the shippers the season is over in California. There are not means in the State to feed 1,000 cartoons of silk-worms. The eggs are now, probably, partly hatched, and will not keep for Europe, and are not in very high estimation there if they would. They do not at all compare with the California eggs of the French annual variety. It remains to be seen what effect this short supply of eggs in Europe this year will have upon the California demand next year.

CATTLE MARKETS IN THE SOUTH.—The South is manifesting a new interest in the improvement of farm animals. The first grand stock, seed, and implement sale of the Tennessee Agricultural and Mechanical Association will take place at the fair grounds, near Nashville, on Wednesday, Thursday, and Friday, the 3d, 4th, and 5th of May, 1871. Full pedigrees of breeding animals offered for sale are required. Persons desiring to offer animals or articles should, as soon as practicable, forward lists to John H. Williams, general agent, that they may appear in the programmes.

BUTTER-MAKING IN THE "GREAT AMERICAN DESERT."—Dr. Sternburg, of Fort Harker, Kansas, finds the "Great American Desert" of the old geographers admirably adapted to stock-raising and dairy enterprise. He keeps 130 head of cattle, and milks 30 cows, from which, last summer, he marketed 3,000 pounds of butter at 50 cents per pound. The stock finds ample subsistence from natural grasses, except about three weeks in the year, during which the snow covers the ground. He prefers improved breeds of cattle to the Texan or native stock, and insists upon commencing with good cows, which should be fully supplied with good water and salt, and milked regularly every day. The milk



should be churned every day, the butter thoroughly worked, and the dairy kept perfectly clean.

**CHEESE FACTORIES IN ENGLAND.**—The manufacture of cheese by the factory system is an American idea, and until recently has been exclusively an American enterprise. During 1870 the system was introduced into England, and two factories were established in Derbyshire. No Englishman was found to possess sufficient experience to manage them, and two Americans, named Schermerhorn, were engaged to perform this service. Both factories are now in successful operation.

**KOUMISS.**—This is the name of an article of food recently introduced into England from Germany. It is of Tartar origin, and in its original form is made by fermenting mare's milk and agitating it during the process. Cow's milk is used as a substitute. The result of the treatment is a mixture of alcohol, carbonic acid, lactic acid, and finely divided caseine and butter, with the residue of the sugar and salts of the milk, in taste resembling a mixture of champagne and cream, and supposed, as the Tartars are very athletic, to be conducive to health and a preventive of phthisis.

**PRESERVATION OF FRUITS AND VEGETABLES.**—An invention of Mr. Buchanan for preserving fruits and vegetables is attracting some attention in England. The moisture is expelled by a cold dry process, instead of the former modes of desiccation by heat. It is said to preserve vegetables and fruits in a much more perfect and palatable state than the heating process so generally in use.

**JUTE.**—Augustus F. Leory, of New Orleans, writes to the Department, under date of March 11:

You were kind enough last year to send me several papers of jute seed. These I planted myself on my place seventy miles below this city, on the banks of the Mississippi River. In three months the plants grew, with little or no cultivation, ten feet high. They fully matured and produced abundance of seed. I am now fully satisfied that jute can be produced throughout all the sugar-growing portion of this valley.

**BORAX.**—A large deposit of borax has been discovered in Bishop Creek precinct, Inyo County, California. The borax is found in beds, and is slightly impregnated with saltpeter. It is pronounced to be of a superior quality.

**LARGE HONEY PRODUCT.**—Rev. Robert Johnson, of Kossuth, Des Moines County, Iowa, reports to this Department that he has colonies of bees that gave him 150 pounds of honey each during the past year.

# METEOROLOGY.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY OBSERVERS OF THE SMITHSONIAN INSTITUTION.]

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain and melted snow, (in inches and tenths,) for February and March, 1871, at the stations named. Daily observations made at 7 a. m., and 2 and 9 p. m

Stations in States and Territories.	FEBRUARY.					MARCH.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
<b>MAINE.</b>												
Houlton .....	27	Deg. 49	5	Deg. -20	Deg. 16.0	In. 1.20	12	Deg. 51	7	Deg. 14	Deg. 32.4	In. 2.23
Orono .....	25	47	5	-17	19.9	2.53	10	57	29	17	34.7	4.11
Surry .....	25	49	5	-16	20.9	.....	10	55	29	20	36.7	.....
Williamsburg .....	25	40	5	-26	12.4	2.00	11	46	29	10	28.8	3.10
West Waterville .....	25	50	5	-12	22.0	1.98	11	57	29	20	37.1	5.63
Gardiner .....	25	47	5	-10	23.0	1.55	10,11,12	54	29	24	37.7	5.37
Lisbon .....	25	51	5	-12	22.4	2.80	13	56	29	18	36.6	5.30
Standish .....	24	54	5	-13	23.4	1.94	11	60	29	24	37.9	5.24
Norway .....	25	47	5	-12	23.5	2.10	11	55	29	20	35.2	5.06
Cornish .....	1	48	4	-9	22.4	3.01	11	56	24	25	36.2	3.90
Cornishville .....	25	46	4	-10	22.6	3.25	11	54	29	20	36.8	5.40
<b>NEW HAMPSHIRE.</b>												
Strafford .....	24, 25	43	4	-18	16.7	2.72	9	60	29	2	32.3	3.80
Whitefield .....	24	50	5	-22	17.5	1.47	11	59	29	3	33.6	2.61
Mt. Washington .....	24	35	4	-34	7.3	.....	.....	.....	.....	.....	.....	.....
Tamworth .....	24, 25	47	22, 23	-14	21.0	2.40	11	57	29	22	36.0	5.46
Contoocookville .....	24, 25	53	5	-14	21.6	.....	12	62	8	24	39.5	.....
Goffstown Centre .....	24, 25	52	5	-10	24.8	3.25	.....	.....	.....	.....	.....	.....
Amoskeag .....	.....	.....	.....	.....	.....	.....	12	62	29	11	38.0	3.48
<b>VERMONT.</b>												
Lunenburg .....	25	40	5	-28	17.5	2.10	10, 12	53	29	14	34.4	3.50
Craftsbury .....	24	46	5	-25	14.9	1.57	11	51	7, 29	13	29.9	4.06
South Troy .....	24	50	5	-26	17.7	2.02	11	58	29	4	33.6	4.19
Randolph .....	25	48	5	-18	20.9	2.80	11, 12	57	29	3	35.7	3.47
Woodstock .....	25	42	5	-19	17.8	3.09	11	55	29	10	33.6	3.37
Norwich .....	.....	.....	.....	.....	.....	.....	11, 31	58	7	24	38.0	4.30
Near St. Albans .....	24	48	5	-21	18.0	1.70	9	61	29	11	34.7	4.40
West Charlotte .....	18	50	5	-16	23.6	1.90	11	62	7	23	39.4	5.50
Panton .....	25	48	5	-18	20.2	2.19	11	60	24	20	36.2	5.49
Castleton .....	18	45	5	-16	21.5	2.51	12	62	29	13	37.4	2.79
<b>MASSACHUSETTS.</b>												
Kingston .....	25	58	5	-7	27.4	3.90	12, 19	63	1, 2	22	39.8	4.55
Topsfield .....	24, 25	60	5	-10	25.2	3.78	.....	.....	.....	.....	.....	.....
Newbury .....	24	57	5	-7	26.3	.....	.....	.....	.....	.....	.....	.....
Lawrence .....	24, 25	50	5	-10	26.1	1.65	12	63	28	27	39.1	4.02
Georgetown .....	25	53	5	-9	26.2	3.64	12	67	29	25	40.2	3.53
Milton .....	25	56	5	-5	29.2	3.40	12	66	29	28	44.1	2.59
Cambridge .....	24	59	5	-11	29.1	.....	12	66	27, 28, 29	31	43.5	.....
North Billerica .....	18	59	5	-8	28.0	.....	12	66	23	25	41.0	.....
West Newton .....	25	28	5	-8	28.3	.....	12	69	29	27	42.5	1.18
New Bedford .....	25	55	5	-6	27.9	3.19	19	60	5	29	40.1	4.89

Table showing the range of the thermometer &c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.					MARCH.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
<b>Mass.—Contin'd.</b>												
Worcester	25	51	5	-10	26.2	4.36	12	63	29	25	40.0	4.68
Lunenburg	25	52	5	-14	23.8	3.10	12	63	29	29	40.0	3.75
Mendon	25	53	5	-8	29.1	3.10	19	59	29	24	39.6	4.80
Amherst	25	51	5	-10	26.0	2.91	12	61	29	25	40.5	3.99
Richmond	25	47	5	-16	24.6	4.60	17	64	5	24	37.9	.....
Williams' College	25	44	5	-15	24.1	1.50	17	62	29	22	38.4	3.02
Hinsdale	24	48	5	-19	22.5	2.65	11	60	28	22	38.0	5.17
<b>RHODE ISLAND.</b>												
Newport	25	52	5	-3	30.6	2.24	19, 31	58	29	28	42.1	4.67
<b>CONNECTICUT.</b>												
Columbia	25	50	5	-10	27.9	4.90	19	79	29	28	41.0	6.47
Middletown	25	55	5	-11	25.9	4.10	9, 19	61	8	28	41.1	6.52
Southington	25	52	5	-11	26.7	3.91	10, 19	58	29	28	40.9	5.84
Round Hill	28	51	5	-9	25.5	3.28	19	60	29	26	40.1	4.64
<b>NEW YORK.</b>												
Moriches	25	51	5	-4	25.9	4.13	19	59	8	20	37.7	4.51
South Hartford	17	48	5	-13	24.6	2.76	12	62	29	19	40.5	3.38
Garrison's	25	55	6	-5	26.0	3.11	19	62	5	32	43.0	3.71
Throg's Neck	25	50	6	-3	29.8	.....	19	66	{ 5, 8, 28, 29 }	32	43.1	.....
White Plains	1	49	5	-1	28.2	.....	19	62	16	30	44.0	.....
Cooper Union	25	54	6	3	31.8	5.78	3, 9	59	29	33	44.5	5.60
Brooklyn	25	55	5	1	31.1	3.68	19	62	29	32	45.3	5.21
Flatbush	.....	.....	.....	.....	.....	.....	19	62	6, 15, 24	30	41.3	5.34
Glasco	25	60	6	-5	26.0	2.15	11	65	.....	.....	.....	6.00
Newburg	25	55	6	0	28.5	2.26	.....	.....	.....	.....	.....	.....
Middleburg	25	56	5	-12	26.0	2.10	9	66	29	20	38.6	6.90
Cooperstown	18, 24	50	5	-22	22.0	1.94	17	64	29	9	37.5	5.29
Gouverneur	24	51	5	-23	19.4	1.47	9	66	29	10	34.4	4.46
North Hammond	2	50	5	-26	23.0	2.54	11	62	29	18	38.0	5.37
Lowville	.....	.....	.....	.....	.....	.....	9	60	29	10	37.0	5.11
South Trenton	25	48	5	-22	21.1	5.19	8	60	29	10	36.3	6.73
Cazenovia	24	48	5	-18	23.1	.89	17	63	29	17	37.9	.....
Oneida	24	52	5	-13	22.5	1.95	9	65	7	26	40.0	6.55
Depanville	24	52	5	-21	22.0	2.15	9	67	29	17	36.2	4.65
Oswego	24	48	5	-9	25.3	1.50	9	68	7	25	38.3	3.31
Palermo	24	49	5	-19	22.2	1.70	9	66	29	19	35.9	2.61
North Volney	24	48	5	-14	24.0	.....	9	66	7, 29	23	37.0	.....
Nichols	25	51	5	-10	25.8	.....	17	64	29	20	39.9	.....
Newark Valley	25	56	6	-16	24.6	1.30	17	64	29	10	38.9	6.20
Rochester	24	61	5	-5	28.3	2.63	8	66	24	27	41.2	2.88
Angelica	24	56	6	-6	25.7	.....	16	71	29	17	38.5	.....
Little Genesee	24	60	6	-8	25.6	2.86	15	70	6	16	36.8	4.86
Carlton	23	62	5	-4	26.0	2.08	9, 20	68	7	26	38.0	2.16
Suspens'n Bridge	24	58	5	-4	26.3	2.15	9	68	24	25	39.1	3.30
Lockport	24	58	5	-5	25.9	2.30	9	70	3, 23, 24	26	37.9	3.07
Buffalo	24	55	5	-2	27.7	2.14	9	72	7	25	39.3	3.74
Jamestown	24	56	5	0	27.6	2.48	8	66	7	18	36.0	3.50
<b>NEW JERSEY.</b>												
Jersey City	22	55	5	-2	30.2	.....	19	71	29	32	45.3	4.91
Paterson	25	55	5, 6	-2	30.1	3.29	18	64	8, 29	30	43.5	3.99
Newark	25	51	5	-1	28.7	3.05	19	63	29	28	43.0	4.99
South Orange	25	53	5	-3	28.0	3.33	19	64	8, 29	29	42.8	4.03
Trenton	25	60	5	6	33.0	4.07	9	71	8	34	48.0	5.50
Rio Grande	25	69	6	6	33.9	4.00	23	72	4, 28, 29	32	44.6	7.88
Moorestown	25	61	6	2	31.3	3.50	17	75	8	31	45.4	4.39
New Germantown	25	52	5	-1	27.9	2.30	19	62	20	29	42.2	5.15
Readington	.....	.....	5, 6	4	.....	.....	.....	.....	7, 29	30	.....	.....
Greenwich	25	67	6	7	34.8	4.44	17	74	5	31	47.3	6.68
Vineland	25	69	6	6	36.6	3.75	17	74	5	29	46.2	6.23

Table showing the range of the thermometer, &amp;c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.					MARCH.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	
<b>PENNSYLVANIA.</b>												
Nyces .....	28	50	5	— 8	24.2	3.04	17	62	5,7,13,28	26	39.3	6.49
Hamilton .....	23	52	5, 6	— 4	28.1	1.55	11, 17	60	4, 28	28	31.3	5.31
Dyberry .....	25	45	5	— 12	22.7	1.96	9, 11	56	29	13	35.8	5.78
Fallsington .....	25	57	6	5	31.0	3.50	9	70	29	30	45.0	5.40
Philadelphia .....	25	60	6	9	34.3	3.20	17	72	5, 29	36	47.6	5.77
Germantown .....	25	60	6	— 1	33.3	.....	17	73	28	30	45.4	.....
Do .....							17	72				
Horsham .....	25	50	6	2	30.5	3.50	9	71	5, 8	31	45.2	6.64
Plym'th Meeting .....	25	56	6	3	30.2	2.82	9	67	29	31	45.3	4.40
Egypt .....	25	58	6	— 2	29.9	.....	11, 19	63	29	24	42.7	.....
Factoryville .....	25	51	6	— 13	24.9	2.40	23	62	29	20	39.4	6.87
Reading .....	25	55	6	5	33.8	5.83	3	67	5, 29	33	47.4	6.25
West Chester .....	25	58	6	1	29.9	2.35	9	72	25	28	44.7	5.68
Parkerville .....	16, 18, 25	48	6	3	30.7	3.22	9, 17	71	29	28	45.5	5.42
Ephrata .....	25	55	6	— 1	30.2	2.24	9, 17	68	3	31	44.5	6.59
Do .....	18, 25	51	6	— 2	30.9	.....	17	75	7	30	43.4	4.25
Mount Joy .....												
Carlisle .....	25	59	6	2	31.2	2.55	19	82	7, 29	31	46.0	3.89
Fountain Dale .....	20	50	6	4	32.8	3.85	23	69	7	32	46.2	5.20
York Sulp'r Spg's .....	20	52	6	1	32.1	2.60	3	68	5	30	44.9	6.10
Tioga .....	24	56	5, 6	— 6	26.0	1.60	17	66	29	12	39.1	5.45
Grampian Hills .....	24	52	6	— 10	24.0	2.43	16	68	7, 29	16	36.3	2.73
Johnstown .....	24	55	6	3	32.2	.....	15	80	12	16	44.1	2.70
Franklin .....	24	65	6	3	27.6	2.48	16	75	7, 29	20	41.2	3.40
Pittsburg .....	24	65	6	11	35.0	3.10	16	79	7	29	48.5	1.30
CConnellsville .....	24	62	6	12	35.2	.....	16	80	25	24	47.8	.....
Brownsville .....	24	63	6, 15	10	35.0	.....	16	80	7	26	48.0	.....
New Castle .....	24	63	6	5	31.4	1.30	16	72	25	20	45.0	1.80
Beaver .....	24	64	6	11	34.1	.....	16	77	14, 25	26	45.4	.....
Canonsburg .....	24	70	6	9	35.2	1.87	8	78	25	22	46.7	1.92
<b>DELAWARE.</b>												
Dover .....	25	68	6	10	36.5	3.50	17	74	5	32	49.3	6.50
Milford .....	25	72	6	9	36.3	1.90	17	77	5	23	48.9	6.90
<b>MARYLAND.</b>												
Woodlawn .....	25	65	6	2	31.4	2.14	9	70	5	29	44.9	7.33
Fallston .....	25	64	6	4	34.9	3.20	23	71	{ 4, 5, 7, 25, 29 }	32	46.2	6.41
St. Inigo's .....	24, 25	60	6	13	37.2	2.76						
Woodstock Col .....	25	64	6	4	33.1	2.84	9	68	7	29	45.5	5.70
Mt. St. Mary's .....	25	58	6	5	32.5	3.15	23	68	7	30	45.9	6.23
<b>DIST. OF COLUMBIA.</b>												
Washington .....	25	61	6	13	37.5	3.75	17	69	7	35	49.2	5.30
<b>VIRGINIA.</b>												
Johnsontown .....	26	74	6	16	41.8	4.00	16, 17	76	5, 7	35	52.4	6.65
Capetown .....	26	76	6, 7	20	45.5	.....	16	78	4, 5, 31	40	55.8	.....
Hampton .....	26	78	7	16	44.3	3.75	17	78	5	33	54.0	7.35
Surry C. H. .....	20	74	7	12	44.4	.....	16	87	5	30	56.0	10.05
Comorn .....	25	66	6, 7	13	38.3	2.34	23	76	5	31	52.4	5.06
Mt. Solon .....	24, 25	62	7	0	36.1	1.25						
Vienna .....	25	69	6	12	37.5	3.20						
Acotink .....	25	65	6, 15	15	34.4	.....	15	70	5, 7, 25, 29	30	45.2	7.10
Piedmont .....	25	70	6	10	37.2	2.30	23	75	29	29	48.1	4.85
Piedmont Station .....	25	70	15	6	36.0	2.40	17	76	7, 29	24	46.5	4.80
Markham Station .....	25	66	6	12	37.6	2.75	22	75	7	31	50.3	5.10
Keswick Station .....	20, 25	60	7	12	39.4	.....	17	79	7	30	50.3	.....
Staunton .....	25	69	7	10	39.2	3.45	16	75	7, 29	29	49.3	3.00
Lexington .....	20	64	7	— 3	37.5	4.18	15	80	7	24	47.1	4.86
Lynchburg .....	20	63	7	20	42.9	4.65	17	74	5, 29	36	53.7	5.75
Near Wytheville .....	26	60	15	14	40.5	2.85	8	72	5	28	48.6	4.05

Table showing the range of the thermometer, &amp;c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.					MARCH.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
<b>NORTH CAROLINA.</b>												
	<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>		<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>	
Goldsboro.....	26	82	7	23	50.4	4.90	3, 16	84	12	36	60.5	5.85
Oxford.....	26	72	7	22	43.0	5.35	16	73	5	28	56.0	7.70
Fayetteville.....	26	78					16	80	5	38	58.2	8.85
Albemarle.....	26	73	7	20	45.5	5.09	15	83	5	26	54.5	5.61
Statesville.....							15, 22, 23	76	23	30	47.7	6.25
Asheville.....	25	65	15	27	44.2	3.21	14, 15	69	5	30	59.7	5.30
Do.....	25	70	10, 28	28	44.3		15	74	5	28	51.0	
<b>SOUTH CAROLINA.</b>												
Aiken.....	25	77				3.72	16	82	1, 5	42	60.4	3.14
Gowdeysville.....	4, 20	64	7	30		4.57	15	78	5	32	58.2	5.13
<b>GEORGIA.</b>												
Berne.....	26	77	20, 28	36	56.3	1.95	26	78	1	36	60.1	7.40
St. Mary's.....	2	86	20, 28	38	61.2	1.07	12, 16	82	1	40	64.3	6.57
Quitman.....	17, 25	77	19	39	60.8	4.59	15	81	5	40	64.2	10.50
Atlanta.....	12, 20	69	3, 28	32	47.3	5.81	15	79	1, 29	38	55.0	5.37
Macon.....							15	80	1, 5	40	59.3	5.40
<b>ALABAMA.</b>												
Rockville.....	21, 25	74	3	28	52.6	3.94						
Carlowville.....	25	78	15	34	56.5	6.73	14, 15	80	4	38	60.0	13.00
Selma.....	25	77	15	34	57.7	5.70	16	80	4	41	62.0	7.85
Moulton.....	25	72	14	32	59.9	4.09	14, 15	74	4	38	56.7	6.57
Greene Springs.....	26	76	15	29	51.7	7.90	14, 15, 19	79	1	31	58.0	8.35
Coatopa.....	25	78	15	31	54.8	5.40	14, 15, 19		80	4	36	50.8
<b>FLORIDA.</b>												
Near Port Orange.....	12, 13	84	20	32	62.8	0.95	27	87	7	45	67.3	3.38
Jacksonville.....	26	81	28	43	64.0	1.80	16	87	1	42	67.6	7.15
Platka.....	26	90	19	40	66.9	1.24	24, 26	88	1, 5	46	68.5	6.80
Newport.....	25	75	4, 19	38	60.0	6.35	24	79	5	39	62.5	11.85
<b>TEXAS.</b>												
Clarksville.....	28	74	13	32	55.9		19	82	3	43	62.1	
Houston.....	25	83	1	32	58.8		11, 23, 24	80	4	38	65.2	
Galveston.....	21	84	14	34	61.0		25	86	4	44	64.3	2.30
Oakland.....	21, 24	78	1	30	59.8	2.05	13	83	4	38	65.0	1.75
Sand Fly.....	24	76	1, 12	32	54.4	3.50	12, 19	82	4	42	62.9	1.20
Bluff.....	15	76	1	32	59.1	1.42	11	86	4	42	64.7	2.07
Clinton.....	21	79	1	31	60.1	0.80	11, 22	81	3	45	64.5	1.80
Austin.....	21	80	14	31	57.1	1.41	18	83	4	43	63.1	2.13
<b>LOUISIANA.</b>												
New Orleans.....	12	82	19	36	61.0	1.20	19, 21	80	4, 5	42	63.0	4.55
Ponchatoula.....	6	82	19	36	62.7	4.35	18	85	4	40	65.6	6.35
<b>MISSISSIPPI.</b>												
Columbus.....	25	77	14	33	52.9	8.47	14, 19	76	4	37	58.1	10.49
Philadelphia.....	25	74	14, 15	32	54.7	8.30	19	79	4	36	59.2	5.40
Near Brookhaven.....	24, 25	80	14	35	55.6	5.30	14	82	21	40	62.0	9.70
Clinton College.....	25	76	14	33	55.7	8.03	14	81	4	44	60.7	11.38
Holly Springs.....	27	74	5	27	54.0	7.00	20	78	23	34	56.0	15.60
<b>ARKANSAS.</b>												
Helena.....	20	78	3	24	51.6		14	86	17	33	56.2	
Clarksville.....	20, 22, 23	72	14	22	46.7		19	82	4	31	55.6	
Mineral Springs.....	23	78	14	26	49.1	2.50	14, 19	78	16	34	56.9	7.31

Table showing the range of the thermometer, &amp;c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.					MARCH.						
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TENNESSEE.												
Elizabethton .....	24, 25	Deg. 70	10, 23	Deg. 25	Deg. 41.9	In. 2.85	15	Deg. 82	5	Deg. 23	Deg. 51.4	In. 4.25
Tusculum College .....	25	68	10	25	45.6	2.50	16	77	5	29	52.2	3.40
Lookout Mount'n .....	21	68	10, 14, 27	33	47.3	.....	15, 19	75	24	35	54.5	.....
Clearmount .....	25	70	3	26	45.0	3.60	19	76	24	35	53.0	5.74
Austin .....	25	74	3	24	46.2	6.72	19	78	23	31	54.8	6.37
Clarksville .....	21	69	13	27	45.7	6.51	19	78	4, 23	33	53.0	9.73
Trenton .....	23	72	13	29	49.9	3.00	19	75	4	31	56.6	8.20
La Grange .....	22	74	13	30	47.0	5.50	19	78	17	35	55.3	12.80
KENTUCKY.												
Pine Grove .....	23	65	3, 10	20	38.9	4.91	16	78	{ 4.5, 18, } 25, 23	30	51.5	3.39
Danville .....	21	63	10	26	43.0	4.63	8, 15	76	4	32	52.8	3.77
Shelby City .....	20	67	10	23	42.4	4.63	15	76	4	32	51.9	4.19
Near Louisville .....	23	67	3, 6, 10	23	39.5	5.74	15, 19	77	28	28	50.7	7.29
OHIO.												
Salem .....	24	66	6	4	30.8	1.50	16, 20	79	25	20	43.2	1.55
New Lisbon .....							16	75	14	23	43.2	2.39
Steubenville .....	24	63	6	13	35.0	1.82	16	78	7	26	48.0	1.02
Martin's Ferry .....	24	70	6	9	34.3	.....						
Painesville .....	24	62	5, 6	6	22.5	3.30	8, 20	68	4	28	41.9	3.50
Milnersville .....							20	73	29	27		
Cleveland .....	24	64	6	6	29.0	2.07	20	75	4, 13, 24	26	41.4	3.92
Wooster .....	24	68	6	8	33.3	.....						
Pennsville .....	24	66	8	12	33.1	3.21	15	78	25	28	47.4	1.10
Gallipolis .....	23, 24	68	15	9	37.0	2.67	16	79	25	26	51.5	1.88
Oberlin .....	24	64	6	6	28.8	1.20	3, 16, 20	70	13	13	41.0	2.45
Kelley's Island .....	24	58	6	9	29.8	2.60						
Sandusky .....	24	64	6	10	31.2	2.73	16, 20	70	27	24	42.6	2.75
Carson .....	24	63	6	8	33.0	1.66	20	70	22	31	45.9	2.05
North Fairfield .....	24	64	5, 6	8	31.1	1.71	20	72	29	28	44.9	2.16
Gambier .....	24	57	6	9	30.4	2.80	15	69	25	28	44.2	2.53
Mount Gilead .....				10	.....	.....						
Westerville .....	24	64	6	13	34.1	1.50	15	73	23	30	47.1	3.06
Williamsport .....	25	77	6	15	33.7	2.74	16	81	25	23	49.4	4.52
North Bass Isl'd .....	24	58	5	8	29.1	3.40	8	66	22	29	40.2	2.88
Marion .....	24	61	6	7	30.2	1.84	16	69	25	27	44.7	3.53
Hillsboro .....	24	62	13	14	34.4	3.56	15	71	25, 29	30	47.5	3.42
Bowling Green .....	24	65	13	8	33.0	3.38	15, 18, 30	71	25	27	47.0	2.45
Kenton .....	24	52	6	2	32.1	3.33	8	69	29	31	44.5	6.91
Bellefontaine .....	24	62	6	7	30.2	2.51	15	69	25	25	43.9	3.74
Urbana Univ .....	24	65	6	9	33.2	1.85	15	74	3	28	46.9	2.57
Bethel .....	23, 24	65	6	18	35.6	3.13	15	77	4	30	36.4	2.88
Carthage .....	24	66	6	8	33.2	3.65	15	73	4, 24	29	46.5	5.05
Jacksonburg .....	23	64	6	16	33.4	3.84	20	74	25	28	47.4	4.27
Oxford .....	23, 24	64	6, 10	14	32.2	3.63	15	74	4	22	45.6	4.71
Mt. Auburn Inst. .....	23	66	6	15	37.0	4.65	15	76	4	30	49.2	3.84
Cincinnati .....	23	68	6	16	36.6	.....	8, 15	71	4	31	49.0	3.57
Do .....	24	69	6	18	36.7	5.10	15	80	12	31	49.6	4.30
College Hill .....	24	66	6	12	33.8	3.95	15	75	4	28	46.6	3.18
MICHIGAN.												
Detroit .....	24	68	6	2	27.5	3.11	8	66	22	24	40.5	3.02
Monroe City .....	24	67	13	0	29.8	1.05	2	68	28	29	43.5	3.25
Ann Arbor .....	24	61	5, 6	5	28.7	2.89	8	67	22	26	40.8	2.15
Macon .....	24	64	13	3	28.8	2.55	8	72	28	28	42.5	1.90
Alpena .....	24	40	5	2	23.1	1.40	5, 9, 10, 29	40	19	22	33.0	1.94
State Agr'l Col. .....	24	57	6	2	25.7	1.73	8	70	4, 25	23	38.2	3.31
Olivet College .....	23	52	6	2	25.2	2.92	8	67	22, 25	22	38.6	3.88
Litchfield .....	23	55	6	2	27.3	2.20	8, 15	69	4	24	39.3	3.80
Coldwater .....	15	48	6	4	26.6	1.63	8, 16	68	22	20	39.4	1.25
Grand Rapids .....	23	50	6	2	26.9	1.50	8	72	22	24	34.1	2.74
Do .....	23	52	6	4	27.6	1.44	8	68	4	24	37.9	3.56
Northport .....	24	46	5	2	24.3	1.67	25	51	19	21	32.8	3.58
Benzonia .....	16	51	11	0	25.9	1.79	.....					
Copper Falls .....	24	42	2	7	14.2	3.70	9, 25	43	1	5	25.9	3.20
Ontonagon .....	22	46	11	12	19.0	0.50	31	44	24, 28	10	23.4	2.40

Table showing the range of the thermometer, &c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.					MARCH.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
<b>INDIANA.</b>												
Fort Wayne . . . . .	23	64	10	29.4	2.75		3	75	4	20	42.3	2.75
Anrora . . . . .	23	62	6	18	36.0		15	79	4, 7, 25	30	46.7	5.66
Vevay . . . . .	23	67	6	21	37.7		15	78	4	33	50.3	4.74
Mt. Carmel . . . . .	23, 24	62	10	15	31.5		13, 19	70	4	23	46.7	1.85
Spiceland . . . . .	23	66	10	11	33.5		15	73	4	24	46.5	3.57
Laconia . . . . .	23	66	3	22	39.6		14, 22	76	4	23	50.3	7.32
Columbia City . . . . .	23	62	9, 10	4	32.7							
Knightstown . . . . .	24	65	10	10	33.5		15	74	4	23	47.0	3.20
Indianapolis . . . . .	24	65	10	12	35.2		15	73	4	26	47.6	3.08
Bloomington . . . . .	24	66	10	17	35.6		19	72	4	26	47.2	3.62
Near La Porte . . . . .	24	60	10	2	30.8		15	72	4, 21, 22	30	43.2	3.20
Bensselaer . . . . .	23	62	10	3	29.5							
Merom . . . . .	23	67	12	14	33.0		15	76	4	31	50.4	3.90
New Harmony . . . . .	24	68	10	24	40.9		19	79	4	29	51.4	6.06
<b>ILLINOIS.</b>												
Chicago . . . . .	23	56	10	2	30.5	2.22	8	72	$\left. \begin{smallmatrix} 1, 2, 3, \\ 12, 20, \\ 21 \end{smallmatrix} \right\}$	32	42.7	2.27
Near Chicago . . . . .	23	52	10	-1	29.7		15	76	12	23	42.4	.....
Evanston . . . . .	23	49	10	-3	28.3	1.96	2	61	21	29	39.4	2.43
Marengo . . . . .	24	45	10	11	23.4	1.30	2	65	19, 28	23	36.6	2.23
Charleston . . . . .	20	41	10	13	35.3	2.88	19	74	4	25	46.2	2.10
Mattoon . . . . .	23	60	10	14	35.5	3.00						
Anrora . . . . .	28	50	10	-10	25.5	.....	15	69	1, 6	29	40.9	3.04
Louisville . . . . .	23, 24, 28	64	10	20	34.4	5.00	14	74	21, 24	26	50.2	3.50
Belvidere . . . . .	23	48	10	-16	23.8	1.67	2, 15	67	13	25	38.2	1.95
Decatur . . . . .	26	62	9	14	31.6	1.65	19	74	6, 16	28	44.7	3.05
Pana . . . . .	23	62	10	12	34.0	2.50	19	76	5, 12	30	46.3	.....
Rochelle . . . . .	23, 28	50	10	-13	27.3	.....	15	73	3, 12	26	40.0	.....
Wyanet . . . . .	23	56	13	-10	27.3	2.00	15	70	3, 21	27	41.5	2.72
Tiskilwa . . . . .	23	56	10	-6	29.1	.....	15	74	24	24	42.6	.....
Hennepin . . . . .	23	58	10	-2	29.0	.....	2, 15	72	24	26	42.0	.....
Do. . . . .	23	55	9	1	28.5	2.49	2, 15	70	3, 24	29	43.7	3.20
Peoria . . . . .	23	66	10	6	32.0	1.62	15	73	6, 24	30	45.8	3.24
Havana . . . . .	23	68	13	-6	31.6	1.60	19	78	6	25	46.4	4.25
Waterloo . . . . .	23, 24	68	10	16	38.3	2.11	19	77	17	30	45.3	1.75
Dubois . . . . .	23	66	2, 10	19	40.4	4.60	19	78	3	27	49.7	2.75
Galesburg . . . . .	23, 28	55	13	-10	28.8	1.50	15	70	3	25	43.5	2.05
Manchester . . . . .	16, 23	68	13	5	34.2	1.55	14	81	6	23	47.7	4.40
Mt. Sterling . . . . .	23	69	13	8	35.0	2.80	19	75	3	30	47.4	4.10
Andalusia . . . . .	23	56	13	-10	29.5	.....	15	69	3, 6, 11	23	40.4	.....
Oquawka . . . . .	23	63	13	-8	31.9	3.02	15	72	3	26	44.7	1.96
Augusta . . . . .	23	73	13	-8	32.1	1.59	7, 15	73	3, 6	25	44.9	3.85
Warsaw . . . . .	23	73	13	-12	31.1	2.21	7	73	3, 6	26	44.5	3.51
<b>WISCONSIN.</b>												
Sturgeon Bay . . . . .	23, 24	46	11	-9	22.9	1.20	29	51	24	14	32.8	3.35
Manitowoc . . . . .	28	43	10	-4	25.7	0.64	30	48	1	20	35.0	4.84
Hingham . . . . .	23, 24	48	10	-1	25.6	.....	23	54	1	20	35.8	.....
Milwaukee . . . . .	23, 24	49	10	-2	28.7	1.32	8	48	1	24	36.0	2.75
Appleton . . . . .	23, 24, 28	49	10	-1	26.4	.....	8	59	1	20	36.5	.....
Geneva . . . . .	23	47	10	-14	23.4	1.30	15	60	1, 12, 13	24	36.2	2.06
Waupaca . . . . .	23, 27	48	11	-8	25.0	.....	8	58	1	15	35.8	.....
Embarras . . . . .	24	52	11	-4	25.4	1.50	8	58	24	10	33.6	4.36
Rocky Run . . . . .	23	52	11	-4	25.2	1.50	8	64	1	20	38.7	4.44
Madison . . . . .	23, 28	46	10	-4	23.7	1.43	8	60	1	20	35.4	2.96
Edgerton . . . . .	23	50	10	-4	26.9	1.70	8	62	2	20	38.8	1.58
Mosinee . . . . .	23	46	10	-14	18.5	2.86	8	54	1	5	29.9	11.33
Baraboo . . . . .	23	54	10, 11	-2	25.7	5.00	8	60	1	20	35.6	5.75
New Lisbon . . . . .	23	56	11	-8	25.7	.....	8	64	1	18	37.8	.....
Tunnel City . . . . .	23	54	10, 11	-10	24.2	4.58	29, 30	54	1, 6	10	32.7	3.25
Bayfield . . . . .	23	42	11	-20	15.5	.....	29	52	1	12	29.2	.....
<b>MINNESOTA.</b>												
Beaver Bay . . . . .	16	42	11	-20	17.0	1.84						
St. Paul . . . . .	23	44	10	-14	20.7	0.65	29	54	3	7	32.3	2.57

Table showing the range of the thermometer, &amp;c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.					MARCH.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
<b>MINNESOTA—Con.</b>												
Minneapolis.....	3	Deg. 44	10	Deg. -24	Deg. 17.9	In. 0.28	25	Deg. 51	3	Deg. 3	Deg. 30.1	In. 4.05
Leech Lake.....	22	37	9, 12	-20	15.2		28	59	3, 13	0	25.6	2.38
Koniska.....							7, 31	54	3	— 2	30.5	2.60
Sibley.....	23	47	12	-17	19.2	0.48	25	54	3	— 1	31.0	1.05
Litchfield.....	24	39	10	18	18.4	0.78	7, 25	56	1, 3	2	29.8	1.80
New Ulm.....	4, 23	44	12	-11	20.0	0.44	29	52	3	8	31.8	1.12
Oak Lake.....	22	40	10	-14	17.2	0.65						
<b>IOWA.</b>												
Clinton.....	20	68	10, 13	-10	22.0	1.20	8	68	24	26	41.8	4.50
Dubuque.....	23	54	13	-3	27.5	1.55	15	67	1	27	39.0	3.32
Monticello.....	23	56	13	-12	26.4	3.00	15	70	3	18	38.5	3.40
Durant.....	23	54	13	-9	26.7	1.70	15	68	3	22	38.7	2.05
Bowen's Prairie.....	23, 35	54	10	-12	26.0	2.40	15	72	3	16	38.1	2.25
Fort Madison.....	22	59	13	-8	30.2	2.57	15	73	3	24	43.4	2.10
Guttenberg.....	24, 28	46	13	-10	25.1		8	56	3	4	34.2	
Mount Vernon.....	23	52	9, 13	-8	25.6		7, 8	57	3, 13	19	37.2	
Iowa City.....	23	53	13	-13	26.2	3.10	15	67	3	20	42.3	5.36
Independence.....	23	51	10	-10	24.8	2.45	15	70	3	16	36.7	1.65
Near Independence.....	23	55	10, 13	-11	24.1	2.95	7	62	3	16	36.5	1.80
Rockford.....	23	50	10	-5	23.0		7	61	3	16	36.6	0.85
Iowa Falls.....	23	58	12	-10	25.3	5.59	7, 25	62	3	18	38.0	1.18
Algona.....	23	50	12	-14	21.2	1.05	7, 29	62	3	15	34.2	
Webster City.....	23	54	10, 12	-10	24.2	1.99						
Boonesboro.....	23	63	9, 10	-8	24.4	3.05	7	67	3	20	35.5	2.24
Afton.....	23	56	10	-4	26.6	1.99						
Fontanelle.....	23	68	9	-7	27.5	4.10	14	74	23	20	39.0	2.18
Grant City.....	23	58	12	-17	24.3	2.60	7	72	16	20	37.8	0.45
Sac City.....	23	55	12	-12	22.9	5.00	7	69	16, 21	20	34.8	0.80
Logan.....	23	68	12	-11	28.2	3.10	14	82	27	17	39.1	
Le Mars.....	23	62	12	-30	23.3							
Woodbine.....	23	69	8	-8	27.7	1.12						
West Union.....	23	55	10	-11	26.6	1.51						
<b>MISSOURI.</b>												
St. Louis.....	23	72	10	20	40.4	2.84	19	79	3	34	50.9	1.41
Allenton.....	23	74	13	15	39.0	4.21	19	84	17	26	49.4	1.93
Hematite.....	23	75	1, 10	21	42.5	3.63	19	82	4	26	51.5	2.01
Hannibal.....	23	72	13	-4	33.6	2.80	7	75	3	28	45.6	4.80
Rolla.....	19, 22	70	14	10	40.4	2.86	19	81	17	25	50.4	2.31
Keytesville.....	19, 20	65	13	-5	35.1		7, 22	78	3	22	47.0	
Jefferson City.....	23	70	13	7	41.0		7	76	3, 17	30	51.0	
Willard.....	22	73	9	10	40.4	2.74						
Cave Spring.....							18	80	27	19	49.2	3.19
Kansas City.....	19	68	13	-2	35.0	1.14	7	75	27	26	46.0	2.33
Oregon.....	23	70	9, 10	0	32.8	3.11	14	81	16	22	44.1	0.56
Corning.....	23	72	13	-3	32.7	1.93	14	80	16, 27	20	43.5	0.45
<b>KANSAS.</b>												
Atchison.....	23	74	13	-10	33.4	2.40	14	89	23, 27	24	45.8	1.20
Williamstown.....	20	74	13	-4	38.5	4.30	14	80	3, 16, 20	26	46.6	1.70
do.....	20	75	13	-5	38.5	4.57	21	84	3	26	50.7	1.20
Leavenworth.....	23	70	13	-9	33.8	2.89	14	78	3, 16	24	46.0	1.56
Olathe.....	22, 23	70	12	-3	35.1	1.60	14	78	3	24	45.3	2.85
Paola.....	23	76	13	-16	36.7	1.73	21	78	3	24	48.5	1.76
Baxter Springs.....	22	72	13	14	43.4	2.60	18	80	3, 27	30	51.8	2.10
Lawrence.....	22, 23	72	13	-6	35.3	2.43	14	78	3, 16	26	47.4	1.73
Holton.....	23	72	12	2	32.9		14	82	16	22	44.2	1.13
Le Roy.....	22, 23	72	13	-7	38.9	3.41	18	82	3	27	51.3	2.47
Burlington.....							14	80	3, 16	25	48.9	1.25
State Ag'l College.....	23	71	12, 13	3	36.0	2.48	14	83	16	22	47.2	1.02
Council Grove.....	23	72	13	-10	36.5	3.10	14	80	3	20	47.3	1.10
Douglas.....	20	74	13	-6	39.7	2.15	14	85	16	25	51.5	1.16



Table showing the range of the thermometer, &amp;c., for February and March—Continued.

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<b>KANSAS—Cont'd.</b>		<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>		<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>
Plum Grove.....	22	60	13	-11	30.6	1.65						
Girard.....	23	72	13	4	39.1	3.30						
Burlingame.....	20	70	13	3	34.0		14	82	16	21	45.9	
<b>NEBRASKA.</b>												
Omaha agency...	22	68	12	-9	31.1	1.00	14	80	16	16	41.9	
De Soto.....	23	67	12	-13	28.3	1.37	14	81	16	18	40.6	0.82
Bellevue.....	23	70	12	-8	31.5	1.60	14	85	16	22	42.8	0.40
Nebraska City.....	23	72	12	-10	30.1	1.30	14	84	16	19	42.3	0.21
New Castle.....	3	70	7, 10, 25	0	25.5	0.50						
<b>UTAH.</b>												
Coalville.....	18	49	25	-5	27.8	1.55	12	56	2	1	37.5	
Camp Douglas.....	27	53	8, 25	19	32.5	2.44	12	64	2	19	38.7	3.57
<b>CALIFORNIA.</b>												
Monterey.....	2, 26	61	23	37	48.2	2.64	31	77.5	3, 22	38	53.0	0.31
Chico.....	4	68	16, 24	34	47.3	3.65	31	81	21	38	55.0	0.90
Watsonville.....	4	70	2, 23	32	49.9	5.45	29	83	18	29	52.6	0.40
Cahto.....	2	64	22	35	46.0	10.60						
Visalia.....	18	70	23	29	47.2	1.56	30, 31	83	14	32	55.0	
Taylorville.....	26	67	{ 3, 12, } { 23, 24 }	28	41.9		{ 11, 15, } { 19, 28 }	64	28	32	48.7	
San Diego.....	23	70	17	39	51.9	1.35						
<b>MONTANA.</b>												
Deer Lodge City.....	26	52	11	-31	23.5	0.88	31	55	22	8	32.5	1.30
Missoula.....	21	51	11	-4	29.5	0.00	30	55	10	22	37.1	1.47
Virginia City.....	19	49	11	-10	24.5		12	56	10	6	33.5	2.00
<b>WASHINGTON.</b>												
Cathlamet.....	26	54	11	26	40.2		30	68	29	32	44.3	
Port Angeles.....	17, 25, 26	48	8, 11, 12	37	43.2	10.87						
<b>COLORADO.</b>												
Denver City.....	20	66	1	13	38.5	0.23	13	68	9	10	46.0	1.81
Colorado City.....	21	72	2, 12	9	37.1	0.55	13	76	2	15	44.9	0.71
Golden City.....	21	70	11	12	41.1	1.00	13	72	15	20	43.0	1.40
<b>OREGON.</b>												
Portland.....	26	58	11	28	43.0	5.06	31	69	18	33	47.0	9.24
Eola.....	25	49	11	25	37.3	4.32	30	62	29	30	41.6	7.51
Astoria.....	3, 26	49	11	31	40.2	10.88	30	61	18, 29	35	44.0	16.21

## NOTES OF THE WEATHER.

FEBRUARY, 1871.

*Orono, Me.*—Auroras 10th, 11th, 13th, 15th, 21st.

*Williamsburg, Me.*—Auroras 10th, 11th; mean heat of winter 12.45°.

*West Waterville, Me.*—Auroras 10th, 11th, 21st; wells and streams low.

*Gardiner, Me.*—Month 2° 06 warmer than February average of thirty-five years, and 1.55 inches less moisture than average of same period.

*Standish, Me.*—Wheeling till 8th; good sleighing 15th; snow gone 24th.

*Oxford, Me.*—Dry winter; little good sleighing; streams low.

*Cornish, Me.*—Winter like March and April; February, 19 inches snow.

*Strafford, N. H.*—Very cold 4th, 5th; snow on fifteen days, 20.75 inches.

*Tamworth, N. H.*—Ground bare 28th; wells low or dry.

*Contoocookville, N. H.*—Thaws 1st, 25th; hard winter on grass fields.

*Goffstown Center, N. H.*—Warm 23d to 28th; many wells still dry.

*Lunenburg, Vt.*—Month cold and clear; March less snow than usual.

*East Bethel, Vt.*—Smallest amount of sleighing in fifty years.

*Woodstock, Vt.*—Drought partly relieved by rain and snow of 18th.

*Georgetown, Mass.*—Sky nearly cloudless for seventy hours 4th to 7th.

*Mendon, Mass.*—Bright aurora 10th; snow gone; roads muddy; wells rising.

*Lunenburg, Mass.*—Severe wind and cold 3d, 4th, 5th; sleighing 13th to 17th.

*Southington, Ct.*—Southeast wind melted the snow and caused freshet 18th; bluebirds 25th; mean heat of the winter 27° 17.

*Garrison's, N. Y.*—Month cold; much snow; ice yet on the Hudson.

*Cooperstown, N. Y.*—No heavy storms of snow, rain, or wind; only ten days sleighing; winter mean heat 3° below last winter.

*North Hammond, N. Y.*—Month mild, open; coldest day of winter 5th.

*South Trenton, N. Y.*—Snow (23.72 inches) on fourteen days; changeful month.

*Middleburg, N. Y.*—Streams low; only five days good sleighing.

*Depauville, N. Y.*—February mean 2° 5 above the last, and 1° above the average of seven years; pleasant month, except a few days.

*Palermo, N. Y.*—The winter was 22° warmer than average of seventeen winters; snow-fall this winter was 45.75 inches.

*Buffalo, N. Y.*—Month 1° above average of thirteen years; very changeable, and two days sleighing; winter rough, stormy, but not very cold.

*Newark, N. J.*—Month 2° below average; of twenty-seven Februaries only seven were colder; less snow, rain, and winds than usual.

*South Orange, N. J.*—Auroras 10th, 21st, 22d; sleighing from 23d ultimo ended by rain 18th; traveling heavy.

*Carlisle, Pa.*—Coldest morning in two years 6th; robins, bluebirds, 23d.

*Fountain Dale, Pa.*—Bluebirds; snow and frost gone 28th.

*Tioga, Pa.*—Snow gone; ice out of the river 28th.

*Grampian Hills, Pa.*—Good roads, and fine month for out-door work.

*Connellsville, Pa.*—Crows 23d; frogs heard; bluebirds 26th.

*Brownsville, Pa.*—Pleasant month; much plowing done.

*Beaver, Pa.*—Month nearly 4° warmer than in 1870.

*Milford, Del.*—Brilliant aurora 10th; wells rising 20th; pleasantest day 25th.

*Woodlawn, Md.*—Ice leaving the Susquehanna 24th to 28th; snow visible all month, and 14.2 inches fell in the month, but very little sleighing.

*Hampton, Va.*—Robins 1st; crocus 23d; willow in leaf 25th; frogs 28th.

*Surry, Va.*—Month wet, cloudy; little farm work done; coldest winter day December 25, warmest 26th inst.

*Piedmont, Va.*—Distant thunder, frogs, doves cooing, 25th; no snow, roads good, springs low for the season.

*Lynchburg, Va.*—Bright aurora 12th; nearly a foot of snow this month.

*Wytheville, Va.*—Blue birds 11th; bright aurora 12th; doves cooing 20th; thunder and lightning, frogs, 21st; snow 22d, 27th.

*Albemarle, N. C.*—Wet month, no snow; crocus and daffodil 28th.

*Unionville, S. C.*—Thunder and lightning 5th; frogs 28th.

*Berne, Ga.*—Thunder and lightning 9th, 13th, 24th, 26th; destructive gale and drenching rain 18th; frost 28th.

*Quitman, Ga.*—Thunder-storms 1st, 12th, 13th, 26th; heavy wind and rain storms 17th.

*Rockville, Ala.*—Thunder 5th, with lightning 12th; Chickasaw plum blossoms 20th, peach tree 23d.

*Coatopa, Ala.*—Frost, ice, 15th; peach and plum blooming 18th.

*Moulton, Ala.*—Month mild and pleasant, last days summer-like, frosts 15th and 19th; rains sufficient.

*Jacksonville, Fla.*—Mean heat of month about 2° above average, rainfall below average, vegetation forward.

*Sand Fly, Tex.*—Heel flies 22d; peach and plum trees in full bloom 26th.

*Bluff, Tex.*—Thunder and lightning 6th; peach blossoms 15th, leafing 28th; plum blossoms 20th; red mulberry leafing 16th.

*Clarksville, Tex.*—Vegetation forward, but too wet for farming.

*Austin, Tex.*—Frost 1st, 14th; peach blossoms 15th, plum 21st.

*Ponchatoula, La.*—Blackberry and wild apple in bloom, mocking birds nesting, young figs plentiful, 28th.

*Brookhaven, Miss.*—Doves 3d; green lizards 17th; toads 20th; large butterflies 22d; only white frost this month, 28th.

*Helena, Ark.*—Tornado with thunder and lightning, destroyed lives and houses, 17th.

*Clarksville, Ark.*—Frogs 4th; frost 13th; wind and rain storms 23d.

*Elizabethton, Tenn.*—Thunder-storm 5th; tree toad 20th; freeze 28th.

*Greenville, Tenn.*—Remarkable thunder-storm 5th and 6th.

*Shelby City, Ky.*—Frogs 19th; but little snow all winter.

*Pine Grove, Ky.*—Thunder showers 5th; sleet, snow, hail, 6th.

*Salem, Ohio.*—Auroras 3d, 10th; meadow larks 22d; robins 24th.

*Painesville, Ohio.*—The driest month in a very dry winter.

*Cleveland, Ohio.*—Robins 20th; violets 24th; ice in the river broken up 25th; February temperature for sixteen years, 29° 18; winter, 29° 16; for sixteen years, 28° 96.

*North Bass Island, Ohio.*—Crows 21st; bluebirds 24th; hawks 25th.

*Bowling Green, Ohio.*—Robins, bluebirds, 14th; no thunder-storms.

*Urbana, Ohio.*—Mean temperature 3° 08 above last February, and nearly 3° above the February average of nineteen years.

*Jacksonburg, Ohio.*—Rain, hail, sleet, 5th, 12th; snow-storm 27th.

*Detroit, Mich.*—Snow, heavy rain, snow, 17th, 18th; bluebirds 24th.

- Ann Arbor, Mich.*—Month open, moderate; bare ground at close.
- Litchfield, Mich.*—Robins, bluebirds, 28th. Little sleighing this month.
- Grand Rapids, Mich.*—Much sleighing (64 days) this winter.
- Northport, Mich.*—Coldest winter day 5th. Winter mild, good sleighing; earth now bare, and bay and lake open.
- Copper Falls, Mich.*—Splendid auroras 11th, 12th; sheet lightning 23d.
- Ontonagon, Mich.*—Warm, pleasant month; little ice in lake.
- Fort Wayne, Ind.*—Auroras 10th, 16th; frost out of ground, third time, 22d.
- Vecay, Ind.*—First copious rain in many months 17th; robins 24th, crocus 25th; rain all day and night 25th, 26th.
- Mount Carmel, Ind.*—First heavy rain in several months 17th, 18th.
- New Harmony, Ind.*—Thunder-storms 5th; heavy rains 16th, 17th, 25th.
- Aurora, Ill.*—Best and most sleighing in twenty years.
- Belvidere, Ill.*—Good sleighing till 23d; very high wind 24th.
- Wyanet, Ill.*—A hazy month, some days very thick.
- Hennepin, Ill.*—Thunder-shower 24th. Month mild.
- Havana, Ill.*—Thunder 5th; ice out of river 18th; robins 24th.
- Dubois, Ill.*—Bluebirds 4th; frogs 7th; all-day rain, flood, 17th.
- Mount Sterling, Ill.*—Spring birds 10th; roads drying, frost gone, 27th.
- Oquawka, Ill.*—Heavy wind and rain with lightning 24th.
- Milwaukee, Wis.*—Heavy storm—at San Francisco 20th; at Corinne, Utah, 21st; at Cheyenne 22d; at Omaha 23d; here 24th; reached Portland, Me., 25th. [In some places rain, snow, hail, attended by wind and lightning.]
- Embarrass, Wis.*—Auroras 10th, 11th, 12th, 20th, 21st, 24th, 26th.
- Tunnel City, Wis.*—Thunder-storms 23d, 24th; snow gone, freshets, 28th. Ground frozen three feet deep.
- St. Paul, Minn.*—Only cold spell of winter 9th to 14th; lightning, no thunder or rain, 24th. Warmest winter in twelve years, except 1862-'63, and 1868-'69.
- Minneapolis, Minn.*—Mildest February since 1865.
- Oak Lake, Minn.*—Most beautiful February known here.
- Bowen's Prairie, Iowa.*—Severest gale this winter, 28th. Month warm.
- Guttenburg, Iowa.*—No sleighing all winter; fine season for cattle.
- Independence, Iowa.*—Winter very mild and even temperature.
- Boonesboro', Iowa.*—But two inches rain and melted snow from November 10th to 23d instant. February free from storms or rough winds, generally.
- Hematite, Mo.*—Martins 16th; frogs 20th; meadow larks 23d.
- Rolla, Mo.*—Month nearly 4° warmer than in 1870.
- Oregon, Mo.*—Auroras 12th, 13th, 16th, 20th, 24th, 27th.
- Atchison, Kans.*—Brilliant aurora 12th; heavy thunder-storm 23d.
- Plum Grove, Kans.*—Thunder, hail, 23d; frogs, blackbirds, 24th.
- Council Grove, Kans.*—First thunder-shower 16th, with hail 23d.
- Nebraska City, Neb.*—Latter part of month very pleasant.
- Newcastle, Neb.*—Little snow this winter, weather pleasant.
- Watsonville, Cal.*—Gale and thunder-storm 20th; willow in leaf 28th.
- Visalia, Cal.*—Winter colder than usual.
- Deer Lodge City, Mont.*—Auroras 11th, 12th, white light.
- Missoula, Mont.*—Bright auroras 11th, 12th, streamers.

## MARCH, 1871.

*Cornish, Me.*—Robins and bluebirds 6th; ground bare 19th.

*Oxford, Me.*—Farmers plowing on 18th; this has not occurred in March since 1838.

*Standish, Me.*—Some have done part of their sowing on light high ground.

*Gardiner, Me.*—Auroras 1st, 10th, 15th, 19th, 22d, 24th, 28th. The month  $2\frac{3}{4}^{\circ}$  warmer than ever known before.

*Contocookville, N. H.*—An unparalleled March; no good sleighing; only 6 inches of snow; bare ground nearly all the month; auroras 1st, 3d, 15th, 19th, 22d.

*Panton, Vt.*—Began plowing 14th; aurora 28th.

*East Bethel, Vt.*—Mean temperature of the month  $5^{\circ}$  higher than for five years preceding.

*Georgetown, Mass.*—Sleighing only on the morning of the 28th; auroras 1st, 2d, 19th, 24th.

*New Bedford, Mass.*—Bluebirds 1st; thunder 23d.

*Lunenburg, Mass.*—The mildest March since 1851.

*Middletown, Conn.*—The mean temperature higher than shown by the records of thirteen years.

*Garrison's, N. Y.*—Weather mild first part of the month; cold the latter part.

*Cooperstown, N. Y.*—The mildest March for twenty-two years; robins 4th.

*North Hammond, N. Y.*—Extraordinary season for maple sugar, trees averaging four to five pounds each.

*North Depauville, N. Y.*—The mildest March for thirty-five years; no sleighing; auroras 9th, 10th, 17th, 20th, 22d, 24th, 25th, 26th, 28th.

*Buffalo, N. Y.*—The temperature of the month  $7\frac{3}{4}^{\circ}$  higher than the March average of thirteen years.

*Greenwich, N. J.*—Farmers plowing 2d.

*Fallsington, Pa.*—The warmest March since 1865.

*Factoryville, Pa.*—The temperature of the month was  $7^{\circ}.5$  above the March mean of seven preceding years.

*York Sulphur Springs, Pa.*—Faint aurora 10th.

*Woodlawn, Md.*—The first part of the month was very mild; the latter part cold; aurora 24th.

*Mt. St. Mary's, Md.*—The temperature of March warmer than for several years past.

*Surry Court-House, Va.*—The month has been windy, very wet, and variable.

*Albemarle, N. C.*—Peach-tree bloom nearly over on the 26th, and apple and pear trees in full bloom.

*Macon, Ga.*—Oaks begin to bud 9th; terrific wind night of 11th; wind-storm 26th, throwing down trees, with much thunder and lightning.

*Moulton, Ala.*—An unusually damp and rainy March; the ground during most of the month too wet to plow or plant; the spring is unusually forward.

*Pilatka, Fla.*—Violent thunder-storm on the 30th, accompanied by hail.

*Oakland, Tex.*—Potatoes in bloom 15th; heavy thunder-shower from the west, night of 25th.

*Brookhaven, Miss.*—Heavy rain and hail-storm from the northwest, p. m. of 11th, lasting half an hour; heavy wind-storm passed at the northwest on the 26th, greatly damaging farms, &c.

*Elizabethton, Tenn.*—An unusually warm March; the season about a week earlier than usual.

*Arcadia, Ky.*—First bloom of strawberry 16th; aurora 17th, 9 p. m.

*Cleveland, Ohio.*—Auroras evenings of 15th and 17th.

*North Fairfield, Ohio.*—First thunder-shower 15th; the season quite two weeks earlier than usual.

*North Bass Island, Ohio.*—Heavy gale from west night previous to 1st; ice in Lake Erie broken up 1st; heavy thunder evenings of 2d and 14th; aurora 17th; very heavy white frost 18th and 25th.

*Urbana, Ohio.*—The month warmer than any March for twenty years past.

*Bethel, Ohio.*—The month has been very changeable, though not very cold; plowing done most of the month.

*Algena, Mich.*—Auroras 10th and 17th.

*Ann Arbor, Mich.*—An unusually pleasant March; navigation on the Detroit and St. Clair opened 19th.

*Vevay, Ind.*—Brilliant aurora 17th.

*Spiceland, Ind.*—The finest March for many years.

*Charleston, Ill.*—Aurora 17th; the earliest spring for several years.

*Belvidere, Ill.*—The month unusually mild and even; good plowing since 8th; some grain sowed 13th.

*Manitowoc, Wis.*—Auroras 24th and 27th.

*Milwaukee, Wis.*—Ice left the Milwaukee River 9th.

*Minneapolis, Minn.*—Only one warmer March during the last six years; bluebirds 28th.

*Koniska, Minn.*—On the prairies the ground is frozen more than three feet deep, and plants usually considered hardy have been killed; very little snow until March.

*Clinton, Iowa.*—First boat up the river 9th; bluebirds and robins 10th.

*Durant, Iowa.*—Aurora 17th.

*Independence, Iowa.*—A very warm and pleasant March, and remarkable for the amount of thunder and lightning; farmers commenced sowing grain by the middle of the month.

*Logan, Iowa.*—No rain during the month; such a March has not been known here since 1850.

*St. Louis, Mo.*—On the 8th, 2.30 p. m., a destructive tornado swept over the river and a part of East St Louis, its course being apparently from south to north, nearly. At its commencement the sky was as dark as night.

*Hematite, Mo.*—Heavy thunder-storm from the south on the 8th at 1.30 p. m.; aurora 17th.

*Cave Spring, Mo.*—A sudden change from warm to cold about 5 o'clock p. m. 8th; strawberry blossom April 1.

*Leavenworth, Kansas.*—The average temperature of the month  $11^{\circ}.3$  higher than that of last March.

*Paola, Kansas.*—On the 8th a storm from the northwest, commencing with small hail and from that changing to a violent snow-storm, with heavy thunder and sharp lightning.

*Williamstown, Kansas.*—Blackbirds 1st; plowing 2d.

*Bellevue, Neb.*—Aurora 17th; a very pleasant and dry March.

*Nebraska City, Neb.*—Farmers generally began plowing and sowing about the 1st.

*Denver, Col. Ter.*—The month unusually windy and cloudy, and its mean temperature  $13^{\circ}.3$  higher than that of last March; first rain 24th and 25th.

MONTHLY REPORT



OF THE

DEPARTMENT OF AGRICULTURE

FOR

MAY AND JUNE

1871.



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PH.D. THESIS

Author: [Faint text]
Title: [Faint text]
Department: [Faint text]
Date: [Faint text]

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# MONTHLY REPORT.

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DEPARTMENT OF AGRICULTURE, STATISTICAL DIVISION,  
*Washington, D. C., June 20, 1871.*

SIR: I present herewith for publication a condensed statement of the acreage and condition of the growing crops, together with a variety of extracts from the correspondence of the Department; also, articles on beet-sugar manufacture; on the climate of Santa Barbara; temperature and rain-fall of certain stations in northeastern Ohio; list of market prices of farm products; agriculture in Italy; the game laws of Prussia; scientific notes; meteorological tables, and notes on the weather, &c.

J. R. DODGE,  
*Statistician.*

Hon. HORACE CAPRON,  
*Commissioner.*

## CONDITION OF THE CROPS IN JUNE.

The meteorological peculiarity of the season has been the recurrence of severe frosts in the interior areas, the Ohio and Mississippi Valleys. In the former the severest occurred April 19 to 23, killing fruits and injuring grain crops; and the absence of rain is noted throughout this region, in some places for a period of eight weeks together; but showers in the latter part of May have been quite general, and exceedingly timely and refreshing. West of the Mississippi heavy frosts occurred early in April, one on the 13th destroying much fruit in Kansas. In the Gulf Coast States, on the contrary, rain was abundant both in April and May, attended with a low temperature as in the section north of them.

While the planting and germinating season was generally cool, it was commenced at an early date, being preceded by a spell of genial and sunny weather; the temperature of the soil has not been reduced by evaporation of heavy falls of rain; consequently the crops of all but the cotton States are more advanced than usual, and the grain harvests are commencing a week, in some places ten days, earlier than their customary date.

### WHEAT.

The wheat acreage of the country has been increased. The averages, as carefully calculated from our returns, in comparison with the breadth sown last year, show an increase in the following States: New York, 1 per cent.; New Jersey, 2; Ohio, 6; Michigan, 4. Wisconsin, 4; Minnesota, 10; Iowa, 15; Kansas, 30; Nebraska, 25; Oregon, 3. A small decrease appears in the New England States; in Pennsylvania, a reduction

of 2 per cent.; Maryland, 3; Kentucky, 2; Indiana, 2; Mississippi, 2; and South Carolina, 8. The average increase in acreage is estimated at 4 per cent., or about three-fourths of a million acres.

The condition of the crop in Massachusetts is placed at 14 per cent. below an average; Connecticut, 6; New York, 2; Virginia, 8; North Carolina, 18; South Carolina, 27; Georgia, 25; Alabama, 23; Mississippi, 4; Texas, 14; Arkansas, 13; Tennessee, 26; Kentucky, 20; Indiana, 3; California, 42. The States reporting superior condition are: Delaware, 2 per cent. above average; Maryland, 2; West Virginia, 4; Ohio, 7; Michigan, 6; Wisconsin, 6; Minnesota, 2; Illinois, 3; Iowa, 8; Missouri, 4; Kansas, 9; Nebraska, 6; Oregon, 4.

The wheat plant in New England is suffering from drought in the sandy and less elevated sections. Spring grain has been injured from this cause in the mountain sections of Western Massachusetts.

Winter wheat is in fine condition throughout New York. Our correspondent in Livingston County says it looks better than he has seen it in the past forty-five years, though the spring grain is suffering from drought, particularly on uplands. In Erie County, spring wheat has had an unprecedented growth in the last ten days of May. In Onondaga wheat is beginning to head, and in some places is "lodging" badly. The growth of spring grains has been retarded in Clinton by a wet and cold spring. Recent rains have greatly improved the crop in Seneca. Drought has been severe in several sections, as in Albany, Livingston, Suffolk, and other counties, causing injury to spring grains, but winter wheat endures it well. A fully average condition is reported throughout the Middle States. There has rarely been a better prospect for wheat in New Jersey, Ocean County furnishing the only unfavorable report. In Westmoreland, Pennsylvania, it is stated that very heavy showers have washed the pollen from the blooming wheat, and a reduction is feared in consequence.

The reports from Maryland are equally favorable as to average condition. A few drawbacks are reported from the Hessian fly in Talbot, Queen Anne, and St. Mary's. In Talbot the joint-worm is troublesome. While the injury in St. Mary's, from the rust and fly, is severe, the superior condition of the crop will compensate for this deficit and place the prospective yield above the average. The following items are extracted from the returns:

*Cecil County, Md.*—Wheat, early in the spring, was uncommonly promising, but the greater part of it was struck with an unusually early rust. In whole fields the leaves turned yellow, and persons passing through them had the lower part of their garments stained a brown color. The excessively hot weather in April, followed by heavy rains and cool weather in the last of April and the first of May, probably caused this. At present crops of all kinds are suffering from drought.

*Queen Anne County, Md.*—The Hessian fly has sadly thinned many fields of wheat, and the blades have been killed by red rust. Wheat passed out of blossom without heavy rains or high winds, and is consequently entirely free from scab, which proved so destructive last year. If the weather proves favorable for the next three weeks we will harvest three-fourths of a crop. Had the usual amount of fertilizers been used last fall I think the crop would have been a full average.

In Virginia rust is reported in King George, Nansemond, Surry, Nelson, Chesterfield, Buchanan, Lee, Middlesex, Pulaski, and Lancaster; and the fly in Campbell, Chesterfield, King George, Augusta, and Pulaski. While the general prospect is not very unpromising, there are some counties in which the reduction is heavy, as will be seen by the following extracts:

*Buchanan County, Va.*—Wheat suffering from excessive wet, hot, and sultry weather. Rust in nearly every field. Great complaint of smut; some fields totally ruined. The fallow crop very poor.

*Lee County, Va.*—Rust has greatly damaged the wheat.

*Clarke County, Va.*—A heavy growth of straw in the northeastern part of the county; in others the report is less favorable. The crop of the county will probably be 5 per cent. above an average.

*Augusta County, Va.*—The wheat is thin; some fields were seeded to oats. The fly has done considerable injury. The wheat heads are long, however, and will probably yield a good crop.

*Spotsylvania County, Va.*—Wheat ripe sixteen days earlier than for many years. Very little injury from disease or rust.

*King George County, Va.*—Wheat retains its promising appearance, but it can hardly mature well while the ground is so saturated. Rust on several plantations. The recent storms have thrown down the rank wheat. Crops are not uniform; some are light and damaged by fly, and some by rust. Results uncertain; prospects by no means favorable.

*Nausenond County, Va.*—Although we have had a very dry spring and considerable rust, winter wheat is heavier, with larger heads, and altogether better than last year. Birds are so destructive to smooth wheat that we cannot raise it; they injure the bearded scarcely any.

*Middlesex County, Va.*—The rust struck wheat as early as the 20th of April, and before the 5th of May the lower blades were entirely dead, and now the fields throughout the county are red, and farmers are offering their crops for half they cost them.

The prospect is less flattering in the Carolinas than in Virginia. Rust has appeared in many sections, including the counties of Orange, Macon, Stanley, Yadkin, Stokes, Mecklenburg, Gaston, Rockingham, Harnett, Alamance, Beaufort, Union, Green, Davie, Anson, Montgomery, Camden, Franklin, Perquimans, Bladen, Cowan, and Gates, in North Carolina; and in Newberry, Union, Lexington, York, Spartanburg, and Richland, in South Carolina. The fly has totally destroyed many fields in Montgomery, produced some injury in Davie, and destroyed some early fields in Orange, North Carolina; and injury from the same cause is reported in Greenville and York, in South Carolina.

*Pasquotank County, N. C.*—We have a more perfect failure of the wheat crop than I have ever known.

*Mecklenburg County, N. C.*—Wheat looked well up to the 20th of April, when a long cold rain occurred. Rust prevalent. One farmer who sowed for 450 bushels, and who expected 400 bushels one month ago, now thinks he will not have over 50.

*Spartanburg County, S. C.*—It was thought that wheat would be almost a failure from rust, but it is filling remarkably well, and should the weather continue favorable, there will be a fair crop.

*Union County, S. C.*—Rust on the wheat and an insect in the roots.

Wheat is not a prominent crop in the South. The acreage of the Gulf States appears to be but slightly increased. The reports of condition are comparatively low, rust and the fly having wrought much damage. The following items are from our correspondence:

*Gordon County, Ga.*—Wheat set back by cold rains and rust.

*Dawson County, Ga.*—Too much rain for wheat. Serious damage by rust.

*Talbot County, Ga.*—Wheat crop reduced by immense numbers of rice birds feeding upon it.

*Murray County, Ga.*—Wheat crop nearly ruined. On the bottom lands it has been attacked by the fly, rust, and spot. Other crops promising.

*De Kalb County, Ala.*—Wheat almost ruined by excessive rains. Some fields will not be cut at all. Not over half a crop.

*Randolph County, Ala.*—Increased acreage in wheat. That sown in December looking well; that sown in January is a little backward, though promising.

*Washington County, Ark.*—Prospect for winter wheat very good in early spring; early sown wheat killed by frost the 25th of April; later sown more or less injured.

*Madison County, Ark.*—Early wheat killed by frost the 22d of April; farmers planting their wheat fields with corn.

*Cherokee County, Texas.*—Wheat harvest commenced May 29; considerably damaged by rust.

*Dallas County, Texas.*—Wheat poor, owing to the great quantity of rain.

*Medina County, Texas.*—A dry winter and severe spring frosts damaged the growth of winter and spring wheat considerably; the rains at the end of March came too late to repair the injury.

*Grayson County, Texas.*—Damaged by rust, which appeared early; quality fair, but kernel not well filled.

*Burnet County, Texas.*—Wheat and other cereals not much cultivated of late, on account of rust from spring rains.

Rust is prevalent in many counties in Tennessee; the loss is estimated at 40 per cent. in Hancock; the blades are rusted in Humphrey, and in many fields the stalks are involved; scarcely more than half a crop is expected in Hawkins; in Hickman some fields are given up to pasturage; much discouragement is felt in Knox; Stewart promises but half a crop; and rust is also reported in Dyer, Giles, Hardin, Campbell, Coffee, Loudon, Jefferson, Lauderdale, Monroe, Meigs, Oglethorpe, Polk, Robertson, Rhea, Smith, Sullivan, and Sevier. The fly is reported in several counties, and the joint-worm is mentioned in Jefferson and Loudon. The Sullivan correspondent significantly remarks: "This season teaches the farmers that book-farming is no humbug; we *must* improve our worn-out lands or starve out."

The reports from West Virginia are quite uniformly favorable. The only counties reporting rust are Cabell and Jefferson. Some injury has been wrought by "the fly" in Nicholas. In Braxton wheat is early, nearly all of the Tappahannock variety, and a larger quantity is expected than ever before. The best crop ever raised in Monongalia is predicted.

In Kentucky a full crop is scarcely expected. Much damage was done by the heavy frost of April 23. The injury was especially severe in Anderson, Bourbon, Clark, Carroll, Edmondson, Franklin, Henry, Jackson, Laurel, Lincoln, Marion, Ohio, Shelby, Spencer, Scott, and Warren. The following items are quoted:

*Carroll County, Ky.*—Wheat, rye, and barley were in fine condition up to April 23, when the frost injured the wheat very seriously, especially on the river bottoms, and now rust has attacked many fields.

*Edmondson County, Ky.*—Winter wheat was damaged by frost and rust on the blades. The prospect for a good harvest has, however, improved of late.

*Jackson County, Ky.*—Wheat was damaged materially by the frost of April 23, especially the Tappahannock kind. I regret very much the damage done this kind of wheat, as it is considered by those who have made experiments with it to be the best and most profitable wheat that has ever been introduced into this part of the State. Wheat sowed early last fall is damaged considerably by the fly.

*Laurel County, Ky.*—The wheat crop has been very materially injured by the Hessian fly, rust, and frost of April 23. Perhaps the estimate of 50 per cent. of an average is too high; taking into consideration the increased acreage we shall make about one-half crop.

*Shelby County, Ky.*—The frost on the night of April 22 almost entirely destroyed the early varieties of wheat. Late varieties are more promising. Rust is on the blades of wheat and rye.

*Scott County, Ky.*—The frost of April 23 injured the Tappahannock wheat very much, it having commenced jointing. The other kinds were not advanced enough to be hurt.

Very few complaints come from Ohio. The Logan correspondent says the growth of wheat is remarkable, and the crop is uniformly heavy, though rust and the joint-worm have caused some uneasiness. Early wheat was injured in Champaign County by the frost of April 14. Insects, rust, and frost have greatly injured the prospect in Adams, and in Jackson "there will hardly be enough wheat raised in the county for seed." There is some apprehension of loss felt in Holmes, Darke, and Greene.

In Indiana the prospect is slightly below an average. Frequent and heavy frosts during April and May did a large amount of injury. In places some loss is apprehended from drought, which prevented growth and tillering. In Park no rain sufficient to wet the ground has fallen since February 17. The straw and heads are short in sections injured by frost and drought. The harvest will be early. In Ripley "some fields are

as yellow as saffron—the Michigan white wheat rusted badly, while the old Mediterranean and Hill were not much hurt.” Rust is quite general, though not very destructive; the fly is reported in several counties, but the enemies of the crop have been frost and drought.

The promise for wheat in Illinois, in the southern counties of which the harvest commenced early in June, is fine. In Cook County a finer prospect “was never known;” in De Kalb “the outlook is encouraging in the highest degree,” and our correspondent in Marion says: “I have lived here thirty-three years, and never saw such a good prospect for wheat.” The harvest is unusually early. Our Livingston correspondent reports that “one of our farmers commenced cutting his barley May 31, the earliest harvesting ever done in this county; while in Monroe barley was cut in the first week in May, and some red May wheat was cut about the same time. The chinch bug has injured spring wheat in De Kalb, Grundy, Hancock, Kankakee, Livingston, Putnam, and Sangamon; the effects of drought are mentioned in Clay, Effingham, Greene, Jo Daviess, Franklin, Lawrence, Marion, and Randolph; and rust, which has been less injurious than in many other States, is reported in Edwards, Peoria, Polk, Pope, Scott, and White.

A fine crop on an enlarged area is assured in Iowa. In Boone “there has never been a better prospect for crops of all kinds since the first settlement of the county;” in Clayton all crops are ten to fifteen days in advance of other years; in Cherokee wheat looks well, and “the acreage doubles each year, owing to immigration;” in Hancock is reported “the earliest spring ever seen by the oldest settlers of the county;” in Iowa “the most favorable season for starting crops ever known;” “the wheat crop never looked better” in Marshall, in Marion, or in Story. The chinch bug appears in spring grain in Decatur and Taylor; and drought has been more or less injurious in Jefferson, Page, Plymouth, Shelby, and Wapello.

*Kossuth County, Iowa.*—The weather has been very favorable and crops never looked better. A large breadth has been sown on new land, and much breaking has been done.

*Pocahontas County, Iowa.*—Propitious spring rains have brought along the grain finely. Acreage has increased, owing to the rapid development of the county, immigration being very heavy.

A fine crop is reported from Missouri. The drawbacks are numerous, but slight in influence, and include frost, drought, insects, and rust. The chinch bug is reported in Adair, Cass, Harrison, Johnson, Linn, and Nodaway; the fly in Cass, Jasper, Johnson, Lafayette, Marion, and Phelps; drought in Franklin, Texas, Phelps, and Osage; and rust in Benton, Calloway, Cass, Chariton, Cape Girardeau, Moniteau, and Montgomery.

*Jasper County, Mo.*—Most of the wheat was sown after October 1, and is extra good. That sown before that date is much injured by the Hessian fly.

*Lafayette County, Mo.*—The wheat has been injured at least 40 per cent. by the fly.

*McDonald County, Mo.*—Wheat considerably injured by severe frost April 22, which killed the young growth of timber.

*Osage County, Mo.*—The drought of April and May destroyed the very flattering prospect for wheat.

Wisconsin appears to be as free from injuries to the wheat crop as any other State. The chinch-bug is reported in Iowa County, and the worm (joint?) in Calumet and Sheboygan. A fine yield is anticipated.

*Dane County, Wis.*—The season has been more than usually favorable, and almost every branch of farm work and all farm crops are at least in average condition. In some fields the small grains are injured by an unusual amount of “pigeon” and “fox-tail” grass.

*Marathon County, Wis.*—No rain for four weeks previous to June 1.

Minnesota will sustain her reputation for good crops, though the season has not been uniformly favorable. It was cold and wet in seed-time, and several weeks of drought followed, but late rains, warm and seasonable, have benefited the crop.

The wheat of Michigan can scarcely be improved in condition. In some places fears begin to be entertained of injury from drought, but refreshing rains have dissipated such forebodings.

Kansas reports the largest increase of acreage of any of the States, and stands among the first in condition of the plant. In Coffey County the rust made its appearance on the blades, but did not extend to the stem, and "an enormous crop" is promised. Early sown wheat in Linn was injured by the fly to such extent that some fields were plowed up. Injury is reported from the same cause in Bourbon, Franklin, Johnson, Miami, Wilson, Wyandot, and Woodson. The chinch-bug has committed depredations in Nemaha, Osage, and Shawnee.

*Montgomery County, Kansas.*—Crops of all kinds promise well. Plenty of rain. This county is about two years old. There are 100 acres in cultivation this year for every one last year.

All kinds of spring grain look well in Nebraska, and promise a large yield. In some sections the season has been rather dry, and the straw will consequently be short and the heads small.

In California there is a small crop. It was feared, in the early spring, that the failure would be disastrous, that the yield would not supply bread for the people and seed for the next crop. At the date of our returns, all of which have been mailed since the commencement of the present month, the prospect had brightened, with the aid of light but seasonable rains, indicating a surplus of four or five millions of bushels. It is thought in Napa that recent rains have been worth \$100,000 to the crop. In Colusa, in the midst of failure, instances of a probable yield of 30 bushels per acre, the result of summer-fallowing and fall-plowing, show that good crops, in California as elsewhere, depend more upon good cultivation than fertility or climate. In San Joaquin Valley, where utter failure was imminent, a respectable yield will be obtained in places. Reports are more encouraging from Stanislaus, where the reduction will be less than was anticipated. The headers were at work at Sherman's Island on the 5th of June, and the harvest was progressing in Merced County, with improved prospects. A material improvement is also reported in Monterey. The only counties reporting average condition are Butte, Del Norte, Siskiyou, Tuolumne, and San Bernardino.

There is a fine prospect for a good crop in Oregon. The acreage of spring grain is reported as slightly increased, with a small increase of winter wheat. Washington Territory also has a fine prospect for a bread crop. In the Walla-Walla Valley "the grain crop never looked better;" a million bushels may be harvested in Walla-Walla County—promising a revenue of \$700,000 in gold.

#### CORN.

The acreage of corn will not be reported until July. The tenor of reports is favorable as to condition. The corn-granary of the West, the State of Illinois, is green with corn-fields, which were planted early, and grew vigorously. In sod-land cut-worms have been very troublesome, in many instances rendering a replanting necessary. The De Kalb correspondent says, "The corn is looking splendid, and by the 4th of July it will be as high as a horse's back." In some places the want of rain has been felt.

The reports from Iowa and Missouri are mainly favorable. Worms are quite generally injurious, and in several counties drought has been severe, yet expressions like the following are very frequent: "Corn is in fine condition, and if there is a little more rain there will be a big crop;" "We never had a better stand, or such clean fields;" "Corn prospect was never better." Like all other vegetation, corn is more advanced than is usual at this date. The returns from Kansas are very favorable, with less complaint of cut-worm and drought than from more eastern States.

In Ohio, Indiana, Kentucky, and Tennessee an average prospect is revealed, with some tendency to drought in light soils, and the prevalence of cut-worms in sod-lands.

Throughout all these States there are counties in which "corn had a bad start," from cold rains early in the season, after the warm spell in April, in which a large amount was planted. Where the surface was level, the soil an impervious clay, and drainage therefore imperfect, this evil was aggravated. Such reports will be inevitable until good culture, in connection with requisite preliminary farm improvements, shall better adapt our soils to the vicissitudes of our changing seasons.

In the Middle and Eastern States drought and cut-worms have been more injurious than in the West.

In southern reports reference is frequently made to an increase of acreage. The crop is reported in good condition, except where growth has been retarded by cold rains. The stand is more generally good than in the Northern States. Corn is, in most sections, later than usual, on account of cold, wet weather, and the consequent delay in weeding and cultivation. The following items will show a great variety in condition:

*Lawrence County, Ala.*—Upland corn looks well. Planting on low lands delayed six weeks.

*Clay County, Ala.*—Small corn crop from bottoms, unless the fall be late.

*Dallas County, Ala.*—Very promising where it has been cultivated and not neglected for cotton.

*Yalabusha County, Miss.*—Acreage larger and stand better than usual, but the crop has suffered from too much rain.

*Rapides Parish, La.*—Corn looks sickly, owing to cold weather; early planted in silk.

*Prairie County, Ark.*—A large crop of corn has been planted; at least four weeks later than usual, owing to heavy rains.

*Union County, Ark.*—Twice as much corn planted this year as last.

*Refugio County, Texas.*—Corn has suffered much from drought; some too far advanced to be benefited by the recent rains.

*Bandera County, Texas.*—Spring unusually cold and dry; about two-thirds of a stand of corn from the first planting; the replanted is up; a rain on the 19th of May has revived the crops and the hopes of the farmer.

*Austin County, Texas.*—Corn looks well; is more forward than last year. Crops are rather backward in the eastern parts of the county on bottom-lands.

#### COTTON.

In June, 1870, good middling cotton was quoted in New York at 23½ cents; in Boston at 24½; and in October the same grade brought only 16½, and in December only 15½ cents. Thus the penalty for growing four millions of bales instead of three was a reduction of seven cents per pound, equivalent to \$130,000,000 on the crop. In our monthly for June, 1870, the declaration was made that "the cotton-growers seem determined to reduce the price to 15 cents, with every prospect of doing it. The acreage is materially increased in every State, while that of wheat has decreased." In the July report the opinion was expressed that "with an average season the present acreage should give nearly three and a half millions of bales; with one of the extraordinary length

of the last, the produce would be little short of four millions." The correctness of that estimate was fully verified, a full half-million of bales having been contributed by the extreme length of the season. In October, the harvest having progressed thus far auspiciously, the estimate of 3,800,000 bales was placed on record. No fairer prediction could have been made; an early date for the recurrence of a killing frost would have reduced the yield below that figure, while the greatly lengthened season did actually secure a larger product.

The Department of Agriculture has received returns from nearly three hundred counties, representing the most productive districts of each of the cotton States, and showing the comparative acreage and the condition of the crop in the first week in June.

A diminution in the area planted in cotton appears in every State except Florida. The most careful analysis of the returns, with due regard in making averages to the extent of cotton production in the respective counties, gives the following percentage of reduction in comparison with last year: Virginia, 30 per cent.; North Carolina, 14; South Carolina, 13; Georgia, 12; Alabama, 13; Mississippi, 15; Louisiana, 8; Texas, 14; Arkansas, 16; Tennessee, 12. These State averages, reduced to a general average, the assumed acreage of the respective States being an element in the calculation, will place the reduction of the cotton area of 1871, as compared with that of 1870, between 14 and 15 per cent., equivalent to nearly a million and a third of acres. This would leave between seven and a half and eight millions of acres as the present area in cotton. The average yield has not, in former years, exceeded 150 pounds per acre; that for 1870 was more than 200 pounds.

The condition of the growing crop is below an average in nearly every State. The spring has been unusually wet and cold, retarding growth, causing the plants to turn yellow and die, and obstructing cultivation. To a large extent replanting has refilled the vacant spaces of imperfect "stands." The weather has recently been more favorable, and it is not impossible that an average condition may be attained by the commencement of the picking season. The "condition" of cotton in July of 1869, a year favored with an abundant yield, was only a little better than the showing for June of the present year. While the prospect is slightly unpromising, there is nothing in it of a decisive character. The percentage, below an average condition, is respectively as follows in the several States: North Carolina, 10 per cent.; South Carolina, 8; Georgia, 18; Alabama, 17; Mississippi, 16; Louisiana, 10; Texas, 7; Arkansas, 17; Tennessee, 10. In Florida the condition is 3 per cent. above an average.

An official estimate of the ultimate result so early in the season would be an absurdity. The influence of future rains, floods, frosts, and insect enemies, cannot be calculated in advance. But in view of the extremely favorable circumstances affecting the crop of last year, there cannot be expected in the present season, upon a reduced area, exceeding three and one-half millions of bales. An early frost, or the prevalence of insects, or a very unpropitious season, might reduce the yield to three millions; and a still further reduction is possible in the union or severity of several of these causes of failure.

A very general disuse of fertilizers is reported in Georgia and the Carolinas, where last year their application was almost universal, and in many instances, excessive. This fact may contribute to a reduction of the aggregate yield of the year. Their cost was found to be disproportionate to the increase in production at current prices for cotton.



The rains of April and May have been general, and in some sections abundant in quantity. At Selma, Alabama, the rain-fall in April amounted to 12.5 inches; at Green Springs, in the same State, 13.3 inches; at Philadelphia, Mississippi, 10.8 inches; and at Fayetteville, Arkansas, 7.5 inches. The State averages of the several meteorological stations of the southern States, as reported to this office for the Smithsonian Institution, for April and May, are as follows:

	APRIL.	MAY.
	<i>Inches.</i>	<i>Inches.</i>
North Carolina .....	3.1	5.04
South Carolina .....	3.51	4.55
Georgia .....	3.87	3.85
Alabama .....	.....	4.89
Texas .....	2.36	3.65
Louisiana .....	2.97	5.11
Mississippi .....	7.67	8.22
Arkansas .....	6.25	5.85
Tennessee .....	5.48	4.21

In certain districts in Texas the fall of rain was much larger than the average; at Gilmer it amounted to 6.73 inches.

The temperature of April and May, especially of the early part of May, was low and extremely unfavorable to the growth of the plant.

The following extracts, from the notes accompanying the returns of correspondents, will give an idea of local views and prospects:

*Surry County, Va.*—More cotton planted than last year. The cold nights of May checked its growth.

*Greene County, N. C.*—Cotton fifteen days backward, caused by cold weather in May.

*Duplin County, N. C.*—Unusually promising. Good stands and plants two weeks earlier than usual.

*Anson County, N. C.*—Has been injured, but will recuperate.

*Richmond County, N. C.*—Heavy rains and unseasonable weather have caused material damage.

*Camden County, N. C.*—Cotton killed out when planted early; but when planted late the stand is good, but growth much inferior to last year.

*Franklin County, N. C.*—Area greatly diminished, and the stand is a very bad one. The hot, dry weather for a week past has been favorable to cotton and has saved it from dying. Farmers are turning attention to corn, oats, and wheat.

*Sampson County, N. C.*—The wheat crop will soon disappear from this county at the present rate, and cotton take its place. Almost every one, before cotton was planted, said less cotton this year than last; but the fact is the acreage has been increased ten per cent. The cold nights in May have damaged the stand materially, but I hear of no one who has plowed up the cotton and put in corn.

*Currituck County, N. C.*—Cotton small.

*Edgecombe County, N. C.*—For ten or twelve days the weather has been hot and favorable.

*Pasquotank County, N. C.*—The recent cold weather has nearly ruined the cotton. Probably not over one-fourth of a crop can be made this year.

*Stantly County, N. C.*—Damp cold nights have caused the cotton to turn yellow and rot. Many fields are an utter failure.

*Gaston County, N. C.*—Has suffered from cold dews, and loss may ensue. Propitious weather will repair the breach.

*Moore County, N. C.*—Is late, but the present warm dry weather will start a vigorous growth.

*Beaufort County, N. C.*—Killed to some extent, and there has been considerable late planting. Present condition a fair average. The acreage is much diminished, owing to the low price of the staple, and there is a very decided tendency to a diversity of crops.

*Perquimons County, N. C.*—About two-thirds of the acreage of last year. The prospect fair.

*Bertie County, N. C.*—Less cotton and more corn planted.

*Bladen County, N. C.*—Cotton backward, but improving.

*Newburg County, S. C.*—Stands very poor on sandy soil; plants small and have suffered from the cool weather of spring.

*Orangeburg County, S. C.*—The provision crop has been much increased in acreage, at the expense of the cotton crop; the cold spring caused the cotton to die out so much that many planters replanted; very little commercial fertilizer used this year, and the crop is very backward.

*Williamsburgh County, S. C.*—Acreage reduced; comparatively little commercial fertilizer used; crop is in average condition.

*Fairfield County, S. C.*—Cotton backward and unhealthy, owing to cool nights in May.

*Lexington County, S. C.*—Cotton backward, owing to cold weather.

*York County, S. C.*—It has been the general desire to cut down the acreage in cotton, but I am satisfied that the area planted is fully up to last year, while the stand is much better and earlier; the plants are small but healthy.

*Richland County, S. C.*—Is recovering from the effects of the unusual cold of the first half of May.

*Brooks County, Ga.*—Cotton backward, owing to wet and cold spring; prospect improving; average acreage.

*Harris County, Ga.*—The remarkably wet spring caused much of the cotton to dwindle and die; cotton acreage decreased and more corn planted.

*Emanuel County, Ga.*—Much of the area planted has been plowed up and replanted—a good portion of it in corn. The older farmers say they never saw such a poor prospect for cotton; all caused by continued heavy, beating rains, which still continue.

*Newton County, Ga.*—Acreage decreased 20 per cent.; condition 23 per cent. below an average, due to atmospheric changes with an undue quantity of rain.

*Harris County, Ga.*—The long, wet spring has spread general gloom over the farmers. Cotton has died out to a very bad stand, and laborers work without spirit.

*Pulaski County, Ga.*—Cotton acreage reduced 10 per cent., and the condition is 25 to 33 per cent. below that of last year. Cotton poor; spring early, but too much rain.

*Wilkes County, Ga.*—Was never in much worse condition; late and small. Some yet replanting to secure a better stand.

*Hancock County, Ga.*—Stand of cotton below average, owing to cold wet spring.

*Troup County, Ga.*—Cotton backward, but quite as good as last year.

*Harris County, Ga.*—Is not doing well. We had some eight to ten days of rain the last of May and first of June, which has given an impetus to grass. On all these days our plows and hoes were idle. Most of the time the ground was too wet to work.

*Twiggs County, Ga.*—Cotton backward. Improving until within a few days, in which we have been having heavy rains.

*Carroll County, Ga.*—The coldest and wettest spring known by the oldest inhabitants. Cotton never worse. A large quantity plowed up and planted in corn or replanted in cotton; too late to do much.

*Muscogee County, Ga.*—Cotton backward.

*Jones County, Ga.*—A poor stand; small, grassy.

*Merriwether County, Ga.*—Poor stand; poor condition.

*Spalding County, Ga.*—The stand upon the red land is generally good; but upon gray land there is much complaint.

*Dooley County, Ga.*—Cotton prospect not flattering.

*Laurens County, Ga.*—Many planters have replanted cotton, and a great deal is just up and is completely choked with grass and weeds. Should the rains continue four weeks longer the crop will not reach 25 per cent. of an average.

*Schley County, Ga.*—Cotton improving.

*Walton County, Ga.*—Stands good; plants healthy and growing finely.

*Sumter County, Ga.*—Not very promising. Some farmers have plowed up and replanted to destroy the grass.

*Columbia County, Ga.*—Young cotton killed to an alarming extent by the cold nights of May.

*Wilkinson County, Ga.*—Imperfect stand, and what is left looks badly, with diseased stem.

*Chambers County, Ala.*—Spring uncommonly wet, and cotton has suffered considerably. Many farmers have replanted. Time enough for a fair average crop. Acreage decreased in favor of corn.

*Calhoun County, Ala.*—In the grass generally.

*Marengo County, Ala.*—Very unpromising. All the river and creek lands have been overflowed and have been replanted. Constant rains prevent working the crop.

*Lawrence County, Ala.*—Very much damaged by continued rains, but may still make a full crop.

*Autauga County, Ala.*—Crop injured 20 per cent. by excessive rains.

*Macon County, Ala.*—Cotton backward and poor, owing to the excessive rains. The bottom lands cannot make a crop this year.

*Tallapoosa County, Ala.*—Cotton small and puny.

*Greene County, Ala.*—Very small and grassy. The stand not good.

*Clay County, Ala.*—Excessive rain has injured cotton.

*Randolph County, Ala.*—In some fields the stand and condition are very good, while in others the plants have died out. Acreage about half that of last year.

*Dallas County, Ala.*—Excessive rains have materially injured the cotton crop.

*Liberty County, Ga.*—Cotton backward. The cool nights have caused the tender plants to die out.

*Forsyth County, Ga.*—Injured by excessive rains and cold weather between the 1st and 12th of May.

*Butts County, Ga.*—Has died out in some fields of stiff lands from the effects of cold. The spring unfavorable for cotton.

*Conecuh County, Ala.*—At least one-third less acreage in cotton. In bad condition on wet lands; on high land the crop is looking better than for years.

*Perry County, Ala.*—Excessive rains; cotton later and in worse condition than I ever saw it on the 1st of June.

*Wilcox County, Ala.*—Cotton small and grassy, with poor stand.

*Sumter County, Ala.*—Heavy rains; many farmers have replanted.

*Hale County, Ala.*—Planting interrupted by excessive rains; a portion has been replanted in cotton and a portion in corn. Planters discouraged.

*Shelby County, Ala.*—Cotton crop seriously injured by rain.

*Clarke County, Ala.*—Much less planted than last year. On the uplands looks badly excessive rains.

*Suwanee County, Fla.*—Is in poor condition, owing to the cold, backward spring.

*Leon County, Fla.*—Good stand; the low price has induced many farmers to plant corn instead.

*Holmes County, Miss.*—More backward than usual; many stands totally ruined by lice; cool spells and heavy rains have retarded planting, and many farmers are replanting where there was a good stand at first. Late cotton has done best, but there is scarcely a clean crop in the county.

*Lauderdale County, Miss.*—One-third less planted, and the unfavorable season will destroy fully one-third of the area planted.

*Lafayette County, Miss.*—Not promising; grassy.

*Kemper County, Miss.*—Cotton a month late, poorly put in, and much of the land usually put in cotton is being planted in corn.

*Grenada County, Miss.*—Upromising; excessive moisture. The weather is now more favorable.

*Marion County, Miss.*—There will be little cotton made in this county; excessive rains.

*Pike County, Miss.*—Season has been unpropitious for cotton. Weather now more favorable.

*Yazoo County, Miss.*—In poor condition; excessive rains; as poor a prospect as I have ever seen in the county in forty years.

*Newton County, Miss.*—Injured by excessive rains, but it is fast coming out; and though the area is small compared with last year, the prospect is fair for a good crop.

*Washington County, Miss.*—Backward, and labor is two weeks behind on the crop. Excessive rains.

*Claiborne County, Miss.*—Backward, owing to the heavy rains and cold nights.

*Winston County, Miss.*—The cold weather and the continued rains have killed a great deal of the cotton. Some farmers have replanted; some as late as the 20th of May.

*Clark County, Miss.*—Acreage decreased, and the first planting destroyed in a great measure. Some have just finished replanting.

*Attala County, Miss.*—Acreage a little larger than last year; but we have never had a poorer crop prospect. Owing to the wet weather of the last two months, many crops can never be fully redeemed—lost in grass and weeds.

*Yalabusha County, Miss.*—Stands of cotton poor, and it is so in the grass that it will be impossible to cut out the grass without injury to the cotton. Altogether the prospect is considered gloomy for cotton.

*Madison Parish, La.*—One month later than usual; stand very poor; that which has come up partly destroyed by lice; less by one-third planted this year than last, owing to continued rains.

*Winn Parish, La.*—Very backward in consequence of wet and cold; at present looks unpromising.

*West Feliciana Parish, La.*—Stand injured by heavy rains in April and May; crop generally unpromising.

*Rapides Parish, La.*—Extremely backward, owing to wet and cold weather; also badly in grass.

*Washington Parish, La.*—The acreage is increased this year, but the crop in general does not look well.

*Prairie County, Ark.*—About half as much planted this year as last; at least four weeks later than usual.

*Clarke County, Ark.*—About half a crop planted; has been nearly destroyed by rains.

*Cross County, Ark.*—Crop considerably injured by cold and wet weather.

*Drew County, Ark.*—Crop very foul, owing to heavy rains, which have prevented working the land.

*Pulaski County, Ark.*—Cotton slim and infested with lice, in consequence of continued wet and cold; coldest season for ten years.

*Phillips County, Ark.*—Crop about two weeks later than usual; cold rains and hail-storms killed about all planted from the 10th to the 20th of April; later planted looks finely.

*Union County, Ark.*—Only about half as much cotton planted as last year.

*Lafayette County, Ark.*—Crop very backward, owing to a late spring and consequent delay in planting.

*Cherokee County, Texas.*—Spring cold and backward; cotton infested with lice.

*Lavaca County, Texas.*—In bloom; acreage about the same as last year; prospect for a good crop at least twenty per cent. better

*Grimes County, Texas.*—Season more favorable and prospect better for cotton than last year.

*Upshur County, Texas.*—Not so much cotton planted as last year; crop very backward in consequence of heavy rains.

*Kendall County, Texas.*—Acreage much smaller than usual, caused by low price last year.

*Henderson County, Texas.*—About seven-tenths the usual acreage planted this year; too much rain for healthy growth of the crop.

*Austin County, Texas.*—About twenty-five per cent. less planted than usual; stand good; prospect for a large crop promising.

*Washington County, Texas.*—The acreage is much less than last year, occasioned by its low price and the scarcity of labor. Much cotton was lost last year from want of hands to gather it.

*Decatur County, Tenn.*—Prospect for a crop very poor.

*Giles County, Tenn.*—During the cold rain in the middle of May much cotton died.

*Hickman County, Tenn.*—Peanuts have taken the place of cotton.

*Lauderdale County, Tenn.*—More corn planted than last year, and less cotton; about 20 per cent. more corn, and 20 per cent. less cotton.

*Lake County, Tenn.*—The reduction in the acreage is attributable to the low price of the product and the difficulty in obtaining labor.

*Oglethorpe County, Tenn.*—Has suffered from a variety of causes. First, it failed to come up well; second, cold, wet spells have caused it to die out very seriously. It is now raining, and too cold for the season.

#### SUGAR-CANE.

We have few returns this month concerning sugar-cane. The report from Terre Bonne Parish, Louisiana, indicates a fine crop, three-tenths above an average; in Saint Martin's Parish the stand, both of stubble and plant cane, promises to be good, except in cases in which the stubble is a little backward; in Plaquemines, the estimate is ten per cent. above. The condition of cane in Saint Helena is reported to be not so good as last year by ten per cent.

#### PASTURES AND CLOVER.

Pastures are not in average condition on the Atlantic coast from Maine to Virginia, or in the Ohio Valley, but are in succulent growth in the Carolinas, the Gulf States, Wisconsin, the States bordering on the Upper Mississippi and Missouri, and Oregon. Clover warrants a similar statement, except that there is comparatively less reduction in the Western States. The prospect for a good crop of hay is not flattering, on account of dry weather. A few representative extracts are presented:

*Norfolk County, Mass.*—Clover largely winter-killed; at least two-thirds of the meadows seeded last spring are failures, and in most cases have been re-seeded. Old meadows were largely injured by the dry weather of last year and the open winter, so that the prospect for hay is extremely dark. Farmers are trying to compensate for the loss by sowing corn, millet, &c., to cut green. Spring pastures show the effects of last year's drought.

*Bristol County, R. I.*—Grass will probably fall short one-third from last year, on account of the dry weather last fall, which killed the grass. Farmers are plowing up the

fields and planting corn and English turnips, which will, in a measure, make up for the loss of hay.

*Rockland County, N. Y.*—Pastures drying up, and farmers are turning their stock into fields they had intended to mow.

*Tioga County, N. Y.*—Pastures have suffered from the frosts and dry weather.

*Hunterdon County, N. J.*—Farmers are sowing their clover-seed on oats-ground; it does not do so well as when sown on wheat or rye. It often fails to take, and dry weather has more effect upon it when sown on oats-ground. Spring pasturage injured by the drought. Hay crop will be very much shortened if the drought continues.

*Cambria County, Pa.*—Grass short, but well set and thick.

*Wyoming County, Pa.*—Clover almost destroyed by the drought.

*Montgomery County, Md.*—Springs are failing and pastures are unusually short. The hay crop will be a failure with many farmers.

*Surry County, Va.*—Farmers are beginning to see the use of clover, and the area is annually increasing. The crop fine.

*Augusta County, Va.*—Most of the upland grass hardly worth mowing. Pasture short.

*Adams County, Ohio.*—Clover greatly injured by the cut-worm.

*Parke County, Ind.*—Owing to drought, the hay crop will be a failure this season.

*Switzerland County, Ind.*—The hay crop promises to be heavy.

*Crawford County, Ill.*—Clover short up to May 21, when rain fell. Vegetation has since flourished.

*Perry County, Ill.*—April and early May were dry, affecting grass "disastrously." Late May showers will bring oats up to an average, but pastures will be short.

*Winnebago County, Ill.*—Clover and timothy wintered remarkably well, and obtained an early start. Owing to short forage, farmers turned their stock into the meadows until May, and there will be another short hay crop.

*Hancock County, Iowa.*—Earliest spring ever known in the county. The grass on the prairie large enough to mow; it is a month in advance of the growth of last year.

*Monona County, Iowa.*—Prairie pasture earlier and better than for fifteen years. Clover, as an experiment, doing splendidly.

*Mourne County, Iowa.*—Pastures got a good start, and keep up well. Timothy will be light.

*Lincoln County, Mo.*—Timothy meadows promise a light yield.

*Juneau County, Wis.*—Grasses are looking much better than at this time last year; there will be an abundant crop of hay.

*Bay County, Mich.*—The lack of rain is badly felt here; the crop of hay will be light unless rain falls soon.

*Emmett County, Mich.*—Owing to cold nights in April and May grass did not grow rapidly, but late rains have improved all crops.

*Anderson County, Ky.*—The winter was the mildest ever known in the county, and the grass for pasture was the earliest.

*Lincoln County, Ky.*—The frost of April 23 has done great injury. Grass, which made a very early and thrifty start, has done badly since.

*Giles County, Tenn.*—More of the grasses sown than in any previous year. Cold, backward spring.

#### OATS.

Oats have shared the fortunes of clover and the grasses, having suffered somewhat from dry weather in the Atlantic States and in the Ohio Valley. The crop of the Gulf States will be a large one for that section, and that of the region west of the Mississippi will be a full average on an increased acreage. Oregon will also make a fine crop. The following items are extracted from correspondence:

*Orange County, Fl.*—Increased acreage in oats, and the condition is better than last year, on account of more rain.

*Monongalia County, W. Va.*—Prospect for oats very poor; eaten by a small bug or louse; many fields have been planted in corn.

*Norfolk County, Mass.*—Oats have come up well; a large acreage, owing to sowing with grass-seeds, to be cut green for fodder.

*Albany County, N. Y.*—The crop of oats must be very light, owing to the drought and the open winter.

*Ocean County, N. J.*—Oats suffering severely from drought.

*Greene County, Pa.*—Oats are in a deplorable condition; there is no possibility of making more than half a crop, and many fields will have acres on which there will be no oats. They are killed by a small green louse that clusters on the blades; the trouble is general throughout the county.

*Surry County, Va.*—Much larger area sown to oats than in any previous year since the war. Condition quite good, considering the hasty manner in which it was put in.

*Camden County, N. C.*—Oats are looking well, but will be injured by rust.

*Union County, N. C.*—Rust on the oats, and insect in the roots.

*Richland County, S. C.*—More than usual attention has been given to the oat crop, which, though slightly affected by rust, promises an abundant yield.

*Leon County, Fla.*—Oats (except the "rust-proof" variety) have rusted to a greater or less extent.

*Jackson County, Fla.*—Crop was much increased in acreage this year, and hopes were entertained that it would form an entering-wedge to a system of rotation and diversity of crops. An oat called "*anti-rust*" does well and perfects its seed annually; from experience and repeated trials, no other will perfect its seed with us. Why is it? It is very difficult to determine, from the fact when sown alongside of each other no difference is perceptible until, about the panicle, the one withers, losing vitality, and yields nothing; the other perfects its seed and yields abundantly, season propitious. To sow in the fall has no influence. Some farmers are of the opinion that the "*anti-rust*" grows more rapidly and comes to seed much earlier, escaping the blighting effects of the May sun and heat. It is a fact, however, that both may be sown on the same piece of land, either separately or mixed, in all respects the same; at the stated time the "*anti-rust*" will stand and the other fall.

#### FRUITS.

Every season is replete with casualties to fruits, by frosts, hail and rain storms, and insects; but certain sections are much more exposed to risk of failure than others. So necessary in filling the complement of home supplies are these products that each farmer should secure some of them, even with a certainty of a constant partial failure of his crops. There are valleys in which spring frosts are inevitable, and thermal belts scarcely ever touched by early spring or autumn frosts; there are wide districts in which fruits are very uncertain and capricious in yield, and large tracts wholly or partially enveloped by water, as the eastern shore of the Delaware, the islands of Lake Erie, the western counties of New York, and the peninsula of Michigan. These districts, with those affected by the Gulf Stream on the Atlantic coast and those favored by the mild climate and favorable aspect of hill slopes in Southern Illinois, Missouri, and Arkansas, constitute the main reliance of city populations for native fruit supplies.

A good supply of fruit will be gathered during the present season. The peach crop of New Jersey, Delaware, and Maryland is above an average, and larger than that of last year. It is also very large in most of the Southern States, and ample in all of them. It is a fair average in Michigan. In most of the Western States the crop will be short, on account of the severe frosts of April, varying from one-half to three-fourths of an average. Less exposed situations—the slopes or summits of elevations—will furnish a large percentage of the product. California reports a moderate degree of abundance, with a better prospect for apples and pears than for peaches. Texas has an abundance of the fruits of that climate. The valley of the Missouri, including the State of Iowa, gives assurance of nearly an average crop.

The prospect for apples and pears appears to be best in the New England States, Ohio, Michigan, and Missouri; a little below an average in the Middle States, with a considerable further reduction in the West. The reports, as a whole, indicate a comparatively small crop of these fruits.

Small fruits have been produced in moderate abundance; but the supply has been quite generally reduced by dry weather.

Insects are swarming almost everywhere this year and reducing the quantity and value of all kinds of fruits. Their ravages are referred to in detail in another section of this report.

*Duplin County, N. C.*—Pear blight very destructive. In one orchard three-fourths of the bearing trees have been destroyed. In a young orchard of 200 trees three years old twenty trees have been destroyed. The Bartlett and the Beurre superfine have withstood its attacks better than other varieties.

*Hinds County, Miss.*—An unusual crop of fruit—apples, pears, apricots, and peaches—is now being shipped. One hundred thousand boxes of fruit will be shipped from Terry this year.

*Tangipahoa Parish, La.*—Peach crop excellent, ten days earlier and fifty per cent. better than the average for the last five years; grapes above an average.

*Cherokee County, Texas.*—Plums more valuable in this county than apples or pears; mine are keeping twenty-five hogs fat.

*Cherokee County, Texas.*—Fruits very abundant; woods full of ripe plums and berries; hogs fat.

*Williamson County, Texas.*—The crop of peaches, plums, and grapes promises to be immense throughout the State; Chickasaw plums (*Prunus chicasa*) now ripe; Hales's early peach by the 10th of June.

*Sangamon County, Ill.*—Apples plenty; peaches one-third of a crop; all small fruits except grapes abundant. Frosts as late as May 9th and 10th. Most varieties of grape-vines were badly winter killed.

*Holt County, Mo.*—Apples and pears were injured by frost; the latter a total failure. Peaches, although in bloom, were not touched, even when ice was formed three-fourths of an inch thick. Peaches are never hurt here by spring frosts, but are by winter freezing.

*Green Lake, Wis.*—Fruits of all the kinds grown here promise an abundant crop, the largest ever grown in the county.

*McLeod County, Minn.*—A large number of apple trees has been brought into the county during the past two years; some are now bearing. Hardy varieties of apples and cherries bid fair to succeed.

*Jefferson County, Kansas.*—A hard frost, April 13th, killed all the fruit on low lands, where many of the oldest orchards are located; but on high lands the crop will be large. One orchard slightly elevated above the Kansas Valley will bear no fruit; all killed by frost.

*Woodson County, Kansas.*—Exposed orchards have fared the best. Trees exposed to the north winds are full of fruit, while those protected by skirts of timber along the valleys never bloomed.

*Anderson County, Ky.*—Grapes were killed by the frost, and the leaves and young branches on the vines were literally blackened, but since the frost more new branches have shot forth, and the blossoms on them give promise of a crop, not, however, as large as the first. In some orchards the peach trees having limbs that were partially broken off by sleet in the winter were not affected by the frost, and peaches are growing finely on them. One gentleman states that there are many such limbs in his orchard loaded with fruit, while on the unbroken and healthy limbs of the same trees the fruit was all killed.

*Salt Lake County, Utah.*—The failure of the apple crop is almost total. The grasshoppers, for some years past have mainly taken our fruit crops, have now seriously injured our trees, in some instances killing them outright. Peach, apricot, plum, and pear trees do not appear to have suffered so much, although their fruit has been completely devoured for the same period.

Table showing the condition of the crops, &c., on the 1st day of June, 1871.

STATES.	WINTER WHEAT.		WINTER RYE.		WINTER BARLEY.		SPRING WHEAT.		SPRING BARLEY.		OATS.		CLOVER.		SPRING PASTURE.
	Average compared with last year.	Average condition June 1st.	Average compared with last year.	Average condition June 1st.	Average compared with last year.	Average condition June 1st.	Average sown this spring compared with last.	Average condition June 1st.	Average sown this spring compared with last.	Average condition June 1st.	Average compared with last year.	Average condition June 1st.	Average compared with last year.	Average condition June 1st.	Average condition June 1st.
Maine.....	97	98	97	97	.....	.....	100	99	100	103	96	101	101	91	
New Hampshire.....	96	90	101	104	.....	.....	104	99	101	104	101	100	101	83	
Vermont.....	100	97	95	97	.....	.....	130	100	99	102	103	100	95	97	
Massachusetts.....	97	95	101	97	100	95	100	83	101	97	97	96	83	83	
Rhode Island.....	.....	115	102	115	.....	.....	.....	95	97	95	100	106	96	82	
Connecticut.....	100	101	90	99	101	100	96	93	100	102	102	98	84	80	
New York.....	101	102	100	103	101	100	100	97	100	98	102	97	89	93	
New Jersey.....	102	105	101	102	.....	.....	.....	.....	.....	.....	102	92	80	80	
Pennsylvania.....	98	104	100	104	98	102	97	95	94	100	90	98	80	90	
Delaware.....	100	102	100	100	.....	.....	.....	.....	.....	100	100	100	80	80	
Maryland.....	97	102	97	104	105	107	.....	.....	.....	100	84	98	76	84	
Virginia.....	101	92	97	100	.....	.....	.....	.....	.....	105	99	101	97	95	
North Carolina.....	100	82	98	95	.....	.....	.....	.....	.....	103	98	115	99	102	
South Carolina.....	82	73	93	89	85	92	.....	.....	.....	104	82	101	86	103	
South Carolina.....	101	75	99	96	99	95	.....	.....	.....	115	108	127	111	111	
Georgia.....	.....	112	100	100	.....	.....	.....	.....	.....	140	87	.....	.....	108	
Alabama.....	103	77	102	88	111	89	.....	.....	.....	102	103	114	110	108	
Mississippi.....	98	96	100	100	.....	.....	.....	.....	.....	116	103	123	115	108	
Louisiana.....	.....	.....	.....	.....	102	100	.....	.....	.....	105	102	.....	.....	99	
Texas.....	103	86	98	93	.....	.....	.....	.....	.....	115	93	103	96	101	
Arkansas.....	104	87	100	106	.....	.....	.....	.....	.....	116	103	124	100	106	
Tennessee.....	100	74	99	95	101	101	92	88	.....	103	95	104	96	97	
West Virginia.....	106	104	98	89	108	101	.....	.....	.....	103	90	101	97	97	
Kentucky.....	98	80	99	93	91	96	.....	.....	.....	101	97	102	91	102	
West Virginia.....	110	104	106	107	97	97	95	105	96	110	94	105	97	102	
Missouri.....	104	106	105	106	.....	.....	.....	.....	.....	112	100	103	105	97	
Illinois.....	104	106	105	106	.....	.....	.....	.....	.....	94	92	100	95	97	
Indiana.....	98	97	102	103	103	105	.....	.....	.....	85	104	100	91	93	
Indiana.....	106	107	99	103	100	108	96	99	99	89	105	100	95	96	
Ohio.....	106	107	99	103	100	108	96	99	99	89	105	100	95	96	
Michigan.....	104	110	100	105	102	102	105	100	106	98	103	100	95	96	
Wisconsin.....	104	107	104	110	101	103	105	100	106	98	103	100	95	96	
Wisconsin.....	110	102	97	100	.....	.....	.....	.....	.....	107	108	102	113	116	
Wisconsin.....	110	102	97	100	.....	.....	.....	.....	.....	107	108	102	113	116	
Iowa.....	115	110	102	107	95	100	105	105	105	98	109	107	109	101	
Iowa.....	140	109	110	110	107	102	115	108	107	108	107	107	109	106	
Kansas.....	130	108	119	110	.....	.....	.....	.....	.....	105	120	113	140	111	
Kansas.....	130	108	119	110	.....	.....	.....	.....	.....	105	120	113	140	111	
Nebraska.....	120	55	105	60	111	80	130	103	125	112	116	107	111	124	
California.....	.....	.....	.....	.....	104	104	105	104	104	104	100	100	79	111	
Oregon.....	98	105	100	103	104	104	105	104	104	104	107	105	106	85	
Oregon.....	98	105	100	103	104	104	105	104	104	104	107	105	106	106	



Table showing the condition of the crops, &c.—Continued.

STATES.	MAPLE SUGAR AND MOLASSES.		COWS AND CALVES.		SHEEP.		COTTON.		APPLES.		PEACHES.		PEARS.	
	Amount of sugar made this year compared with last.	Amount of molasses made this year compared with last.	Average condition of cows this spring.	Number of calves dropped compared with average of former years.	How many hun-dreds of the total number of sheep have been lost by disease or other casualties.	How many hun-dreds of the total number of lambs dropped this spring have died.	Average compared with last year.	Average condition of June 1st.	Average amount of bloom this spring.	Average condition of the crop June 1st.	Average amount of bloom this spring.	Average condition of the crop June 1st.	Average amount of bloom this spring.	Average condition of the crop June 1st.
Maine.....	130	120	100	96	.04	.09	.....	.....	87	89	.....	.....	90	88
New Hampshire.....	150	155	100	101	.03	.15	.....	.....	73	71	.....	.....	101	103
Vermont.....	160	154	107	106	.04	.08	.....	.....	102	100	.....	.....	100	100
Massachusetts.....	120	116	103	102	.05	.05	.....	.....	62	72	.....	.....	95	93
Rhode Island.....	.....	.....	98	101	.05	.09	.....	.....	51	58	.....	.....	105	97
Connecticut.....	115	110	106	100	.06	.11	.....	.....	84	80	.....	.....	108	106
New York.....	116	113	102	102	.06	.08	.....	.....	28	30	.....	.....	101	97
New Jersey.....	.....	.....	103	100	.06	.10	.....	.....	78	69	.....	.....	103	92
Pennsylvania.....	108	107	101	102	.06	.10	.....	.....	94	79	.....	.....	107	80
Delaware.....	.....	.....	100	100	.....	.....	.....	.....	80	80	.....	.....	100	98
Maryland.....	.....	.....	105	102	.05	.08	.....	.....	106	91	.....	.....	105	96
Virginia.....	88	69	103	100	.09	.09	.....	.....	82	79	.....	.....	109	86
North Carolina.....	.....	.....	103	101	.10	.09	.....	.....	61	66	.....	.....	106	79
South Carolina.....	.....	.....	106	103	.05	.05	.....	.....	87	84	.....	.....	107	80
Georgia.....	.....	.....	105	105	.15	.08	.....	.....	82	83	.....	.....	117	96
Florida.....	.....	.....	107	101	.05	.13	.....	.....	103	79	.....	.....	115	98
Alabama.....	.....	.....	104	100	.13	.10	.....	.....	87	83	.....	.....	135	96
Mississippi.....	.....	.....	113	104	.09	.09	.....	.....	84	90	.....	.....	118	91
Louisiana.....	.....	.....	100	102	.....	.09	.....	.....	90	105	.....	.....	122	113
Texas.....	.....	.....	101	98	.09	.08	.....	.....	115	113	.....	.....	137	123
Arkansas.....	.....	.....	109	107	.07	.08	.....	.....	84	89	.....	.....	110	91
Tennessee.....	77	72	109	106	.09	.09	.....	.....	56	73	.....	.....	128	83
West Virginia.....	89	88	103	103	.08	.09	.....	.....	97	90	.....	.....	109	81
Kentucky.....	81	83	108	102	.06	.07	.....	.....	96	55	.....	.....	104	54
Missouri.....	74	78	107	107	.11	.11	.....	.....	105	95	.....	.....	99	94
Illinois.....	80	85	107	102	.08	.08	.....	.....	104	98	.....	.....	76	83
Indiana.....	76	75	109	105	.04	.09	.....	.....	109	75	.....	.....	85	60
Ohio.....	82	82	107	103	.04	.09	.....	.....	104	68	.....	.....	91	74
Michigan.....	116	115	105	105	.05	.08	.....	.....	116	105	.....	.....	120	110
Wisconsin.....	130	125	105	106	.04	.12	.....	.....	120	106	.....	.....	107	110
Minnesota.....	109	101	103	109	.05	.08	.....	.....	108	110	.....	.....	106	95
Minnesota.....	109	101	103	109	.05	.08	.....	.....	108	110	.....	.....	106	95
Minnesota.....	109	101	103	109	.05	.08	.....	.....	108	110	.....	.....	106	95
Iowa.....	117	115	112	110	.07	.10	.....	.....	130	101	.....	.....	106	77
Kansas.....	.....	.....	112	125	.06	.09	.....	.....	125	90	.....	.....	110	96
Nebraska.....	.....	.....	107	108	.02	.02	.....	.....	84	65	.....	.....	100	77
California.....	115	100	96	100	.07	.09	.....	.....	106	101	.....	.....	105	102
Oregon.....	106	104	106	104	.05	.10	.....	.....	117	112	.....	.....	115	103

## EXTRACTS FROM CORRESPONDENCE.

## TEA CULTURE.

Hon. W. G. Howard writes to this Department as follows, from San Antonio, Texas: The culture of the plant and the manufacture of the tea is a much simpler and easier process than most persons think. Of the hardy nature of the plant you have abundant evidence in those planted out in the gardens at Washington. And from my own experience in many climates of India, from Arracan to the Himalaya Mountains, neither frost nor snow, drought nor rain, sunshine nor shadow, materially injure the "tea plant." Nor is it subject to the visitation of any worm, bug, or disease.

When I first went to India, all knowledge with respect to tea was very scant and limited, and everything had to be done by hand; but afterward, when the capital invested in tea had increased to enormous proportions—indeed, many millions of pounds sterling—the cost of manufacture was much reduced. When I left India the only manual labor was the picking of the leaves, which was best done by women and children. It is true that a man here would cost \$20 or \$25 per month, against \$2 50 per month there; but when you take into consideration the great lack of economy in the management there, the difference would not amount to so much. In India all tools and lead have to be brought from England, and transported on men's backs for many miles; the constant rebuilding of houses, rendered necessary by the white ant and fire, every year or two; the enormous cost of management, which amounts to more than one-half the actual amount spent in the year; the physical inability of the Bengalee coolies to do much labor; the difficulty of procuring labor, and the unhealthy climate, all combine to bring the cost per acre to as much as it would be in America.

The tea once planted only requires to be kept free from weeds, which can be done here with the plow, the same as with Indian corn, and at the same cost. In India they have neither horses nor plows, and all weeding must be done with the hoe in the hands of a lazy and weak coolie. After the tea is pretty well grown, say four or five years old, its own shade pretty much keeps the ground clean.

Should our Government once take hold of the subject, and demonstrate that tea can be grown, and to a profit, the demand for seed alone would soon pay all cost. The yield of seed is, on an average, four "maunds" (a "maund" is 80 pounds) to the acre, and I sold one year from my garden 4,000 "maunds," at 200 rupees per "maund," and could have sold 40,000 "maunds" at the same figure.

## TRIALS OF WHEAT.

*Culpeper County, Va.*—The Touzelle wheat, received from the Department in 1869, one pint, and sowed November 26, 1869, was a complete success; ripened a week earlier than any other kind. I saved nearly one-half bushel from the crop. I gave away some and sowed about four quarts September, 1870, and it is now nearly ripe and the finest wheat I ever saw—admired by all the neighborhood. I believe it will yield at the rate of 30 bushels to the acre, at the very lowest calculation.

*Cherokee County, Ga.*—In the fall of 1868 I received from the Department about one peck of Tappahannock wheat, which I planted on rather poor, high land, and made about 1½ bushels of beautiful wheat.

I planted the  $1\frac{1}{2}$  bushels on good river-land, and raised last year about 16 bushels of the finest wheat ever grown on my plantation. I am well pleased with it, and believe it to be well adapted to this climate, and a great improvement on any we have had in this county. The Mediterranean wheats were not suited to this climate—especially the white; the red bearded did moderately well.

#### WHITE SCHONEN OATS.

Mr. C. H. Stewart, of Mercer County, Missouri, states that from a quart of white Schonen oats, furnished him by this Department, a crop of  $1\frac{1}{2}$  bushels was raised, and that from this crop, as seed, a second year's crop of 18 bushels was harvested. A portion of the second year's crop was destroyed before harvest, otherwise the yield would have been larger.

#### DIVERSITY OF CROPS.

*Columbus, Ga.*—The agricultural industry of this portion of the South is not diversified to the extent that it is hoped the future may realize. Our people yet have "cotton on the brain." Many crops, the yam, Spanish potato, and turnips, which were largely cultivated before emancipation, are greatly neglected. Attention, however, is being directed to minor crops, and a few years may show quite a changed state of affairs, and cotton become of secondary consideration. It is difficult to change the habits of a people *en masse*, and time, together with the conviction that a change will materially benefit their condition, alone can do it. The southern planter who has his corn-crib in Ohio and his smoke-house in St. Louis or Louisville can never prosper; and although *figures* may clearly prove that foreign markets can cheaply supply his wants, the poverty of his pocket presents incontestable proof to the contrary. Our soil is good, our people are intelligent and enterprising, and when their energies are directed to other channels of industry than that of making cotton alone, they will retrieve their fortunes and be again prosperous and happy.

#### DROUGHT IN SOUTHERN CALIFORNIA.

*San Diego, Cal.*—We have had two successive years of unusual drought. A similar period occurred in 1863-'64. No water has been discharged by any rivers opening into the bay or ocean in this part of California for two years, the most of them sinking or drying up fifteen to twenty miles from their mouths. No cereals have matured, either last year or this, within twelve miles of the ocean. At a greater distance than that, and near the mountains, crops are produced, and cattle find pasturage. It is a prevalent belief here, that the approach of rains is announced by a rise in springs and streams. With few exceptions, there has been, during May, whenever clear, a haze dimming or obscuring the view of the mountains and islands twenty miles distant.

#### GRASS AND CLOVER IN THE SOUTH.

*Amite County, Miss.*—I have both tested, and had tested by experienced planters, the "perennial rye grass" you sent me last September, (1870,) and can say from experience and information from others that it is the best grass for pasturage that has yet been introduced into this section. It is no humbug, and it should be cultivated by every planter in this climate.

*Pike County, Ga.*—But little clover in this county previous to the present year. Many farmers have sown small patches the past winter and spring, and it bids fair to be a success.

*Monroe County, Ga.*—Have just commenced the culture of clover and the small patches are doing finely. Have cut  $3\frac{1}{2}$  tons per acre the first mowing.

#### COMMERCIAL FERTILIZERS IN THE SOUTH.

*Macon, Ga.*—To account for the poor condition of cotton in our county this year, we must state that commercial fertilizers have been used to very limited extent. Hardly 1 pound this year for 1,000 pounds last year.

*Newton, Ga.*—Fifty per cent. less fertilizers used than last year in the county. The quantity for the State is about 75 per cent. less, or in the proportion of 65 last year to 16 this year.

*Richland County, S. C.*—From my best information gained from our merchants the amount of fertilizers purchased as compared with last year is only about 16 per cent.

#### MAPLE SUGAR.

*Orange County, Vt.*—Vermont never before witnessed so great a flow of maple-sugar sap as has flowed the past spring. The results are large quantities of sugar and molasses.

*Essex County, Vt.*—Maple sugar is more abundant than ever before known here.

*Warren County, N. Y.*—The best sugar season for many years.

*Genesee County, N. Y.*—The spring of 1870 was a poor one for maple sugar. Probably not more than one-eighth of the usual quantity was made here. The spring of 1871 was much better, but was not a good one.

#### DOGS vs. SHEEP.

*Gloucester County, Va.*—In one neighborhood in this county, including three flocks of sheep, 35 per cent. were destroyed by dogs.

*Augusta County, Va.*—About three dogs to every sheep in this county. If our legislature would tax the dogs instead of the sheep, it would soon rid the county of a nuisance, and build up one of the most profitable branches of industry.

*Putney, Vt.*—We were troubled by dogs in this State, until our legislature took the matter in hand, and made the owner or the keeper of a dog pay a good round tax for the animal. That statute has had a splendid effect in relieving the farmers from the depredations of thousands of worthless, mischievous dogs. If other States would adopt a like measure they would soon find their flocks and herds enjoying their inalienable rights throughout their whole domain. The result would be that no good, respectable citizen would keep a mischievous, worthless cur.

*Jefferson County, W. Va.*—The dogs have played havoc with the sheep in this neighborhood within the last six months, having killed or crippled \$250 to \$300 worth in that time. It is high time that a tax on dogs, or some such law, for the protection of sheep owners, was enacted in our State.

#### HOG AND CHICKEN CHOLERA.

*Rankin, Miss.*—A fatal disease prevails among swine in some localities

in this county. Large numbers of hogs and pigs in good condition, as to flesh, are dying. No remedy, as yet, has arrested its progress. Cholera also prevails among hens and chickens, but generally yields to sulphur, pepper, or onions mixed with the food.

*Chatham, N. C.*—Very heavy losses among fowls and turkeys from cholera; ducks and geese not injured. A little tar in the water-trough and feed, or chopped onions with a liberal supply of red pepper in other food, has proved a good preventive. Many have lost every fowl and turkey on their farms.

*Jefferson, W. Va.*—The "chicken cholera" is still killing the fowls in different parts of the county, but the disease is not nearly so violent as it has been.

## INSECTS.

Mr. Alexander S. Taylor sends to the Department a communication upon the California grasshopper, or Pacific migratory locust, which has been very destructive in all the valley portions of the State, swarms having simultaneously appeared in Salinas, San Joaquin, Los Angeles, and Santa Barbara in May and June. It is similar to that which frequently visits Kansas, Montana, Texas, and Colorado. It appears to be the *Caloptenus spretus* of Uhler, of which mention was made in the monthly report of this Department for February, 1870. It should not be confounded with the wingless grasshopper, or cricket, of Utah and Nevada. The California coast species has wings, and is but one-third the size of the misnamed cricket.

*Boone County, Ill.*—The seventeen-year locusts have made their appearance, and are busy at work on the trees. They appeared in 1837 and 1854 in this county.

*Grundy County, Ill.*—Within the few days preceding June 1, the seventeen-year locusts came out of the ground in such vast numbers as to literally swarm on all the timber in the county.

*Kendall County, Ill.*—The seventeen-year locusts have come again in vast numbers, but as yet have done no damage.

*Lee County, Ill.*—The locusts have appeared in this county. They have done no harm yet, but are quite numerous.

*Peoria County, Ill.*—Locusts numerous, but had done no harm up to June 2.

*Putnam County, Ill.*—Locusts have appeared in legions.

*Linn County, Iowa.*—Locusts in large numbers.

*Mercer County, Ohio.*—The Colorado potato bug destroying the potatoes.

*Lucas County, Ohio.*—The Colorado potato bugs are destroying the potatoes. Some have plowed up their potatoes; others have planted in corn, so that it may have a start if the potatoes prove a failure; others are trying to destroy the bugs.

*Van Wert County, Ohio.*—Potato bugs bad. One farmer says that chickens keep his potatoes free.

*Erie County, Ohio.*—Potato bug doing some damage.

*Wayne County, Ohio.*—Colorado potato bug has appeared.

*Logan County, Ohio.*—Colorado potato bug doing much damage.

*Franklin County, Ohio.*—Colorado potato bug has made its appearance in all parts of the county, but has done no serious damage as yet.

*Greene County, Ohio.*—The Colorado potato bug has appeared.

*Wood County, Ohio.*—The Colorado potato bug abundant and destructive, taking nearly all the crop as fast as it comes up.

*Adams County, Ind.*—Potato bug very destructive.

*Crawford County, Ind.*—Colorado bug destroying most of the potatoes.

*Floyd County, Ind.*—Colorado bug in great numbers. The best remedy known here is a strong decoction of dog fennel. Some use Paris green, sulphur, &c.

*Howard County, Ind.*—Insects have done some harm, especially the *Doryphora decemlineata*.

*Marshall County, Ind.*—The Colorado bugs are worse than ever; they will probably destroy the entire crop.

*Pike County, Ind.*—The potato bug is troublesome.

*Union County, Ind.*—The Colorado bug takes the potatoes as fast as they come through the ground, and then deposits its eggs on the red clover.

*Jennings County, Ind.*—Potatoes being eaten up by the Colorado bug.

*Boone County, Ill.*—Potatoes being entirely destroyed by the bugs. In some portions of the county no Irish potatoes will be planted, for fear of the bugs.

*De Kalb County, Ill.*—Potatoes will fall a prey to the Colorado bug, unless the season be wet.

*Edwards County, Ill.*—We have a new destroyer of sweet potatoes and cabbage. It is the size of a lady-bird, and of strange shape, and of various brilliant colors. It eats close down. The Colorado bug is very destructive this season.

*Green County, Ill.*—Bugs bad in potatoes.

*Grundy County, Ill.*—Colorado bugs and chinch bugs more numerous than ever known so early in the season, and very destructive.

*Kendall County, Ill.*—Potato bugs are using up the potatoes in spite of all remedies. Poison is resorted to without effect.

*Lee County, Ill.*—Potato bug very numerous, and destroying the tops nearly as fast as they make their appearance.

*Montgomery County, Ill.*—Colorado bugs very abundant. Paris green has been found to be an effectual remedy in every case where tried. Great care should be used in applying it, for if too strong it will destroy the leaves.

*Mercer County, Ill.*—Colorado beetle more abundant than for three years. The mild winter has evidently been favorable to them.

*Ogle County, Ill.*—The Colorado bug is ravaging the potatoes. Farmers pick them off the vines, and use Paris green mixed with flour or ashes. Other insects more numerous than usual.

*Peoria County, Ill.*—Potato bugs on hand early.

*Putnam County, Ill.*—Colorado bugs in legions.

*Sangamon County, Ill.*—Colorado bugs numerous, but potatoes will yield well nevertheless.

*Stephenson County, Ill.*—Potato bugs in excess of last year, and making sad havoc.

*Scott County, Ill.*—Potato bugs threaten to take the crop.

*Buchanan County, Iowa.*—The potato bug has made its appearance in great numbers. Fears are entertained of a failure of the crop.

*Clinton County, Iowa.*—Colorado bug very destructive. Scarcely one-fourth the crop will be saved.

*Linn County, Iowa.*—Colorado bugs in large numbers. They prefer early varieties of potatoes.

*Muscatine County, Iowa.*—Colorado bugs at work.

*Chariton County, Mo.*—The Colorado bug is mowing the Irish potatoes, and the crop will be a failure. The bug eats all the vine but the stalk.

*Phelps County, Mo.*—The Colorado bug has done slight injury to the potatoes.

*Osage County, Mo.*—The potato bug has made its appearance at Linnwood.

*Franklin County, Mo.*—The Colorado bug is very destructive to potatoes at Beaufort.

*Columbia County, Wis.*—The present prospect is that the Colorado bug will entirely ruin the potato crop. They have never been so plenty so early in the season.

*Dane County, Wis.*—The Colorado beetle is in greater numbers than in any former year. Hand-picking and Paris green are generally the means relied on to kill them off. Many farmers are giving up the crop; some have plowed up their potatoes.

*Fond du Lac County, Wis.*—Myriads of potato bugs at work. One farmer picked 2,400 from half an acre in an afternoon. I keep mine clear with one part Paris green, eight parts ashes, and eight parts flour sprinkled on the vines when the dew is on.

*Green Lake County, Wis.*—Potato bugs plenty. Unless great care is taken the entire crop will be destroyed.

*Iowa County, Wis.*—The potato bug is more numerous this year than ever before.

*Juneau County, Wis.*—Potatoes nearly all destroyed by the Colorado bug, whose appearance is much earlier and in greater numbers than in any previous year. It is feared that the entire crop will be destroyed.

*Kenosha County, Wis.*—The Colorado bug threatens to destroy the crop.

*Ozaukee County, Wis.*—The potato bug is in full operation. The young sprouts are eaten before they have a chance to leaf. In former years it was chiefly the brood that destroyed the crop, commencing after the bushes were six or eight inches high, but this year the old fellows that remained over winter are doing the job effectually. Most of our farmers are plowing up the ground and planting it in corn; others are waiting to see what the bugs will do, and will put in buckwheat if the potatoes should be destroyed. At present it looks as if we would not get a bushel, except from the gardens. Lake Michigan is represented by our fishermen to be filled with the bugs, going over, perhaps, to Michigan.

*Outagamie County, Wis.*—Potato bugs more numerous than ever. They eat the vine down to the ground. Thirty have been counted on one vine two inches high. No Paris green to be had, and the bugs have their own way.

*Portage County, Wis.*—Potato bugs fearfully numerous.

*Richland County, Wis.*—Potato bugs very numerous.

*St. Croix County, Wis.*—Colorado bugs are injuring potatoes and tomatoes.

*Sheboygan County, Wis.*—The potato bug has appeared by the million.

*Carver County, Minn.*—The prospect for the potato crop is bad. Bugs plenty and will damage, if not ruin, the crop.

*Fillmore County, Minn.*—The Colorado bug will nearly, if not altogether, destroy the crop.

*Houston County, Minn.*—Potato bugs by the bushel.

*Kandoyohé County, Minn.*—Potato bugs very bad.

*Meeker County, Minn.*—Potato bugs (*decemlineata*) appeared June 1. The bugs have almost covered the potatoes.

*Ramsey County, Minn.*—The potato bug has appeared again, and threatens to destroy the crop.

*Barry County, Mich.*—Colorado bug very destructive to potatoes, tomatoes, and all garden plants. The potato crop is likely to be used up.

*Bay County, Mich.*—Farmers are doing but little toward planting potatoes. The bugs are very thick, coming out of the ground by hundreds, apparently more plentiful than ever. Paris green, mixed with plaster, ashes, and flour, is being used as a preventive.

*Cass County, Mich.*—Potato bugs in countless numbers.

*Kent County, Mich.*—Potato bugs very destructive.

*Kalamazoo County, Mich.*—Potato beetles without number. Remedies for extermination and protection alike fail, and the bug roams at will.

*Monroe County, Mich.*—The prospect is that one-half the crop will be destroyed by the potato bug.

*Newaygo County, Mich.*—Potato bugs everywhere. The whole crop is threatened.

*Ottawa County, Mich.*—We had a few potato bugs last year, but this year we have myriads of them. We expect no potatoes.

*Van Buren County, Mich.*—The potato bug is destroying the whole crop, so far as heard from, in this county, and its ravages are general throughout the State.

*Norfolk County, Mass.*—About one-fourth of the apple trees bloomed, compared with last year, and in many instances the entire crop has been destroyed by the canker-worm. Some orchards present a sad sight, and everything around them is alive with worms. Large and thrifty trees are being cut down as worthless.

*Queen Anne County, Md.*—Peach trees bloomed early and set full, but within the last two weeks fully one-half has dropped off. This is generally attributed to hot, dry weather; but I have cut open about a hundred of these dropped peaches, and in every instance found a worm similar to the apple-worm. The fruit remaining on the trees is very fine, double the usual size at this season.

*Henry County, Ohio.*—Foliage of apple trees so badly eaten by black measuring-worms that but 25 per cent. of the apples can be perfected. Many elm and shellbark hickories are as bare as in autumn.

*Van Wert County, Ohio.*—Measuring-worms are in great force, consuming the foliage of fruit and forest trees.

*Defiance County, Ohio.*—The measuring-worm is making sad havoc with the fruit trees. In some localities trees are nearly stripped of leaves and the fruit is dropping off.

*Darke County, Ohio.*—The fruit and the fruit trees are being much injured by the black caterpillar or measuring-worm.

*Crawford County, Ohio.*—Crop reduced, perhaps one-half, by frost, April 30. Worms are taking the leaves from many fruit and forest trees.

*Graves County, Ky.*—Caterpillars have injured the apple crop. They are very numerous. They begin on the leaves, and next take the fruit. They are on the decline now, and are webbing. They stopped a passenger train a few days ago.

*McCracken County, Ky.*—Caterpillars are so numerous that it is often necessary to clear the railway tracks before the trains can proceed.

*Adams County, Ind.*—A worm resembling the caterpillar is stripping all the foliage off the trees. They are very small at first, but grow fast, and are now an inch and a half long. Fruit and forest trees are considerably damaged by them.

*Massac County, Ill.*—Apple crop seriously injured by the caterpillar. It appeared April 15th and left May 20th.

*Des Moines County, Iowa.*—More frosts in May than for years past. These and the codling-moth have nearly ruined the apple crop.



*Jefferson County, Iowa.*—The canker-worm is doing great damage to some orchards.

*Kings County, N. Y.*—The cabbage-worm has made its appearance by thousands; their first appearance here upon early cabbage. We had them last year on late cabbage and cauliflower, and did much damage.

#### MISCELLANEOUS ITEMS.

*Plaquemines Parish, La.*—Rice crop ten per cent. below the average last year.

*East Baton Rouge Parish, La.*—Irish potatoes planted 10th of January; marketed 19th of April.

*Morehouse Parish, La.*—Crops utterly destroyed by a hail-storm the 27th of April. Hail-stones eight to twenty inches in circumference.

*Matagorda County, Texas.*—Schonen oats have done splendidly, although sown too late, and suffered two months' drought; did not rust, while other kinds did; crop prospects fine.

*Lavaca County, Texas.*—Sheep are doing well; sheared twice a year, April and November.

*Nueces County, Texas.*—Wool-clip unusually heavy this season; some few wool-growers shear but once a year; the Mexicans shear spring and fall.

*Live Oak County, Texas.*—Have had severe drought for six months past; recently some fine showers; some stock have died for want of food and water.

*Bexar County, Texas.*—Fine rains over nearly all of Western Texas from 18th to 24th of May.

*Galveston County, Texas.*—Schonen oats, received from the Department, and sown February 14, were ripe for harvest May 14; some stalks measured four feet in length, and had the heaviest heads we ever saw. The variety seems to be well adapted to this climate.

*Titus County, Texas.*—The Hamburg oats received from the Department promise well; the olive-shaped radish a success.

*El Paso County, Washington Ter.*—Winter and spring have been exceedingly wet; have not had (May 20) twenty sunny days since the middle of November, 1870; ground too wet for tilling.

*Walla-Walla County, Washington Ter.*—Farmers and stock-raisers of the Great Columbian plains are greatly enlarging their farms and herds of cattle and sheep, in consequence of the building of the North Pacific Railroad.

*Thurston County, Washington Ter.*—Winter has been mild and wet; spring very wet; has been too wet to work for a week past, (May 21.)

*Lewis and Clarke County, Montana Ter.*—Prospect for good crops favorable; the unusual spring rains have brought out the native grasses in fine growth.

*Deer Lodge County, Montana Ter.*—Coldest May ever experienced here; crops backward; grass better than usual, owing to excess of cloudy and damp weather.

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#### BET-SUGAR MANUFACTURE.

George T. Chapman, of New York, who has been examining the process of beet sugar manufacture in Europe, informs us that prominent merchants and capitalists in New York will organize a company, to

operate on an extensive scale in Texas, if that region proves to be favorable to saccharine development of the beet. He reports details of the success of Mr. James Duncan, of Lavenham, England, as follows: Capital employed, £12,000. Beets used this year, 6,000 tons; sugar made, 540 tons; cost of beets, £6,000; factory expenses for 110 days, £4,400; interest, repairs, &c., £2,000; total expenses, £12,400. The receipts for 540 tons of sugar, at £43 per ton, £23,220; 1,200 tons pulp sold to farmers, at 12s. per ton, £720; total receipts, £23,940; profit, £11,540. The average percentage of sugar obtained from these beets by Dr. Voelcker's analysis was 12, but the percentage actually obtained at Lavenham was 9, by the process of single carbonitiation. This process is stated to be not equal to Schrosenbach's alcoholic process. Carbonic acid gas is passed through the sirup after the first defection with lime and first boiling down. It is then filtered, through bone black once, and is then ready to boil down to the granulating point. Mr. Chapman brought home a bag of this sugar for samples, equal to the best refined white cane sugar, and made in England at two-thirds the cost of the latter.

A small *brochure*, the work of a Belgian agriculturist in England, just issued, upon the "beet-root sugar question," represents the manufacture of sugar as favoring greatly the interests of small farmers of Belgium. The manufacturers are generally proprietors of 1,000 to 2,000 acres, of which they farm 200 to 400 acres, and sow one-fourth in beet root. Their tenants are restricted from growing the beet in larger proportion, as a decrease in the quantity of sugar results from a rotation of less than four years. The author, E. F. DeMean, makes the following statement of the expense of growing beets in West Flanders:

Net value of an acre sold "on foot".....	£20
Rent and taxes.....	£2 10 0
Plowing and harrowing.....	1 5 0
Manure.....	2 5 0
Seed and sowing.....	0 10 0
Weeding, &c.....	1 10 0
	8
Leaving a net profit of.....	12

## THE CLIMATE OF SANTA BARBARA, CALIFORNIA.

The salubrity of the climate of some portions of the Pacific coast has become proverbial. Dryness, mildness, and equability are requisites of a climate which shall be promotive of health, and these are possessed by certain localities of California in a degree unequalled on the continent. The attention of the convention of the American Medical Association, recently in session at San Francisco, was called to a series of thermometrical observations made at Santa Barbara during the year commencing April 1, 1870, and ending March 31, 1871. This town lies on the coast, in Southern California, in latitude 34 degrees, 10 minutes, which very nearly corresponds to that of Wilmington, North Carolina, on the Atlantic coast. The thermometrical observations referred to embrace the weekly average for the year, the monthly mean, the monthly mean at 2 o'clock p. m., and the warmest and coldest days in each month, and are as follows:

## WEEKLY AVERAGE.

Month.	7th.	14th.	21st.	28th.	Month.	7th.	14th.	21st.	28th.
April .....	59.00	59.00	62.75	61.75	October ...	78.71	66.80	67.76	60.57
May .....	61.66	63.00	60.75	64.00	November .	59.52	59.14	66.62	59.60
June .....	63.00	65.25	64.75	69.75	December .	55.38	52.57	47.62	52.90
July .....	74.35	72.33	70.00	69.90	January ...	56.89	54.00	52.63	54.50
August ....	72.20	73.43	72.41	70.45	February ..	53.09	53.57	52.33	54.43
September .	67.85	78.71	67.71	68.05	March .....	59.09	56.68	54.59	63.33

## MONTHLY MEAN—AVERAGE OF THREE OBSERVATIONS DAILY.

April .....	60.62	October .....	65.96
May .....	62.35	November .....	61.22
June .....	65.14	December .....	52.12
July .....	71.49	January .....	54.51
August .....	72.12	February .....	53.35
September .....	68.08	March .....	58.42

Average temperature for the year, 60.20.

## MONTHLY MEAN AT TWO O'CLOCK.

April .....	65.87	October .....	72.28
May .....	70.75	November .....	71.38
June .....	75.87	December .....	60.48
July .....	79.84	January .....	63.92
August .....	79.41	February .....	58.36
September .....	79.41	March .....	69.71

Average temperature for the year, 70.60.

## MAXIMUM AND MINIMUM DAYS.

COLDEST.		WARMEST.	
April 12th .....	60	April 16th .....	74
May 15th .....	66	May 23d .....	77
June 1st .....	69	June 3d .....	80
July 26th .....	76	July 11th .....	84
August 11th .....	77	August 8th .....	86
September 23d .....	66	September 27th .....	90
October 23d .....	60	October 20th .....	92
November 7th .....	64	November 20th .....	87
December 15th .....	52	December 28th .....	71
January 11th .....	56	January 3d .....	76
February 22d .....	42	February 28th .....	71
March 13th .....	56	March 27th .....	83

Coldest day in the year, February 22, 42; warmest day in the year, October 20, 92. Variation, 50.

The range between the hygrometer and the thermometer at 2 o'clock p. m., at Santa Barbara, is usually about four degrees, except on foggy or rainy days, when it is sometimes identical. During the prevalence of a high warm wind the range is extended at times to ten and even twenty degrees; but this does not happen oftener than once or twice a year, and then only for a short period, about the time of the equinoxes.

## CLIMATE OF WESTERN OHIO.

The following is a record of temperature and rain-fall of certain stations in Northeastern Ohio for the years 1868, 1869, and 1870.

## KELLEY'S ISLAND.

Months.	1868.		1869.		1870.	
	Mean temperature.	Rain and melted snow.	Mean temperature.	Rain and melted snow.	Mean temperature.	Rain and melted snow.
	<i>Degrees.</i>	<i>Inches.</i>	<i>Degrees.</i>	<i>Inches.</i>	<i>Degrees.</i>	<i>Inches.</i>
January .....	21.7	1.00	33.2	0.71	29.3	4.95
February .....	23.9	0.83	30.7	2.67	27.7	1.00
March .....	36.2	3.91	29.7	2.45	-----	-----
April .....	42.2	1.83	45.0	3.22	48.4	1.89
May .....	55.9	2.86	57.1	5.11	63.9	1.27
June .....	68.2	5.98	67.1	6.07	73.1	3.85
July .....	81.7	0.53	73.4	1.39	76.6	6.32
August .....	73.0	3.78	74.2	1.50	75.5	1.52
September .....	63.9	3.29	67.5	1.99	70.5	1.50
October .....	50.8	0.78	47.0	1.93	57.8	3.13
November .....	41.8	2.24	36.5	3.55	43.2	1.64
December .....	27.1	0.45	32.3	1.99	29.9	2.23
Average .....	48.8	-----	49.4	-----	-----	-----
Total .....	-----	27.48	-----	32.58	-----	-----

## SANDUSKY.

January .....	19.5	0.93	34.3	1.22	30.5	7.30
February .....	23.8	0.88	32.5	3.45	25.5	1.22
March .....	28.2	5.96	30.1	2.67	33.2	3.55
April .....	43.8	4.13	46.4	3.22	49.7	2.52
May .....	56.4	6.11	57.6	7.99	71.7	2.17
June .....	68.5	13.47	66.4	6.90	73.1	5.69
July .....	82.9	0.48	71.9	5.52	75.4	5.28
August .....	70.3	5.23	73.3	1.71	73.3	1.72
September .....	57.6	3.20	64.2	3.46	64.7	1.83
October .....	49.0	1.12	44.9	2.96	55.7	4.64
November .....	39.7	2.57	36.4	4.26	41.8	2.95
December .....	25.1	0.84	33.6	2.46	29.7	2.48
Average .....	47.9	-----	49.3	-----	52.0	-----
Total .....	-----	44.92	-----	45.82	-----	41.35



## URBANA.

Months.	1868.		1869.		1870.	
	Mean temperature.	Rain and melted snow.	Mean temperature.	Rain and melted snow.	Mean temperature.	Rain and melted snow.
	<i>Degrees.</i>	<i>Inches.</i>	<i>Degrees.</i>	<i>Inches.</i>	<i>Degrees.</i>	<i>Inches.</i>
January .....	21.8	2.44	33.4	1.50	29.9	6.66
February .....	25.1	1.03	32.9	3.40	29.1	2.06
March .....	42.6	7.51	32.0	5.73	35.3	4.27
April .....	46.7	3.35	48.4	2.43	53.8	1.16
May .....	60.2	6.19	59.1	7.09	65.6	0.64
June .....	69.6	10.38	68.8	2.49	71.0	2.48
July .....	80.5	1.88	72.8	6.53	76.3	2.67
August .....	71.5	5.21	73.9	1.01	73.1	2.33
September .....	60.5	3.81	65.2	3.32	69.0	0.44
October .....	49.9	1.17	43.7	1.89	54.9	4.07
November .....	40.4	1.77	34.5	4.21	40.4	1.90
December .....	25.7	1.57	31.5	3.12	26.9	3.10
Average .....	49.5	-----	49.6	-----	52.1	-----
Total .....	-----	46.31	-----	42.72	-----	31.75

## SUMMARY.

Stations.	1868.		1869.		1870.	
	Average temperature.	Total rain-fall.	Average temperature.	Total rain-fall.	Average temperature.	Total rain-fall.
Kelley's Island.....	48.8	27.48	49.4	32.58	*-----	*-----
Sandusky .....	47.9	44.92	49.3	45.82	52.0	41.35
Toledo .....	47.7	42.95	48.5	42.47	*-----	*-----
Kenton .....	*-----	*-----	*-----	*-----	54.3	52.68
Urbana.....	49.5	46.31	49.6	42.72	52.1	31.75

\* Record incomplete.

## MARKET PRICES OF FARM PRODUCTS.

Articles.	May.	June.
NEW YORK.		
Flour, State..... per barrel..	\$5 75 to \$6 70	\$5 60 to \$6 80
western .....	6 10 to 9 00	5 60 to 9 00
Wheat, No. 1 spring .....	1 47 to 1 50	1 49 to 1 51
No. 2 spring .....	1 43 to 1 45	1 46 to 1 49
winter and amber western.....	1 50 to 1 53	1 68 to 1 69
Corn, new western, mixed .....	76 to 78	70 to 75
old western, mixed .....	79	-----
Rye .....	Nominal.	Nominal.
Barley .....	Nominal.	Nominal.

## Market prices of farm products—Continued.

Articles.	May.	June.
NEW YORK—Continued.		
Oats, western, mixed . . . . . per bushel..	\$0 65 to \$0 68	\$0 64½ to \$0 67
State . . . . . do.		
Hay, shipping qualities . . . . . per ton..	22 30 to 29 00	19 00 to 20 00
prime . . . . . do.	24 00 to 29 00	22 00 to 26 00
Pork, mess . . . . . per barrel..	18 00 to 18 75	15 87 to 16 00
prime mess . . . . . do.	15 00 to 16 25	13 00 to 14 75
Beef, mess . . . . . do.	10 00 to 15 00	10 00 to 15 00
extra . . . . . do.	15 00 to 17 50	15 00 to 17 50
Lard, extra . . . . . per pound..	10½ to 11½	9½ to 10¾
Butter, western . . . . . do.	12 to 30	11 to 20
State . . . . . do.	20 to 34	15 to 24
Cheese, dairy . . . . . do.	7 to 12	5 to 12
factory . . . . . do.	8 to 15	8 to 13½
Cotton, ordinary . . . . . do.	10½ to 13½	13½ to 15½
middling . . . . . do.	14 to 16½	16½ to 19¼
Tobacco, sound lugs, light grades . . . . . do.	5¼ to 5¾	5½ to 6
sound lugs, heavy grades . . . . . do.	6 to 6½	6½ to 6¾
common leaf, light grades . . . . . do.	6 to 7¼	6¼ to 7¼
common leaf, heavy grades . . . . . do.	6¾ to 7¾	6¾ to 7¾
Wool, combing fleece . . . . . do.		
extra pulled . . . . . do.	47½ to 52½	48 to 52
Texas, common to medium . . . . . do.		28 35
California, common . . . . . do.	24 25	37 to 38½
BOSTON.		
Flour, western superfine . . . . . per barrel..	6 00 to 6 25	5 75 to 6 00
extra . . . . . do.	7 50 to 7 75	6 50 to 8 00
choice . . . . . do.	7 50 to 10 75	8 25 to 10 50
Corn, yellow . . . . . per bushel..	80 to 82	81 to 82
mixed . . . . . do.	77½ to 80	78 to 80
Oats . . . . . do.	63 to 69	69 to 73
Rye . . . . . do.	1 10 to 1 20	1 18 to 1 25
Barley . . . . . do.	95 to 1 20	90 to 1 10
Pork, mess . . . . . per barrel..	17 50 to 18 00	14 50 to 15 00
prime . . . . . do.	20 00 to 20 50	17 50 to 18 00
Beef, mess . . . . . do.	12 00 to 16 00	12 00 to 14 00
extra mess . . . . . do.	16 00 to 18 00	15 00 to 16 50
Lard . . . . . per pound..	12 to 14¾	11 to 11¾
Butter, New York and Vermont . . . . . do.	15 to 35	18 to 25
Canada . . . . . do.	15 to 20	18 to 25
western . . . . . do.	12 to 15	15 to 24
Cheese, eastern factory . . . . . do.	10 to 15½	12 to 15
Ohio factory . . . . . do.	12 to 15	13 to 14
Hay, prime . . . . . per ton..	27 00 to 29 00	
Wool, western . . . . . per pound..	50 to 53	52½ to 57½
combing and delaine fleeces . . . . . do.	50 to 59½	45 to 56
tub . . . . . do.	43 to 91	52 to 85
pulled . . . . . do.	40 to 57½	24 to 60
CHICAGO.		
Flour, winter, extras . . . . . per barrel..	6 50 to 8 50	6 50 to 8 50
spring, extras . . . . . do.	4 00 to 7 00	5 25 to 7 00
Wheat, No. 1 spring . . . . . per bushel..	1 24½ to 1 25½	1 27½ to 1 28½
No. 2 spring . . . . . do.	1 22¾ to 1 23¾	1 26½ to 1 27
No. 3 spring . . . . . do.	1 19½ to 1 19½	1 20 to 1 21½
Corn, No. 2 . . . . . do.	52¼ to 54½	51½ to 52
rejected . . . . . do.	52 to 52¾	49¾ to 50
no grade . . . . . do.		50
Oats, No. 2 . . . . . do.	46¼ to 49½	47¾ to 49½
rejected . . . . . do.		45½ to 46

## Market prices of farm products—Continued.

Articles.	May.	June.
CHICAGO—Continued.		
Hay, timothy and clover, (on track).....per ton..	\$14 00 to \$15 00	\$14 00 to \$15 00
prairie.....do.....	10 00 to 12 00	9 00 to 10 50
Pork, mess.....per barrel..	17 75 to 18 25	14 50 to 15 25
prime mess.....do.....	15 00	
Beef, mess.....do.....	12 50 to 13 00	12 00 to 12 50
extra mess.....do.....	14 00 to 14 50	14 00 to 14 50
Lard.....per pound..	11 to 11 $\frac{1}{2}$	9 $\frac{1}{2}$ to 9 $\frac{1}{2}$
Butter, firkin and tub.....do.....	10 $\frac{1}{2}$ to 20	8 to 18
extra.....do.....	35 to 37	
Cheese, New York factory.....do.....	18 to 19	14 to 15
western.....do.....	15 to 16	12 to 13
western reserve.....do.....		
Wool, medium fleece.....do.....	38 to 47	32 to 44
unwashed medium.....do.....	33 to 35	20 to 33
tub.....do.....		40 to 54
CINCINNATI.		
Flour, family.....per barrel..	\$6 25 to \$6 50	6 75 to 6 95
extra.....do.....	6 00 to 6 25	6 60 to 6 75
superfine.....do.....	5 35 to 5 60	6 00 to 6 15
low grades.....do.....	5 00 to 5 30	5 50 to 5 80
Wheat, No. 1 white.....per bushel..		1 50 to 1 55
No. 2 white.....do.....		1 45 to 1 50
No. 1 red.....do.....	1 36 to 1 37	1 48 to 1 46
No. 2 red.....do.....	1 33 to 1 34	
Corn, No. 1.....do.....	57 to 58	55
new ear.....do.....	57	53
Rye, No. 1.....do.....	1 00 to 1 02	1 05
No. 2.....do.....	98 to 1 00	1 00
rejected.....do.....		
Barley, No. 1.....do.....	1 10 to 1 12	1 05 to 1 08
No. 1 State.....do.....		95 to 1 00
Oats, No. 1 mixed.....do.....	54 to 55	54 to 55
No. 2 mixed.....do.....	52 to 54	52 to 54
Hay, tight-pressed.....per ton..	17 00 to 21 00	15 00 to 21 00
loose.....do.....	18 00 to 25 00	18 00 to 25 00
Pork, mess.....per barrel..	18 00 to 18 25	16 00
prime mess.....do.....		
Lard, prime steam.....per pound..		
Butter, choice Ohio.....do.....	20 to 28	17 to 22
fair to good.....do.....	17 to 20	13 to 14
Cheese, western reserve.....do.....	13 $\frac{1}{2}$ to 14	10 to 11
factory.....do.....	15 to 15 $\frac{1}{2}$	12 to 12 $\frac{1}{2}$
Cotton, ordinary.....do.....	6 to 12 $\frac{1}{2}$	11 $\frac{1}{2}$ to 14 $\frac{1}{2}$
middling.....do.....	13 to 14 $\frac{1}{2}$	15 $\frac{1}{2}$ to 18
Tobacco, lugs, West Virginia.....do.....	5 $\frac{1}{2}$ to 7 $\frac{1}{2}$	4 $\frac{1}{2}$ to 7 $\frac{1}{2}$
lugs, Kentucky.....do.....	6 $\frac{1}{2}$ to 10	7 to 12
common to medium leaf, West Virginia.....per pound..	7 $\frac{1}{2}$ to 10	7 $\frac{1}{2}$ to 10
common to medium leaf, Ky.....do.....	12 to 14	10 $\frac{1}{2}$ to 15
Wool, tub-washed.....do.....	48 to 50	43 to 48
fleece-washed.....do.....	42 to 47	38 to 50
unwashed.....do.....	28 to 36	28 to 38
pulled.....do.....	38 to 40	38 to 40
ST. LOUIS.		
Flour, superfine.....per barrel..	5 00 to 5 40	5 00 to 5 25
extras.....do.....	5 50 to 6 85	5 75 to 7 00
choice.....do.....	8 00 to 8 50	7 25 to 8 75



## Market prices of farm products—Continued.

Articles.	May.	June.
St. Louis—Continued.		
Wheat, spring.....per bushel..	\$1 20 to \$1 35	\$1 00 to \$1 30
winter No. 1.....do.....	1 60 to 1 65	1 60 to 1 65
winter No. 2.....do.....	1 50	1 55 to 1 60
winter No. 3.....do.....	1 45	1 43 to 1 50
red.....do.....	1 30 to 1 55	1 35
Corn, mixed.....do.....	48 to 59	49 to 33½
yellow.....do.....	60	51 to 59
Rye.....do.....	75 to 91	75 to 89
Barley, winter.....do.....	92½ to 1 25	88 to 1 00
spring.....do.....	95 to 1 25	55 to 1 00
Oats, mixed.....do.....	49 to 56½	48 to 56¼
yellow.....do.....	46 to 58	56 to 57
Hay.....do.....	15 00 to 25 00	16 00 to 23 00
Pork, mess.....per barrel..	17 50 to 18 50	16 00 to 16 75
Lard, tierce.....per pound..	10 to 11½	8 to 10¾
keg.....do.....	11½ to 12½	10½ to 11¾
Butter, choice.....do.....	26 to 28	17 to 20
fair to medium.....do.....		13 to 15
Cheese, factory.....do.....	17 to 19	14½ to 16
Cotton, middling.....do.....	13½ to 14½	15 to 15½
Tobacco, sound lug.....per cwt..	3 50 to 5 50	3 50 to 5 75
common leaf.....do.....	5 50 to 6 50	5 75 to 6 75
medium leaf.....do.....	6 50 to 7 50	6 75 to 7 75
Wool, tub-washed.....per pound..	48 to 53	50 to 58½
fleece-washed.....do.....	32 to 38	38 to 58
combing.....do.....	33 to 38	38 to 41
pulled.....do.....		43 to 45
NEW ORLEANS.		
Flour, superfine.....per barrel..	5 65 to 6 00	6 12½ to 6 25
extras, (according to grade).....do.....	6 25 to 8 75	6 50 to 10 50
Corn, mixed.....per bushel..	70 to 71	70 to 76
yellow.....do.....	71 to 72	75
white.....do.....	72 to 76	76 to 78
Oats, choice.....do.....	64 to 65	65
Hay, choice.....per ton..	23 00 to 24 00	24 00 to 25 00
prime.....do.....	20 00 to 22 00	23 00 to 24 00
Pork, mess.....per barrel..	19 00 to 19 50	16 50 to 17 50
Lard, tierce.....per pound..	11 to 11½	11 to 11½
keg.....do.....	12½ to 12¾	12 to 12½
Butter, choice western.....do.....	25	22 to 26
choice northern.....do.....	42 to 43	34 to 35
common northern.....do.....		
Cheese, choice factory.....do.....	16 to 17½	15 to 16
western reserve.....do.....	14	13 to 14
Cotton, ordinary.....do.....	10½ to 11	12 to 13
low middling.....do.....	13½ to 14	15 to 15½
middling.....do.....	14½ to 15½	16 to 16½
Tobacco, lugs.....do.....	5½ to 7	5½ to 6¾
low leaf.....do.....	7 to 7½	6¾ to 7½
medium leaf.....do.....	7½ to 8¼	7¼ to 8
SAN FRANCISCO.		
Flour, superfine.....per barrel..	6 25 to 6 75	6 50
extras.....do.....	6 75 to 7 75	7 00 to 8 25
Wheat, State.....per cental..	2 70 to 2 80	2 75 to 2 90
Oregon.....do.....	2 55 to 2 60	2 40 to 2 62½
Corn, white.....do.....	2 45 to 2 50	2 25 to 2 35
yellow.....do.....	2 45 to 2 50	2 25 to 2 35

## Market prices of farm products—Continued.

Articles.	May.	June.
SAN FRANCISCO—Continued.		
Hay, State.....per ton..	\$16 50 to \$22 00	\$14 00 to \$20 00
Pork, mess.....per barrel..	26 00	26 00
prime.....do.....	25 00	22 50
Beef, mess.....do.....	14 00 to 18 00	14 00 to 17 50
Lard.....per pound..	14 to 16	14 to 16
Butter, State.....do.....	25 to 32½	25 to 32½
Oregon.....do.....	18 to 23	
overland.....do.....		25 to 30
Cheese.....do.....	10 to 14	16 to 17
Wool, choice.....do.....	30½ to 32	30 to 33½
inferior and medium.....do.....	27 to 29	20 to 28

## AGRICULTURE IN ITALY.

The kingdom of Italy now embraces an area of 118,000 square miles, and a population of 26,000,000.

In 1865 the surface of Italy, including Venetia and the Roman States, was thus distributed: Arable lands, including vineyards, 29,749,167 acres; natural and artificial grass lands, 3,472,772 acres; rice plantations, 363,742 acres; olive groves, 1,503,327 acres; chestnut groves, 1,609,937 acres; woods and forests, 12,088,822 acres; pasturage, 16,794,847 acres; marshes, lakes, &c., 3,005,835 acres; waste lands, from 6,500,000 to 8,000,000 acres; making a total of about 75,000,000 acres. One-half of the soil that is cultivated is devoted to the cereals, while only 4 per cent. of the entire surface is devoted to the cultivated grasses; cattle and other domestic animals are, therefore, not numerous. In the whole of Italy the estimated number of domestic animals is given as follows: Horses, 1,462, 816; cattle, 4,007,476; sheep, 9,736,101; swine, 4,059,021; goats, 2,615,427. This is only one-fifth the number of domestic animals in the United States in 1869. The annual average of cereal and other productions, in bushels, is as follows: Wheat, 101,484,236; maize, 48,728,339; rice, 3,972,325; chestnuts, 15,771,000; potatoes, 27,894,157; other vegetables, 11,899,178. Of oil the average is 1,775,256 hectoliters, and of wine, 34,977,849 hectoliters. Northern Italy is in a higher state of cultivation than the southern portion. Among the hills of Piedmont, which are as 0.774 to 0.226 of plain, and more particularly where the vine is cultivated, the land is mainly owned by small farmers in lots averaging from 1½ to 7½ acres, but on the plains, especially where rice is grown, the farms are large, ranging from 100 acres to 3,500 and upward, and are generally leased to substantial farmers. The principal products are wheat, rice, Indian corn, oats, rye, and other grains, vines and mulberry trees, clover, lucerne, flax, and hemp; apples, peaches, pears, cherries, chestnuts, and walnuts. Irrigation is general upon the plains. The yield of wheat, however, owing to defective tillage, is only about one-third of the English average per acre. Experiments have proved that it may be doubled with proper cultivation. The use of improved agricultural machines, hitherto discouraged, and of commercial fertilizers, is increasing. The cultivation of the vine in

Piedmont is also receiving greater attention, the old practice of festooning having been generally abandoned, and the improved French methods of culture substituted. In Lombardy there is much activity in agricultural pursuits. As in Piedmont, small farms are common in the hilly districts, and large farms on the plains. Most of the latter are irrigated. On the small mountain farms the spade is largely used, as it is also on the hills of Piedmont. The cultivation of the vine and mulberry trees, with wheat and other grains, prevails in the hills of Lombardy, while rice, flax, and hay are grown on the plains. Silk is a staple product. Cattle are generally kept by all farmers, and the country is rich in butter and cheese. In Venetia none of the cereals are largely cultivated, but are mostly imported from the Levant and the Black Sea. In the Roman States and the provinces which immediately adjoin them the modes of culture are very rude, and production is, of course, very limited.

The subdivision of the soil throughout Italy is much more favorable to farmers of small means than the English system of large landed estates, but is not so minute and impoverishing as that which prevails in France. In a population of 26,000,000 the number of landed proprietors is given at 4,180,000, with an average of  $12\frac{1}{2}$  acres each. In Piedmont and Sicily, 1 in 4 is a landholder; in Parma and Lombardy, 1 in 6; in Tuscany, 1 in 13; and in all Italy, in 1862, 17 in 100 owned land. The most subdivisions are in Piedmont and the Two Sicilies; the fewest, in Tuscany, Romagna, and Umbria, where large tracts are owned by the province, the commune, and the religious orders, and are generally badly farmed.

The cultivation of cotton and tobacco has been introduced into some of the Italian provinces, and the most satisfactory results have been obtained.

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### THE GAME LAWS OF PRUSSIA.

Up to 1848 the killing of game in Germany was a distinct and alienable proprietary right, held independently of the ownership of the soil, and empowering the holder to hunt and shoot exclusively over other lands than his own. In that year the Frankfort Parliament abolished the game laws throughout Germany, and the principle was established that the possession of the soil should thenceforth carry with it the inalienable and exclusive right to pursue and kill game upon it. But the abolition of all game laws was found, upon trial, to be too sweeping a measure. It permitted the taking of game in all seasons, encouraged poaching, gave rise to lawless abuses, and threatened the extermination of game altogether. In 1850 Prussia limited the personal exercise of the right of killing game to owners of at least 200 acres, and restricted the exercise of this right to certain seasons. In 1870 the North German Parliament passed a new game law, which retained the leading features of the laws of 1848 and of that of 1850. As the law now stands, any person in Prussia owning not less than 200 acres of land, lying together, and who procures annually a game certificate, at a trifling cost, has an unrestricted right to kill all game upon his own property; and the same right is extended to owners of all *inclosed* lands. The owners of *uninclosed* lands of less than 200 acres are not entitled to kill the game upon them; these revert, for all sporting purposes, to the commune in which they are situated, and form a common shooting district. There are only two months in the year—October and November—

during which the badger may be killed, owing to the services it renders the farmer in destroying grubs, insects, &c. The fox may be shot at any time. Great care is taken to prevent the extinction of the elk, which can only be shot by special license.

In 1867 an authority (Herr von Hagen) estimated the quantity of game annually killed in Prussia, and the value thereof, as follows:

Species of game.	Number killed.	Pounds each.	Pounds of meat.	Silbergroschen.
Red deer .....	4,288	120	514,560	At 2½
Fallow deer .....	2,546	50	127,300	2½
Roe deer .....	14,204	25	255,100	4
Wild boars .....	2,358	60	141,480	3
Elks .....	54	250	13,700	1½
Hares .....	1,097,316	5	5,486,580	3
Partridges .....	1,311,134	$\frac{3}{4}$	983,351	5
Pheasants .....	2,373	2	4,746	10
Black game .....	1,340	2	2,680	7½
Hazel game, ("Hazelwild") .....	992	$\frac{3}{4}$	744	10
Snipes .....	13,132	$\frac{1}{2}$	6,566	10
Wild ducks .....	16,454	$1\frac{1}{2}$	24,681	3
Rabbits .....	8,308	2	16,616	1
Fieldfares, shock of three score .....	4,824	15	72,360	2

Total number of pounds, 7,750,464, of the value of 840,752 thalers.  
To the money value are to be added—

	Thalers.
11,524 foxes, at 1 thaler the skin .....	11,524
643 badgers, at 2 thalers the skin .....	1,286
Hides and skins of red deer, at 1½ thalers the skin .....	5,717
Hides and skins of fallow deer, at $\frac{2}{3}$ thaler the skin .....	1,697
Hides and skins of roe deer, at $\frac{1}{2}$ thaler the skin .....	2,841
Hides and skins of elks, at 3 thalers the skin .....	162
Hides and skins of wild boars, at $\frac{1}{2}$ thaler the skin .....	1,179
Hare and rabbit skins, at 3 groschen the skin .....	110,562
Total value .....	975,720
(Equal to \$712,275.)	

Since 1867 various provinces have been annexed to Prussia, statistics of the game product of which, if procurable, would largely add to the above totals.

### SCIENTIFIC NOTES.

**REMOVAL OF GYPSUM FROM WATER.**—An easy method of removing gypsum from water consists in the application of the native carbonate of baryta, ground to a fine powder, in the proportion of about half a pound to a large pailful. After the addition of this substance the water is well stirred, and left at rest for twenty-four hours to deposit the sediment, after which it is to be poured off, and may be used.

**CAUSE OF THE RUSTING OF IRON.**—It has usually been supposed that the rusting of iron depends principally upon moisture and oxygen. It

would appear, however, from Dr. Calvert's experiments, that carbonic acid is the principal agent, and that without this the other agencies have very little effect. Iron does not rust at all in dry oxygen, and but little in moist oxygen; while it rusts very rapidly in a mixture of moist carbonic acid and oxygen. If a piece of bright iron be placed in water saturated with oxygen, it rusts very little; but if carbonic acid be present, oxidation goes on so fast that a dark precipitate is produced in a very short time. It is said that bright iron placed in a solution of caustic alkali does not rust at all. The inference to be derived is that by the exclusion of moist carbonic acid from contact with iron rust can be very readily prevented.

**PROPAGATION OF THE GRAPE BY EYES.**—A German agricultural journal informs us that the grape-vine can be propagated by means of eyes, so as to save three years' time in the growth, each eye furnishing a new shoot. Each grape-vine will furnish as many shoots as it has sound eyes, and they are to be cut off about a quarter of an inch from the eye on each side, so as to leave a cylinder of wood about half an inch long, with the eye in the center. If prepared in the autumn, these eyes may be put in a cellar in winter. In April they are to be laid down at a depth of two or three inches in furrows about six inches apart, and covered with a little manure, watered in dry weather, and the earth about them occasionally loosened.

**CURING DAMPNES IN WALLS.**—A Russian preparation for curing moisture in the walls of houses consists in the use of a mixture made by adding two pounds of white resin to a boiling solution of three and three-fourths pounds of green vitriol in one hundred pounds of water. To this ten pounds of sifted red ocher, or other color, eight pounds of rye meal, and six and a half pounds of linseed oil are to be added, and the whole stirred together until it forms a completely homogeneous mass. Two coats of this mixture are to be applied successively, while hot, but only in dry, warm weather.

**MANURE FROM DEAD ANIMALS.**—Dead animals are utilized in France by immersing their soft parts in a very feeble solution of hydrochloric acid, which soon transforms them into an odorless pulp. This is to be mixed with phosphate of lime, and the result is a manure of the best quality.

**UTILIZING THE GREASE OF SHEEP'S WOOL.**—An additional instance of the possibility of converting what was formerly considered refuse into valuable material, is seen in the case of the fatty matter contained in sheep's wool, and technically known as suint. This contains about 40 per cent. of potassa, and when ignited the alkali becomes entirely mixed thereby with strongly-nitrogeinized animal charcoal. The result of recent experiments tends to show that suint, thus treated, may be used to an excellent profit in the manufacture of prussiates and cyanides.

**UTILIZING FISH OFFAL.**—An ingenious method, lately proposed, for utilizing the residue and offal of fish, consists in first boiling it together with one-tenth of its weight of cheap oil, heating it up from 250° to 300° F. It is then treated with sulphide of carbon, whereby the oil naturally contained in the fish, as well as that which was added, is extracted, and a mass is left, quite dry, and containing from 5 to 6 per cent. of nitrogen, and from 12 to 15 per cent. of phosphate of lime.

**MARKS OF DIFFERENCE OF SEX IN EGGS.**—It is stated that the eggs of the common hen, as well as those of many other birds, present cer-

tain external characteristics by means of which it is possible to determine beforehand the sex to be hatched from them. Thus, the "male" egg has, at its pointed end, small folds and wrinkles, while the "female" egg is entirely smooth, and well rounded off at both ends.

**BLACKENING STONE.**—A method of rendering stone completely black, to serve as a foil to some other color, or to protect it against the weather, consists in heating it in an oven to about 140°, and then removing it and dipping the side to be colored into a vessel filled with melted tar. After removal, the surplus is allowed to drain off, and laid not far from the stove to dry. When it is half dried, it is placed in the air and allowed to become completely dry, after which a wisp of straw is used to rub off the blackened side, which gives to the stone a brilliant luster, and prepares it for further use.

**ORIGIN OF MAIZE.**—The claim that the maize, or Indian-corn plant, is indigenous to the soil of the New World, has lately been contested, and recent investigations of certain Chinese records are cited to prove that it was cultivated in China prior to the discovery of America. Chinese authors maintain that it came originally from countries west of China, and that it was introduced into that country long before the first arrival of the Portuguese, in 1517.

**RUSSIAN METHOD OF PRESERVING FRUIT.**—A method of preserving fruit, quite frequently adopted in Russia, consists in slacking fresh lime by sprinkling it with water and adding a little creosote. The fruit is to be packed in wooden boxes, with a layer of the prepared chalk powder of an inch in depth at the bottom. This layer is to be first covered with a sheet of paper, and upon it the fruit is to be laid so as not to touch each other. On the first layer of fruit another sheet of paper is placed, with the lime powder sprinkled over it, and a sheet of paper over this; upon this another layer of fruit is spread, as before, and the process continued until the box is full. The corners may then be filled with charcoal. If a tight-fitting cover is put on the box, the fruit, it is said, will maintain its freshness for at least a year.

**MANURE FROM INDIAN CORN.**—It is said that a new manure is prepared in France from Indian corn, a substance now largely used in French distilleries. The grain, previously coarsely broken, is first subjected to the action of dilute sulphuric acid, to convert its starch into sugar. After fermentation the refuse is placed in large tanks, and when all the solid matters have subsided the clear liquid is drawn off, and the residue yields an excellent manure, containing about 9 per cent. of water, 68 per cent. of organic matters, including nearly 5 per cent. of nitrogen, and about 19 per cent. of mineral matter.

**SULPHURIC ACID FOR DESTROYING WEEDS IN LAWNS.**—A writer in an English journal suggests the use of ordinary sulphuric acid or oil of vitriol, as an excellent agent for the destruction of weeds on lawns. The difficulty of eradicating such unsightly elements of the lawn is well understood, since to do so satisfactorily requires the removal of a large amount of dirt, producing a corresponding injury to the general appearance. By taking the acid in question, and allowing a few drops to fall into the crown of any obnoxious weeds, it will turn them brown in an instant, and ultimately cause the death of the plant. Great care must of course be taken to prevent any of the acid from falling upon the skin, or any article of clothing; but with ordinary care a large amount of surface can be treated in a short time with most excellent results.

**PREPARATION OF WOODEN LABELS FOR PLANTS.**—Wooden labels for plants, to be inserted in the ground, may, it is said, be preserved for an indefinite time by first dipping them in a solution of one part copper vitriol and twenty-four parts water, and subsequently immersing in lime water, or a solution of gypsum.

**PRESERVATION OF BEET LEAVES FOR FODDER.**—It is well known that in France the beet is cultivated on a large scale, mainly for the preparation of beet sugar, and that the leaves are used very largely as food for cattle. A difficulty has hitherto existed in reference to this latter application, on account of the readiness with which the leaves become decomposed, and the impossibility of keeping them fresh for any considerable length of time. We are now informed that this has been overcome by M. Mehay, who subjects the leaves to the action of dilute hydrochloric acid, by means of which, after undergoing a special treatment, they can be stacked away in large quantities and kept indefinitely for future use. The application of the acid employed, so far from injuring these leaves as food, seems to impart to them special alimentary peculiarities, seen in the production of an improved quality of butter. Several veterinary surgeons have certified, as the result of a critical examination of the experiments, that the food gave rise to no disturbance of the digestive system, and that in every respect the new preparation was to be considered a success.

**FEEDING UNBROKEN GRAIN TO HOGS.**—Dr. Lehmann has lately communicated to the Agricultural Association of Saxony the results of some experiments of feeding unbroken grain to hogs, the animal to which the test was applied being a three-year-old pig, of an English breed, which had previously been fed, for a year and three-quarters, exclusively with rye bran. Four pounds of bran were given to it every twenty-four hours; and on each of the first two days of the experiment an addition was made of one pound of the grains experimented upon, the rations being furnished in only a slightly moist condition. The first of the undigested grains were passed off at the lapse of from twenty-four to twenty-five hours, the last of them appearing at various intervals; as, at the end of sixty-two hours for oats, seventy-two hours for barley, seventy-eight hours for rye, and the same for peas. In reference to the quantity of undigested and unaltered grains found in the excrement, it is stated that in one hundred pounds there appeared unchanged and entire 50.6 of oats, 54.8 of barley, 49.3 of rye, and 49.4 of peas. From these results it will be seen that in general only half of the entire grain is used in the process of digestion, and that every one who furnishes food in this manner has to supply twice as much as is actually necessary, at, of course, double the necessary cost. It is, therefore, very evident that a due regard to economy makes it expedient to reduce the food to a more or less fine condition before it is given to such animals.

**FEEDING NETTLES TO LAYING HENS.**—The Vienna Agricultural and Forest Journal states that hens fed in the winter with chopped and boiled nettle leaves, or with the seeds, and kept in a warm place, will continue to lay during the entire winter. The experiment was first suggested by noticing the eagerness with which both domestic and wild fowl devour the nettle leaves and seeds whenever the opportunity is afforded. This proclivity is believed to be the reason why, with the enormous yield of seeds on the part of the nettle, comparatively so few plants spring. It is stated also that in Denmark the seeds and leaves of the nettle are fed very carefully to horses, after having been collected,

dried, and ground; three times a week, morning and evening, a handful of this nettle dust is mixed with the oats, in consequence of which the horses are said to become fleshy and sleek, and their hair to grow unusually long, and to assume a remarkably beautiful, silky luster.

**COOLING OF BROODED EGGS.**—An inquiry is made of the German Poultry Journal whether eggs brooded upon and allowed to become cold can be hatched; in reply to which it is stated that, from extensive observation, it has been shown that eggs which have remained cold for two days or more may even then be successfully brooded, and that the nearer to the period of the escape of the young, the longer may this cooling last. It is, however, necessary that at least half of the brooding period be passed, as, if eggs are left too long in the first half of the period, especially if this is repeated many times, the embryo will, in almost every instance, die. In the second half of the period the chick is already so far formed that a prolonged cooling is not especially injurious to it. It is also established that eggs thus cooled require a longer time than usual to come to maturity.

**DRAINING WITH FASCINES.**—The choking up of clay drain-pipes, especially when used to carry water containing iron in solution, (from which the oxide of iron is precipitated,) has frequently caused great difficulty in keeping up a proper drainage; and, in view of this fact, the propriety of adopting the old method of using fascines, or bundles of wicker-work, has been urgently recommended. For this purpose a coarse wicker-work, made of alder or willow, is to be loosely plaited together into a tube of about ten inches in diameter, braced by cross-pieces at intervals of two feet. A number of these are to be united into a continuous tube, and laid in the ditches prepared for their reception. Sod is then to be laid on the top, with the grass side down, and the trench filled with earth. In this way a very cheap system of drainage is obtained, which will remain for a long time without filling up; while earthen-ware tubes do not answer their purpose for more than six or eight years. The use of the wicker-work has the additional advantage of allowing the air to penetrate upward through the soil, thereby increasing its productive properties.

**EFFECT OF TREES ON CLIMATE, (MALTA.)**—Much has been said in the work of Mr. George P. Marsh, entitled "Man and Nature," and by many other writers, of the influences exerted by man upon the physical condition of the earth and the atmosphere, and deserved stress has been laid upon the important part played by trees in all phenomena connected with the amelioration of climates and the restoration or increase of rain-fall, and the diminution in the number and the intense severity of inundations, &c. Mr. Buchan, a well-known meteorologist of Edinburgh, has lately made a report to the scientific society of that city in regard to certain measures about being introduced by the Governor of Malta for replanting the island with trees, in which he remarks that the characteristic features of the climate of that island are the cold northerly winds of the winter, and the excessive heat of summer, with a great scarcity of water throughout the whole year. The entire absence of trees on the island was thought to intensify and increase these extremes, and it was believed that by securing an abundant covering of forests much could be done for the amelioration of the climate. Mr. Buchan, in reference to the general theory of such amelioration, states that while the highest temperature of the air occurs in summer between 2 and 3 o'clock p. m., the change in the trees is very



slow, the leaves not attaining their maximum temperature until 9 o'clock p. m. Thus, while the atmospheric changes are rapid, the temperature varies slowly in the trees, and therefore they serve, like the ocean, as equalizers of the temperature, moderating the heat of the day and maintaining a higher temperature during the night.

In continuation of the same subject, Mr. Buchan remarks that, as air is heated by contact with the soil, and as trees shelter the soil from the solar radiation, they must diminish the force of the sun's rays, especially in the lower strata of the atmosphere. The exhalation of moisture by trees produces cold in the air by abstracting the latent heat from it. This lowering of the temperature gives to the air a greater degree of humidity. Again, the leaves of trees exercise an important influence in cooling the atmosphere, as the tree itself, by its radiation of heat, becomes sensibly lower in temperature, and thus cools the air as it plays among the leaves.

**VINEGAR FROM UNRIPE FRUIT.**—Unripe fruit, especially apples and pears, as is well known, is much used in the manufacture of vinegar; but the process usually adopted is defective in many important points. We therefore give, for the benefit of our readers, the substance of an article from Graeger's Manual of Vinegar Making, just published in Germany, which may, perhaps, serve a useful purpose. The principal fault of the old process consists in throwing away the pulp after the juices are expressed. As this, however, contains a large percentage of starch, excellently adapted for conversion into vinegar, it is necessary to prepare the fruit so as to save this portion of its substance. With this object it is to be grated, exactly as potatoes are prepared in the manufacture of starch, and the pulp passed through a moderately fine sieve, or through a coarse and open meshed cloth. There is thus nothing left behind but the pomace proper, or cellulose, all the starchy matter having been passed through the sieve with the juice. This is next to be diluted with water, in proportion to the quantity of starchy matter thus obtained; and the whole is then placed in a clean copper kettle, one or two per cent. of concentrated sulphuric acid being added, and heated long enough to transform the starch into grape sugar. The sulphuric acid is to be neutralized by means of carbonate of lime; the gypsum or the sulphate of lime thus produced allowed to settle, and the liquid to become clear, and then poured off. This liquid is to be left for fermentation to take place, either with or without the use of yeast. A liquid having 8 or 10 per cent. of sugar can easily be made to have 4 or 5 per cent. of alcohol after fermentation, which, by its subsequent acidification, will yield a vinegar of 5 to 6 per cent. of acetic acid.

**USE OF FLESH OR MILK OF APHTHOUS CATTLE.**—Professor Dammann has lately renewed, with great care, the inquiry as to the wholesomeness of flesh or milk of cattle that have been afflicted with the foot and mouth disease, and has come to the conclusion that the use of these substances cannot be forbidden with sound reason. He states that the flesh is absolutely harmless, and its use should be allowed under any circumstances, taking care in every case that the slaughtering be done in one and the same place, in order that no new locality be unnecessarily tainted by the liquids resulting from the operation.

In reference to using the milk, he states that should any misgiving be felt, it may be converted into butter or cheese, in which case it is absolutely harmless. No reliable instances could be found, in the course of a long and careful inquiry, of any infection or disease having been communicated to mankind or the lower animals by eating the flesh of

animals thus afflicted, or by drinking their milk. The author concludes by saying that it is eminently right and proper that legal and other precautions be taken against the propagation of the disease in living animals, but that these measures should always be subordinated to the general principles which have now been fairly established.

**ACTION OF POTASH ON FRUIT TREES.**—Dr. George B. Wood, in a late communication to the American Philosophical Society, in Philadelphia, presented the result of certain experiments made by him upon the effect of salts of potassa when applied to grain and fruit-producing soils. In his view, the depreciation of the productiveness of apple, peach, and quince orchards is due to the exhaustion of potash from the soil. Several of such orchards, formerly very valuable, but which had within a few years ceased to bear much fruit, on being treated with an application of wood ashes to the roots of the trees, became completely revived, producing full crops the following year. A still more striking effect was seen the second year, under a renewal of the application. He cited several other instances where the same results followed; in one case where an apple orchard, planted on an old orchard's site, which had never borne fruit, was made to produce a good crop by the application of ashes.

**KILLING RABBITS BY SULPHUR.**—It is well known that the European rabbit has been introduced into Australia, and by its enormously rapid multiplication bids fair to become a veritable pest to the country. Many remedies have been proposed for their extermination, among which the burning of sulphur in their burrows has been strongly recommended. An article by a Mr. Archer, on this subject, however, recounts the numerous experiments made for the purpose of their destruction by sulphur, and ends with the statement that this method is not at all satisfactory, and that carbonic acid would probably be more efficient.

**DESTRUCTION OF GRAIN BY INSECTS.**—Some idea of the injury caused by insects to agricultural products may be formed from the statement that, from 74 tons of Spanish wheat stored in a granary, 10 hundred-weight of beetles were screened out in one instance, and in another 35 hundred-weight were removed from 145 tons of American corn. The offender in both cases was a weevil, known as *Colandra orise*.

**BAOBAB BARK AS A NEW FIBER.**—It is well known that great efforts are being made all over the world to increase the supply of material for the manufacture of paper and textile fabrics, by calling into play substances previously unthought of in this connection. Among the later additions to the series may be mentioned the fibrous bark of the Baobab tree, (*Adansonia digitata*.) This is said to be worth in England from \$70 to \$75 per ton. It furnishes, also, an almost indestructible cordage.

**COLORING FOR BUTTER.**—According to the *Moniteur Scientifique*, a coloring matter much superior to the annatto for coloring butter may be prepared from carrots. For this purpose the roots are to be cut in slices and dried, and afterwards ground to powder, and subjected to the action of sulphide of carbon. An extract can be obtained in this way which, rapidly crystallized, furnishes pure carotene; an insipid, inodorous substance, resembling alizarine in appearance.

**NEW ZEALAND FLAX.**—Among the substances used in the arts as fibers, the New Zealand flax at one time promised to be of great promi-

nence; but owing to its high price, and the difficulty and expense of bleaching it, it has not been employed in so many applications as its strength and other qualities warrant. The principal difficulty in making a profitable use of it has been from the tenacity of the gum which envelops the fibers. This, according to a late writer, consists of three distinct substances: first, an actual gum, found only on the upper leaves and near their bases, and readily dissolved by boiling water, or removable by mechanical means; second, a bitter principle, which it is suggested may be used as a dye or stain for wood, and a mucilage, both easily extracted; and third, a kind of cement, only to be removed by boiling water and alkali, and upon the retention of which the strength of the fibers depends.

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#### ITEMS FROM VARIOUS SOURCES.

**PALACE STOCK CARS.**—The first train of palace stock cars from the West to the East passed over the Pennsylvania Railroad and its western connections about the 1st of May. The event is of general interest, in its humanitarian as well as economic aspect. The train consisted of eleven cars, containing one hundred and seventy-two head of cattle. The cars are arranged for holding sixteen head each, with separate stalls connected by gates, which are closed as soon as an ox gets his place. These stalls are readily adjustable to the size of the animal, so as to afford ample room for lying down and rising up. A comfortable bed of shavings is strewn over the bottom. At the top of each car is a feed-box, with canvas spouts, which communicate with the feed-basins underneath; also a water tank. By this arrangement the cattle can be fed and watered during the transit without unshipping. The cars are about eight feet longer than ordinary stock cars, and there is ample room to prevent the animals from being bruised or jarred. Underneath are the passenger car trucks, with elliptical spring and swinging bar. It is the intention to have stock trains of the above description to run from St. Louis to New York in ninety-six hours. Under the old plan, ten days were often consumed in making the trip, and the discomfort to cattle and shrinkage in their weight were very great.

**IMMIGRATION TO THE SOUTHERN STATES.**—The policy of dividing the large landed estates of the South into small farms, and inviting industrious and order-loving farmers to purchase them and make their homes upon them, is making some progress in that section. Rapid increase in production, material improvement, and accumulation depend upon its more general adoption. A late number of the Natchitoches (Louisiana) Times says that, during the preceding week or two, some of the largest land-owners of that vicinity have been quietly talking over certain plans to induce immigration to the parish. The basis is a subdivision of large tracts of land into small farms of forty acres or more, and the sale to actual settlers of alternate lots, at low prices, and on long credit, or even the donation of every third or fourth lot to industrious families from abroad, whose success might induce their friends to purchase the intervening farms. The Times prefers immigrants from France, Louisiana being originally a French settlement, and still continuing to be largely French in many of its social, religious, and political features, and favors especially the organization of a plan to induce the farmers and mechanics of Alsace and Lorraine to occupy

the fertile fields, which are capable of supporting a much denser population than has ever occupied them.

**THE ALMOND AND OLIVE IN CALIFORNIA.**—Captain Jonathan Mayhew, of Santa Barbara County, California, has succeeded in growing several fine specimens of the almond tree. One tree of the Languedoc variety, two years old from the bud, produced five hundred and fourteen nearly full-sized almonds. The tree is eight feet high with a top spread of nine feet. Other trees of the same age are equally thrifty. A three-year-old Languedoc tree measures thirteen feet high, with a top spread of thirteen feet. Other three-year-old trees nearly equal this one. Four trees, four years old, are bending with fruit. These older trees will probably average 3,000 or 4,000 nuts, or 30 to 40 pounds per tree. The wholesale price of the nuts is seldom less than 25 cents per pound. Captain Mayhew has also, on his farm, three-year-old olive trees propagated from cuttings, three inches in diameter, which are ten and one-half feet high, and are thrifty and promising. The Santa Barbara region presents very favorable conditions for olive growth. Captain Mayhew does not resort to irrigation, but practices deep plowing

**SHEEP HUSBANDRY IN CALIFORNIA.**—Monterey County is a great sheep-walk. Flint, Bixby & Co., of San Juan, on 200,000 acres of land, graze 75,000 sheep and thousands of cattle. We learn that they sheared this spring over 300,000 pounds of wool, realizing \$95,000. The Breens, on 25,000 acres, feed 3,000 sheep and large numbers of cattle and horses. P. Vacca & Co. have 10,000 sheep; Hernandez, 20,000; J. D. Carr, 15,000; E. J. Donnelly, 16,000; A. Mitchel, 2,500; Reynolds & Russel, 5,000; Gooderich & Baker, 8,000; Moore, 7,000; Pendleton, 1,500; Grogan, 1,500; Dr. Matthews, 1,500; D. Wilson, 1,500; D. Dodge, 2,000; W. H. Stone, 2,000; J. W. Stone, 3,000; N. Crooks, 2,000; E. James, 2,000; Wilcox & Bro., 3,000; U. Matthews, 2,000; T. Butterfield & Son, 1,000, besides 200 Angora goats, worth from \$100 to \$500 each. The total of all the above flocks is 203,500 sheep.

**THIN SEEDING.**—George Wilkins, Wix Vicarage, (England,) a correspondent of the *Gardeners' Chronicle*, gives the results of his experience as follows: For fourteen years in succession he never exceeded two pecks, or sixteen quarts, of seed-wheat to the acre, and sometimes used less than one peck, and yet, in each of two of those years he harvested 56 bushels of wheat to the acre, and the average of the fourteen crops in fourteen years was 44 bushels to the acre. The seed was sown with a drill. One of the conditions necessary to the production of large crops from thin seeding he states to be the sowing of the seed early in the fall, that the plants may have a fair start before the setting in of winter. Thorough drainage he also deems an essential condition.

**CULTIVATION OF THE PLAINS.**—R. S. Elliott, industrial agent of the Kansas Pacific Railroad Company, who has been experimenting extensively along the line of the road with the cereals, grasses, and fruit and forest trees, reports that his "experience already warrants the belief that we may grow on the plains, without irrigation, lucern and other valuable forage plants; winter and spring grain, and trees from seeds, as far west as the one hundredth meridian, and probably to the mountains. Experiments now in progress, justify the faith that trees from seeds, cuttings, and young plants may be grown for timber, fuel, and fruit in all parts of the plains between the Platte and the Arkansas Rivers. The growth of living storm-shields along the line of the Kan-

sas Pacific Railway, and timber for the uses of the road, is only a matter of effort and time."

**TENNESSEE INDUSTRIAL EXPOSITION.**—We note with pleasure the complete success of the exposition of the industries of Tennessee, which took place at Nashville in May. Much interest was manifested in the enterprise, which was the first of its kind in the State, and its originators and managers met with ample encouragement. The substantial and capacious building devoted to the exposition was thronged with visitors for twenty days. Tennessee is rich in many of the chief elements of material wealth, and such exhibitions as this will soon teach all her people that it is their true policy to develop them.

**THE CENSUS** establishes the fact that petite culture, or small farming, has made rapid encroachments during the past decade upon the boundaries of large farms and the system of mixed husbandry in the vicinity of our large cities. The production of poultry, eggs, milk, small fruits, vegetables, &c., can be successfully engaged in upon small parcels of land and with limited means in the neighborhood of a good market, and the number who have within the past few years embarked in this business is greater than has been generally supposed.

**VETCHES.**—Dr. H. R. Casey, the correspondent of the Department for Columbia County, Georgia, writes that last winter he sowed in his garden a pint of vetch seed, procured in France, as an experiment. On the 11th of June it had produced a beautiful bed of green forage, over a foot high and very thickly matted. The opinion is expressed by our correspondent that the plant will make good green pasturage, but will possess more value as dry forage. The yield on good ground, he thinks, would be heavy.

**A POTATO PLANTER.**—There has recently been patented another machine for planting potatoes, which, it is claimed, makes the furrow, deposits the seed, and covers it up, by going but once over the ground, and can be used with either one or two horses. A machine of this character that will do its work well is wanted by farmers, and we hope that complete success may soon be obtained in this class of agricultural implements.

**LIMA BEANS IN CALIFORNIA.**—Captain Jonathan Mayhew, of Santa Clara Valley, has a field of 100 acres in Lima beans. The crop is in very promising condition. The beans sell at about  $3\frac{1}{2}$  cents per pound when the common white beans bring  $2\frac{1}{2}$  cents, and are said to be no more trouble to cultivate or to market.

**SQUIRREL SKINS VALUABLE.**—Squirrels are so great a nuisance in California that a bounty of 10 cents per head is paid for their destruction. Mr. Frank Tracy has killed and trapped 10,000 in one season, for which he got \$1,000 bounty. He sent the skins to Paris, where they sold at 15 cents each, swelling his receipts to \$2,500 for his captures. The skins are said to be more valuable than those of the rat or kid in the manufacture of gloves.

**TEXAS CATTLE.**—A dispatch from Abilene, Kansas, dated June 9, states that one dealer in Texas cattle arrived there that day with 5,000 head of mixed stock and 2,000 beeves. A close calculation foots up 132,000 head of Texan cattle now within a radius of twenty-five miles of Abilene.

# METEOROLOGY.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY THE OBSERVERS OF THE SMITHSONIAN INSTITUTION.]

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and the amount of rain and melted snow, (in inches and tenths,) for April and May, 1871, at the stations named. Daily observations made at 7 a. m., and 2 and 9 p. m.

Stations in States and Territories.	APRIL.					MAY.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
<b>MAINE.</b>												
Houlton .....	29	59	9	21	43.3	6.20						
State Agr. College	21	65	1	23	40.9	4.01	30	89	5	34	50.7	3.48
Surry .....	21	68	6	27	43.1	.....	30	94	4, 5	38	.....	.....
Williamsburg .....	21	62	1, 6	18	37.3	4.55	30	88	5	30	49.8	2.43
West Waterville .....	10, 21	68	1	25	44.1	2.20	30	90	5	34	53.8	4.10
Gardner .....	10, 22	58	1	30	44.1	3.38	30	86	4	36	53.8	3.92
Lisbon .....	7, 21	68	1	24	42.9	5.23	30	93	4	35	53.1	5.80
Staudish .....	21	72	1	29	44.2	3.45	30	95	4	36	55.0	4.94
Norway .....	8, 21	68	1, 6	29	42.3	4.20	30	92	4, 5	34	55.0	4.70
Cornish .....	8	70	1	23	43.1	4.33	21	91	4, 5	34	54.2	4.37
Cornishville .....	7, 8	70	6	27	44.4	4.30	30	93	4, 5, 7	35	56.1	5.30
<b>NEW HAMPSHIRE.</b>												
Stratford .....	8	77	1	15	40.0	4.30	21	95	8, 11, 14	33	51.7	2.94
Whitefield .....	8	79	1	13	42.2	3.21	21	89	8, 11	36	52.5	2.87
Summit Mt. Wash- ington.	8	47	5	4	25.0	.....						
Tamworth .....	8	84	1	22	43.9	4.55	30	92	4, 5	35	56.0	5.18
Contoocookville ..	8	85	1, 2	30	47.4	.....	30	94	5	38	59.0	3.40
Amoskeag .....	8	88	1	17	44.3	2.60	30	95	11	34	55.9	3.35
<b>VERMONT.</b>												
Lunenburg .....	8	75	6	23	43.1	5.50	21	90	14	34	54.0	3.63
Craftsbury .....	8	72	1	16	39.4	4.04	21	88	8, 13	32	50.5	2.44
South Troy .....	8	72	1	14	43.6	4.64	21	93	8	34	53.9	2.72
Randolph .....	8	82	1	21	44.7	2.53	30	93	16	34	55.1	3.50
Woodstock .....	8	78	1	22	42.2	2.37	29	86	24	33	52.4	3.74
Norwich .....	8	82	1, 6	26	47.3	2.40	29, 30	90	5, 11, 14	38	58.3	2.90
Near St. Albans ..	7	67	6	24	42.6	3.30	21	87	8	35	54.2	2.10
West Charlotte ..	7	70	1	25	46.8	6.13	21	94	10	37	57.5	2.88
Panton .....	9	76	1, 5	28	44.8	4.98	30	94	18	38	56.1	2.00
Castleton .....	8	83	6	24	46.3	1.64	30	92	11	38	56.7	4.67
<b>MASSACHUSETTS.</b>												
Kingston .....	8	84	6	29	46.2	2.05	30	96	10	39	56.3	4.00
Newbury .....	8	89	1	27	45.8	.....	30	97	10	39	57.4	.....
Lawrence .....	8	82	6	30	45.2	2.78	29, 30	94	3, 4, 5	39	58.1	3.73
Georgetown .....	8	84	1	26	45.4	3.62	.....					
Milton .....	8	87	2, 11	33	48.5	2.96	30	97	8	41	58.9	3.46
Cambridge .....	8	86	2	32	49.3	.....						
North Billerica ..	8	88	3, 5, 6	32	48.0	.....	30	94	10	38	57.9	.....
West Newton .....	8	91	2	30	48.3	1.93	30	100	14	40	58.9	3.67
New Bedford .....	8, 10	73	6	30	46.8	3.76	30	84	10	41	55.0	2.57
Lunenburg .....	8	86	1	27	47.2	3.35	30	93	5	37	57.6	4.70
Mendon .....	8	82	1, 2	28	46.4	3.20	30	88	11	38	57.2	4.40

Table showing the range of the thermometer, &c., for April and May—Continued.

Stations in States and Territories.	APRIL.					MAY.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
<b>MASS.—Contin'd.</b>												
Amherst.....	8	Deg. 85	1	Deg. 27	Deg. 48.0	In. 3.09	30	Deg. 93	5	Deg. 41	Deg. 57.8	In. 3.82
Richmond.....	8	80		26	47.3	3.45	29	90	11, 15	32	57.4	2.86
Williams College.	8	82	1, 6	28	46.2	2.29	30	90	11	36	56.3	2.19
Hinsdale.....	8	78	2	26	44.9	2.15	-----	-----	4, 5, 11	34	-----	-----
<b>RHODE ISLAND.</b>												
Newport.....	21	68	6	32	48.6	3.20	30	80	14	40	56.6	4.18
<b>CONNECTICUT.</b>												
Columbia.....	8	88	6	26	49.5	3.80	30	97	8	41	59.2	4.03
Middletown.....	8	87	6	29	48.8	3.14	30	90	11	41	57.4	4.80
Southington.....	8	86	6	30	49.2	2.35	30	86	5	39	57.9	5.05
Round Hill.....	8	86	6	29	50.9	2.93	30	91	5	41	59.1	3.15
<b>NEW YORK.</b>												
Moriches.....	10, 26	73	3	25	49.8	4.31	27	92	9	47	61.5	2.37
South Hartford.....	8	84	6	22	48.6	1.95	21	92	8	38	60.3	2.10
North Argyle.....	9	77	1	21	45.5	2.50	-----	-----	-----	-----	-----	-----
Garrison's.....	8	85	1, 2	35	53.0	2.98	30	94	5	44	59.0	2.11
Throg's Neck.....	8	86	6	35	51.7	-----	30	91	4	45	61.1	-----
White Plains.....	8	84	1, 2, 3	34	52.1	-----	31	85	5	43	59.3	-----
Cooper Union.....	9	81	1	35	53.3	3.45	30	89	14	44	61.8	4.90
Brooklyn.....	8, 9	83	1, 2, 6	36	53.6	3.84	30	92	5, 14	46	61.6	3.90
Flatbush.....	8	88	17	30	51.8	5.30	30	91	5	41	60.6	2.78
Glasco.....	-----	-----	-----	-----	-----	-----	20	88	7, 8, 9, 11	40	58.3	7.30
Amsterdam.....	8	86	1	25	40.7	-----	-----	-----	-----	-----	-----	-----
Middleburgh.....	-----	-----	-----	-----	-----	-----	21, 29	93	11	34	59.1	5.20
Fairfield.....	8	72	5	25	43.7	-----	30	86	8	35	54.2	-----
Cooperstown.....	8	82	6	22	46.0	2.66	29, 30	90	1, 8	37	56.0	3.18
Gouverneur.....	8	77	1	20	42.8	-----	30	87	10	34	54.0	1.76
North Hammond.....	8	76	5, 6	24	49.0	4.60	31	88	8, 9, 14	40	58.0	2.19
Lowville.....	8	73	6	20	43.2	2.78	21	88	10	34	53.9	2.20
South Trenton.....	8	74	14	20	42.8	4.41	30	92	{ 1, 4, 8, 9, 15 }	40	55.5	2.97
Cazenovia.....	8	77	5	26	45.3	-----	21	90	9, 13	37	55.6	-----
Oneida.....	8	80	1	27	48.0	7.71	30	94	8, 9, 10	40	58.0	4.12
Depanville.....	7	72	5	25	44.2	3.70	30	82	10	34	53.3	1.82
Oswego.....	7	77	1, 6	28	45.8	2.88	30	82	8	39	53.3	1.83
Palermo.....	8, 9	75	6	23	44.3	2.80	29	92	10	37	55.3	0.06
North Volney.....	8	75	6	26	45.0	-----	30	92	10, 13	37	56.7	-----
Waterburgh.....	-----	-----	-----	-----	-----	-----	30	95	9	33	56.2	-----
Nichols.....	8	87	5	28	48.4	-----	29, 30	98	10	35	57.5	-----
Newark Valley.....	8	84	6, 18	28	47.6	2.40	{ 20, 21, 29, 30 }	92	11	35	55.7	3.90
Rochester.....	7	84	1	33	50.7	2.75	30	92	8	41	61.9	1.70
Little Genesee.....	7	84	17	25	47.8	2.39	25	91	9	30	56.1	1.64
Angelica.....	7	79	14, 18	26	48.7	-----	25	87	11	28	53.8	1.01
Carlton.....	8	76	1	28	46.3	2.50	30	87	4, 8	40	55.5	1.38
Suspens'n Bridge.....	8	77	1	29	47.2	3.50	30	92	11, 14	40	55.0	1.30
Lockport.....	7	75	5	23	47.2	2.26	30	89	7, 8	40	57.0	1.65
Buffalo.....	24, 26	70	5	31	47.0	2.68	29	85	8	36	56.5	1.99
Jamestown.....	7	80	17	31	48.7	2.00	25	86	9	34	56.0	1.60
<b>NEW JERSEY.</b>												
Jersey City.....	9	89	2, 6	35	54.3	3.44	30	92	5	45	62.1	4.01
Paterson.....	9	87	6	32	52.7	1.89	-----	-----	-----	-----	-----	-----
Newark.....	9	85	2, 6	32	52.8	3.69	30	88	4, 8, 9	40	-----	-----
South Orange.....	8	88	2	32	52.3	3.13	30	90	9	40	59.3	3.82
Trenton.....	9	85	2	39	57.8	2.14	30	89	9	46	66.0	2.33
Rio Grande.....	12	83	2, 16	34	51.8	3.50	26	88	6, 14	45	61.1	3.25
Moorestown.....	8	84	2, 3	36	54.2	1.50	30	90	9	45	61.7	3.41
New Germantown.....	9	82	1	34	52.9	2.32	30	92	9	43	61.0	3.82
Readington.....	8	84	14	36	54.6	-----	30	90	9	38	62.9	-----
Greenwich.....	8	83	2	38	56.3	1.44	26	87	14	45	62.0	2.97
Vineland.....	8, 9	84	2	36	56.1	2.40	26	91	11	41	64.3	3.00





Table showing the range of the thermometer, &amp;c., for April and May—Continued.

Stations in States and Territories.	APRIL.					MAY.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
VA.—Continued.		Deg.	Deg.	Deg.	In.		Deg.	Deg.	Deg.	Deg.	In.	
Keswick Station . . . . .	8	90	22	41	49.4	.....	26	95	11	41	65.9	.....
Lexington . . . . .	8	85	15	32	56.6	2.53	27	86	10	41	62.8	5.55
Lynchburg . . . . .	8	82	15	44	64.1	2.25	26	85	10, 11	47	64.7	4.75
Near Wytheville . . . . .	8	82	24	38	55.2	3.30	28	84	6	43	61.8	4.70
WEST VIRGINIA.												
Weston . . . . .							25, 26	90	6, 11	42	62.9	.....
NORTH CAROLINA.												
Goldsboro . . . . .	8	92	24	43	66.3	4.26						
Oxford . . . . .	8, 10	86	2	43	62.0	2.15	27	88	10	46	69.0	5.15
Fayetteville . . . . .	7	87	24	44	64.4	2.95	27	90	{ 8, 11 19, 20 }	50	68.4	4.00
Albemarle . . . . .	8	93	2	37	60.9	3.50	27, 28	90	7	38	65.7	6.93
Statesville . . . . .	8, 9, 10	84	23, 24	34	59.7	2.25	26, 27	83	7	31	63.8	5.63
Asheville . . . . . (A)	8	80	1, 22	41	58.3	3.50	26	83	6	41	62.4	3.50
Do . . . . . (H)	30	78	23	40	58.2	.....	{ 8, 19 20, 28 }	76	6	40	62.1	.....
SOUTH CAROLINA.												
Aiken . . . . .	7, 8	88	22	50	.....	3.57	26	88	7	44	69.4	1.28
Smith's Ford . . . . .	8, 10	84	23	42	65.3	3.46						
Gowdeysville . . . . .							24	87	7	44	70.3	4.55
GEORGIA.												
Berne . . . . .	20, 30	82	5	44	65.5	3.00	3	83	7	54	69.4	1.95
St. Mary's . . . . .	30	87	2, 3, 5	54	69.8	3.00	3	86	7	50	73.4	2.49
Quitman . . . . .	30	87	2	49	69.5	2.80	27	92	7	52	73.7	4.15
Macon . . . . .	30	85	23	48	66.7	5.50	31	92	6	50	72.3	4.65
Atlanta . . . . .	8	85	2	42	63.8	5.06	26, 27, 28	85	6	43	67.9	6.63
ALABAMA.												
Carlowville . . . . .	29	84	1, 2	49	67.9	9.22	31	90	11	50	72.9	6.04
Selma . . . . .	29	84	2	43	67.6	12.50	31	89	7	52	71.9	5.75
Moulton . . . . .	5	80	2, 24	42	64.1	6.96	31	84	7	45	67.6	4.03
Greene Springs . . . . .	6	82	2	39	64.1	13.30	25, 31	87	7	44	68.7	5.80
Coatopa . . . . .	29	84	2	41	65.3	.....	25	90	7	47	69.5	7.10
FLORIDA.												
Near Port Orange . . . . .	13	90	2	50	70.6	1.30	2, 10, 27	89	6	56	74.5	1.68
Jacksonville . . . . .	30	92	2	55	72.3	0.60	24	91	7	55	76.0	3.65
Pilatka . . . . .	30	94	5	48	71.8	1.38	2	96	7	54	75.1	4.39
Ocala . . . . .	30	91	3	46	70.7	.....	24	92	9	50	63.2	.....
Tampa . . . . .	29	86	5	46	68.5	.....	3, 24	86	7	55	71.0	.....
TEXAS.												
Clarksville . . . . .	29	86	22	46	68.9	.....	30, 31	87	7	56	73.8	.....
Houston . . . . .	27	94	1	43	72.3	.....	14, 28	94	10, 11	58	77.4	.....
Gilmer . . . . .	29	90	22	39	66.7	6.73	30, 31	90	5	50	72.0	7.92
Clear Creek . . . . .	14, 27	90	1	45	69.3	0.62	21	90	11	56	74.7	2.30
Oakland . . . . .	14	99	1	44	70.8	1.90	31	94	4	57	76.7	5.65
Sand Fly . . . . .	14	88	1	37	69.4	1.70	30	91	11	55	77.8	5.49
Bluff . . . . .	14	90	1	42	72.0	1.75	29, 30, 31	90	11	56	76.3	4.75
Victoria . . . . .	29	86	1, 2	52	72.3	0.00	29	89	10	56	73.0	2.10
Clinton . . . . .							17	92	11	55	75.1	3.20
Austin . . . . .	14, 28	87	1	45	68.9	1.30	17, 30, 31	89	10	57	74.3	4.92
LOUISIANA.												
New Orleans . . . . .	28	84	1, 2	51	68.7	2.15	31	87	11	57	71.0	6.00
Ponchatoula . . . . .	29	88	2	48	72.0	3.80	31	90	11	54	75.6	6.50

Table showing the range of the thermometer, &amp;c., for April and May—Continued.

Stations in States and Territories.	APRIL.					MAY.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature. Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature. Rain and melted snow.		
<b>MISSISSIPPI.</b>		<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i> <i>In.</i>		<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i> <i>In.</i>		
Marion Station .....						31	94	6	48	69.8	8.60	
Philadelphia .....	9	86	1	40	63.5	10.80						
Grenada .....	30	83	2, 22, 23	40	63.7	8.10						
Near Brookhaven .....	9, 30	85	1	40	65.0	5.10	30	89	11	48	68.9	9.60
Holly Springs .....	29	86	22	43	61.0	6.60	31	90	6	43	68.3	7.40
<b>ARKANSAS.</b>												
Helena .....	5	83	12, 22	44	64.7		26, 31	90	6	51	70.0	
Clarksville .....	5	88	1	38	61.4	4.50	31	91	5	50	69.6	5.33
Mineral Springs .....	29	88	22	32	61.4	7.19	15, 20	86	5, 11	44	67.7	7.06
Fayetteville .....	29	84	1, 11	32	60.5	7.52	13, 17, 31	86	12	42	68.5	5.17
<b>TENNESSEE.</b>												
Elizabethton .....	8, 10	82	23	32	69.5	5.91						
Tusculum College .....							25	90	6	44	65.5	
Knoxville .....	7	79	2	38	59.5	4.71	24, 27	86	6	44	66.0	4.38
Lookout Mountain .....	6	81	23	43	63.2		24	85	6	43	66.9	
Clearmont .....	6	82	2	41	61.8	5.68	24	83	6	43	64.7	4.24
Austin .....	6	82	10	36	61.0	3.86	27, 28, 29	88	7	40	67.7	4.10
Clarksville .....	6	84	23	38	61.7	4.76	25, 26	84	6	45	65.6	4.33
Trenton .....	5	85	23	40	64.3	7.75	31	90	6	44	68.8	3.60
La Grange .....	29	84	1	43	63.1	5.70	{ 15, 25, } { 26, 31 }	88	6, 10	48	68.8	4.20
<b>KENTUCKY.</b>												
Pine Grove .....	7, 8, 10	80	1, 2, 23	36	57.9	2.26	26, 29	88	9, 10	42	65.5	6.85
Danville .....	30	82	1, 22, 40	40	60.6	2.16	27	90	5, 6, 9, 10	46	68.0	6.25
Shelby City .....	6	83	23	37	60.8	1.72	28	90	6	42	67.1	1.37
Near Louisville .....	6	84	23	27	59.8	2.06	26, 27, 28	91	7	34	64.0	5.97
<b>OHIO.</b>												
Salem .....	10	85	1, 2, 15	31	53.3	1.00	29	95	6, 8, 9, 17	40	61.2	1.23
New Lisbon .....	7	81	2	29	52.3	1.53						
Steubenville .....	8	78	2	33	57.0	1.76	29	87	7	45	65.0	4.32
Martin's Ferry .....							29	91	6, 8, 11, 14	40	61.7	
Painesville .....	7	80	2, 23	32	51.0	3.05	20, 25, 29	84	8	32	58.5	2.85
Milnersville .....	8	81	24	28	48.0	2.70	25	87	8, 10	32	56.0	4.25
Cleveland .....	7	85	2	30	51.3	2.15	25	89	8	39	58.0	2.02
Adams's Mills .....							25, 29	89	6	44	64.4	3.30
Pennsville .....							26, 28, 29	90	7	40	63.6	2.57
Gallipolis .....	8	84	2	34	59.2	1.48	25, 26, 29	89	7	40	65.0	3.65
Oberlin .....	7	80	1	28	51.6	1.20	29	91	6, 8, 9	38	59.2	1.10
Kelley's Island .....	8	72	1, 2	36	50.2	0.66						
Sandusky .....	7	81	2	36	52.1	2.89	20	86	8	43	61.6	1.77
Carson .....	7, 8	78	1	36	54.2	1.90	29	88	7, 9	42	62.5	1.10
North Fairfield .....	7	81	1	40	54.3	1.90	25	86	6, 8	42	61.9	1.39
Gambier .....	7	94	2	32	51.6	2.09	29	83	6	42	60.5	2.10
Westerville .....	8	80	1	35	54.3	1.11	29	90	6	41	62.8	2.24
Williamsport .....	8	82	16	34	56.1	3.40						
North Bass Isl'd. .....	7, 8	74	1	36	50.3	1.88	31	88	9	44	60.4	2.04
Marion .....	8	75	2	33	53.2	1.72	26	87	6	41	61.1	2.70
Hillsboro' .....	7, 8	78	1	35	54.7	1.32	29	85	10	41	61.6	4.60
Bowling Green .....	7	86	14, 23	33	54.9	3.00	29, 31	94	8	42	64.2	1.80
Kenton .....	8, 19	79	1	40	59.8	4.60	29	94	5, 8, 10	47	65.7	5.00
Bellefontaine .....	7	78	22	33	53.9	2.76	29	92	6	38	62.9	2.86
Urbana Univ .....	7, 8	80	1	34	56.4	2.84	25	91	6	40	64.6	2.00
Bethel .....	7, 8	81	23	32	59.5	2.13	29	91	6, 9	40	64.5	5.63
Carthage .....	9	79	15	36	57.0	4.59	29	89	5	41	64.5	3.03
Jacksonburg .....	8	79	1	36	57.4	2.70	25, 26	88	6, 7	41	65.0	5.50
Oxford .....	7, 18, 10	79	22	31	55.0	1.67	27	95	6	40	65.0	2.77
Mt. Auburn Inst. .....	7	80	1	37	59.0	1.39	26, 28, 29	88	6	42	67.1	7.26
Cumminsville .....							28	93	6	41	65.9	
Cincinnati (H) .....	7	82	1	35	57.7	1.23	28	91	10	41	66.7	4.66
Do (P) .....	8, 10	84	23	34	60.4	1.30	27	97	10	42	68.4	5.35
College Hill .....	7	79	23	33	56.9	1.90	28, 29	92	6, 10	40	65.9	4.75

Table showing the range of the thermometer, &amp;c., for April and May—Continued.

Stations in States and Territories.	APRIL.					MAY.							
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	Deg.	Deg.	Deg.	In.	Deg.	Deg.	Deg.	Deg.	Deg.	In.			
MICHIGAN.													
Detroit							29, 31	92		9	37	61.6	2.43
Monroe City	7, 8	78	2	38	52.9	3.57	20, 25	90		9	45		
Ann Arbor	7	81	1	35	50.2	2.86		88		9	42	61.5	1.84
Macon	7	83	1	31	52.3	2.25	20, 27, 29	91		9	44	64.2	3.10
Alpena	7	50	10	23	38.7	2.85		26	70	8	34	49.5	1.77
State Agr'l Col.	8	87	11, 22	32	49.8	2.97		31	94	8, 9	41	61.4	1.97
Olivet College	2	82	1, 22	32	49.5	3.76		20	91	5	40	61.3	3.59
Litchfield	7	82	1	29	50.3	4.20		29	88	6	41	62.0	3.53
Coldwater	7	81	1	25	49.1	1.60		29	90	10	32	59.2	1.63
Grand Rapids (H)	7	89	1	30	50.3	3.66		31	94	5	38	63.3	1.00
Do (S)	7	85	1	29	49.0	3.39		28	89	5	39	60.3	1.32
Northport	7	66	10	23	41.5	2.75		20	87	4	34	54.6	1.81
Benzonia	7	72	10, 15	30	44.8	3.20		28	86	4	36	54.0	1.60
Copper Falls	6	65	11	14	34.0	2.80		31	83	8	33	52.3	2.10
Ontonagon	26	58	10	26	39.0	2.00		19	84	8, 9, 10	36	54.8	1.60
INDIANA.													
Fort Wayne	7	85	1	31	53.9	1.70		25	94	5	39	64.2	2.40
Aurora	7	84	23	30	58.7	2.01		25, 29	95	5	44	67.4	2.51
Vevay	7, 18	82	23	32	58.8	2.77		25, 26, 27	66	6	44	66.0	3.16
Mt. Carmel	7	82	1, 13	40	58.6	1.40		29	96	6	44	67.9	1.80
Spiceand	7	82	1, 22	34	56.0	1.47		26	94	5	39	65.2	2.58
Laconia	6, 7	84	23	37	60.3	2.10		25, 28	86	6	43	67.3	5.33
Knightstown	7	81	12	32	57.0	1.41		26	92	5, 7	41	65.2	2.56
Indianapolis	7	79	1	36	56.1	1.89		26	88	4	39	65.6	2.37
Bloomington	6	79	22, 23	39	57.0	2.71		28	88	5, 6	41	65.7	1.76
Rear La Porte	7	78	11	33	53.2	2.90		26	89	5	37	64.1	3.00
Rensselaer							27, 28	90	5	40	65.6	3.55	
Merom	6, 7	82	1	38	60.2	2.55		26	89	5	42	68.8	2.10
New Harmony	6	84	1	42	61.0	1.94		24	89	6	46	68.7	2.95
ILLINOIS.													
Chicago	7	81	11	36	53.6	2.97		30	87	4	39	61.1	3.55
Near Chicago	6	86	1, 11	34	51.9		19, 20	90	4	38	59.0		
Evanston	7, 8	76	11	35	49.4	2.62		20	88	4	36	57.3	2.73
Marengo	7	82	1	28	48.1	2.05		28	88	5	36	61.8	2.07
Charleston	6	83	1	32	56.2	1.41							
Aurora	7	81	11	31	51.2	2.33		27	85	4	36	62.1	4.48
Louisville	5, 6	85	1	34	59.3	0.90		26	95	5	40	72.0	5.90
Belvidere	6, 7	86	11, 12	32	49.6	2.40		28	90	4	36	61.6	2.06
Decatur	6	82	1, 11	34	55.5	0.00		31	90	17	36	64.1	2.35
Pana	6, 7	82	1	34	57.0	0.40		{ 19, 20, 26, 31 }	88	5	41	67.0	1.40
Rochelle	7	82	11	32	51.0								
Wyanet	6	86	1	31	52.2	2.93		15, 31	89	10	37	66.2	2.50
Tiskilwa	6, 7	84	1	30	53.7			31	95	10	38	65.3	
Hennepin	6	87	15	30	55.0								
Do (S)	6	84	1, 11	34	54.2	1.60		31	91	5, 6, 9	40	65.1	2.50
Do (O)	6	84	1	33	57.1	2.58		15, 31	91	5	41	67.0	1.93
Peoria	6	84	1	33	57.1	2.58		31	98	10, 11	38	65.6	1.00
Havana	6	90	12	34	68.5	2.05		31	98	10, 11	38	65.6	1.00
Waterloo	6	85	21	36	59.8	0.65		31	93	5	41	69.1	2.90
Dubois	7	78	1	35	56.7	1.22		31	94	7	43	66.5	3.76
Galesburg	5, 6	82	11	33	54.6	2.64		30	88	5	40	65.6	2.72
Manchester	5	90	11, 22	36	58.7	0.95		28	90	1	38	66.8	2.48
Mt. Sterling	6	84	11	37	61.0	1.20		31	91	4	46	69.0	0.95
Andalusia	7, 26	79	11	32	54.5			27	89	6	36	64.6	
Oquawka	6	87	11	36	57.9	2.78		31	93	5	42	68.8	1.34
Augusta	7	87	11	35	58.1	3.05		31	88	4	41	66.9	2.26
Warsaw	6	86	11	32	57.1	2.81		31	90	5	41	66.3	3.48
WISCONSIN.													
Sturgeon Bay	8	61	10	28	41.7	3.35		29	84	3, 4	34	55.1	2.90
Manitowoc	7	71	10	30	44.7	2.95		31	80	4	35	54.6	2.09
Hingham	7	86	14	28	47.5			28	86	9	33	58.7	
Milwaukee	7	84	1	30	46.4	3.20		20	90	4, 5	35	56.2	2.24
Appleton	7	76	10	32	47.4					4	38	56.2	
Geneva	6, 7	84	1, 14	31	48.5	3.07		28	92	4	33	60.4	2.65

Table showing the range of the thermometer, &c., for April and May—Continued.

Stations in States and Territories.	APRIL.					MAY.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
<b>WISCONSIN—Con.</b>												
Waupaca .....	7	Deg. 83	10	Deg. 29	Deg. 47.4	.....	{ 19, 28, 29, 30, 31 }	Deg. 90	3, 4	Deg. 37	Deg. 62.1	.....
Embarrass.....	7	83	10	27	45.8	3.87	28	92	3, 5, 7	36	60.5	2.04
Rocky Run.....	7	86	10	32	49.0	3.81	31	90	4	38	61.5	4.75
Madison Univ.....	7	82	10, 11	33	48.7	2.00	31	86	4, 5	38	61.2	3.11
Edgerton.....	7	86	11	32	51.2	3.70	31	96	4, 5	40	64.5	4.20
Mosinee.....	7	77	10	24	41.9	12.16	.....	.....	.....	.....	.....	12.25
Baraboo.....	6, 7	84	10	30	50.0	2.42	31	90	5	36	63.5	.....
New Lisbon.....	7	86	11	30	49.3	.....	{ 27, 29, 30, 31 }	94	3	38	63.9	.....
Bayfield.....	6	60	10	24	36.9	.....	.....	.....	.....	.....	.....	.....
<b>MINNESOTA.</b>												
St. Paul.....	6	80	10	23	48.5	4.11	19, 31	92	3	40	65.2	2.79
Minneapolis.....	6, 7	76	10	25	45.5	5.00	31	91	3, 5	38	63.2	3.12
Koniska.....	7	83	10	25	42.2	4.95	12	90	3, 10	38	57.4	2.40
Sibley.....	7	79	9	24	46.2	1.69	31	90	5	36	63.0	3.24
Litchfield.....	6	80	10	24	45.0	3.60	31	88	3, 4, 5	40	61.8	1.60
New Ulm.....	7	85	10	25	48.6	2.59	19, 31	92	3	39	65.1	1.30
<b>IOWA.</b>												
Clinton.....	6	94	11, 20	30	50.0	4.75	.....	.....	.....	.....	65.0	.....
Dubuque.....	6, 7	83	11	32	52.0	2.23	31	89	4, 5, 9	40	65.0	1.87
Monticello.....	6	88	{ 9, 10, 11, 22 }	30	51.1	3.00	31	98	5	38	64.8	1.90
Durant.....	6	88	11	30	53.4	1.35	31	97	4	36	64.5	1.40
Bowen's Prairie.....	6	88	22	23	53.3	.....	31	98	5, 6	34	64.1	1.55
Fort Madison.....	5, 6	81	22	31	55.8	2.41	31	93	10	34	65.8	.....
Guttenberg.....	7	84	1, 9	23	49.5	.....	31	94	4, 5	39	62.7	2.51
Mount Vernon.....	6	87	11	30	51.7	.....	31	94	5	37	63.8	.....
Iowa City.....	.....	.....	.....	.....	.....	.....	31	95	6	33	65.9	2.00
Independence.....	6	83	11	29	51.1	1.20	31	95	5	37	65.6	3.15
Near Independence.....	6, 7	85	11	29	51.2	2.40	31	90	5	35	65.6	5.40
West Union.....	6	88	9	26	51.1	1.85	31	91	5	38	65.4	3.72
Rockford.....	5	81	11	33	51.5	.....	31	86	6	36	63.5	.....
Iowa Falls.....	6	82	9, 11, 12	28	53.3	3.90	31	87	6	33	66.4	3.87
Algona.....	6	88	10	24	49.3	.....	31	94	4	38	64.9	.....
Fontanelle.....	6	95	10	29	53.5	5.00	31	92	5	41	65.8	1.50
Grant City.....	6	93	9, 10, 11	28	52.2	3.00	31	95	5	38	66.9	1.28
Sac City.....	5	91	11	26	50.1	5.30	31	90	4, 5	38	53.1	3.10
Logan.....	5	94	9, 10, 22	27	51.1	2.70	19	85	5	33	63.4	1.60
Council Bluffs.....	6	93	11, 19	34	56.0	2.04	19	84	4	40	64.7	2.18
<b>MISSOURI.</b>												
St. Louis Univ.....	5, 6	86	11	40	61.7	0.30	31	91	4, 5	46	69.3	3.45
Allenton.....	6	93	1	34	59.7	1.00	31	97	7	41	66.3	4.35
Hematite.....	6	90	23	35	62.0	0.77	31	97	5	45	69.1	4.58
Hannibal.....	6	86	11	36	58.9	3.00	31	89	5	42	66.7	4.60
Rolla.....	6	89	22, 23	30	58.5	1.53	31	92	7	36	64.6	4.52
Keytesville.....	7	86	10, 11	34	59.5	.....	31	92	4	48	70.2	1.00
Jefferson City.....	6	84	1	33	58.3	.....	31	91	10	44	68.0	.....
North Springfield.....	6, 7	88	22	32	58.9	3.13	31	84	5, 10	45	65.3	5.12
Kansas City.....	6	89	1	30	55.7	3.10	14, 31	90	2	36	65.1	2.25
Oregon.....	6	94	10	27	56.6	2.14	31	87	4, 10	43	65.0	2.13
Corning.....	5	86	11	32	56.9	0.45	16, 20, 31	88	5	34	64.2	1.25
<b>KANSAS.</b>												
Athlison.....	6	94	10, 11	32	56.9	1.70	31	92	5	45	66.8	4.10
Williamstown (C).....	6	94	11	31	58.8	1.88	17, 31	96	5	36	68.9	3.43
Leavenworth.....	6	92	10, 20	33	57.4	2.80	31	90	6	38	65.9	5.03
Williamsburg.....	6	91	11	32	57.3	.....	14	94	5	40	64.7	2.50
Paola.....	6	90	11	34	59.3	2.55	31	88	5	45	66.3	3.83

Table showing the range of the thermometer, &amp;c., for April and May—Continued.

Stations in States and Territories.	APRIL.					MAY.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature. Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature. Rain and melted snow.		
KANSAS—Cont'd.												
Baxter Springs ..	17	86	1	34	60.0	2.40	{ 17, 18, } 19, 30	88	5	44	68.6	3.80
Lawrence .....	6	91	10	33	57.9	2.38	31	91	6	44	66.7	2.79
Holton .....	6	95	10	31	59.5	2.00	18, 31	92	4	45	69.3	2.75
Le Roy .....	6	91	11	32	56.9	4.23	11	92	6	48	70.2	3.42
Burlington .....	6	88	22	35	58.4	5.10	31	85	5	44	65.7	3.20
State Ag'l College	6	91	11	32	60.0	3.00	19	88	5	45	67.2	5.07
Council Grove ...	6	94	21	34	58.0	4.45	14, 16, 17	90	5	45	66.5	6.90
Douglas .....	6	90	10	36	60.3	4.20	14	88	5	46	66.9	4.70
Plum Grove .....	18	79	21	33	54.4	1.30	12	96	4	41	65.5	3.10
Burlingame .....	6	90	11	30	59.5	.....	14	92	5	37	64.0	.....
NEBRASKA.												
Omaha agency ...	5	92	11	24	53.6	2.98	19, 31	89	4	42	66.7	3.07
De Soto .....	6	95	10	26	54.3	3.13	14, 19, 30	88	4	41	65.9	1.13
Bellevue .....	6	96	10	31	56.3	1.80	19	90	4	44	66.8	2.40
Nebraska City ..	6	95	10	27	56.0	1.64	14, 19	89	4	42	65.8	2.11
Newcastle .....	4	95	10	9	.....	.....	.....	.....	.....	.....	.....	.....
Santee Agency ..	6	90	11	24	51.4	.....	15, 31	90	4, 5	42	66.9	2.50
UTAH.												
Coalville .....	3, 5, 28	70	11	27	46.2	.....	26, 27	85	24	40	57.2	.....
CALIFORNIA.												
Monterey .....	5	76	1	40	54.3	0.65	22	75	9, 11	40	41.2	9.46
Watsonville .....	.....	.....	.....	.....	.....	.....	2	84	7	40	57.7	0.50
Taylorsville .....	23	78	9	30	52.0	.....	2	82	18	39	57.3	.....
San Diego .....	4, 25	76	8	46	58.8	0.85	24	75	19	56	63.4	0.14
MONTANA.												
Deer Lodge City.	5	72	8, 9	25	39.6	1.32	27	87	12	29	53.1	2.29
Missoula .....	5	68	16	23	43.7	1.37	26	89	2	34	59.5	0.85
Virginia City .....	4	69	13	19	.....	.....	.....	.....	.....	.....	.....	.....
WASHINGTON.												
Cathlamet .....	.....	.....	.....	.....	.....	.....	4, 20	65	4, 11	40	51.9	.....
COLORADO.												
Denver City .....	.....	.....	.....	.....	.....	.....	28	86	2	42	65.2	2.56
Golden City .....	29	80	9	44	64.7	2.80	.....	.....	.....	.....	.....	.....
OREGON.												
Eola .....	24	68	15	34	47.0	2.84	1, 6, 26	62	12	34	50.3	4.95
Astoria .....	23	60	16	37	46.7	4.19	20	59	11	42	49.5	6.91
WYOMING.												
Laramie City ....	28	73	9	10	40.4	.....	5, 26	82	1	32	55.7	0.35

## NOTES OF THE WEATHER.

APRIL, 1871.

*Houlton, Me.*—Aurora 1st; snow, a foot, 11th; frost gone, spring birds, 17th.

*Williamsburg, Me.*—First thunder shower 7th; robins 8th; auroras 14th, 18th.

*West Waterville, Me.*—Frogs 6th; month  $1^{\circ}.32$  warmer than average for seven years.

*Standish, Me.*—Bees out 3d; swallows 13th; spring two or three weeks early.

*Norway, Me.*—Frogs 3d; thunder shower 22d; rain on fourteen days.

*Cornishville, Me.*—Thunder and lightning 11th; average April heat for forty years  $39^{\circ}.25$ ; this year  $44^{\circ}.41$ . The last three months have been very mild.

*Stratford, N. H.*—Robins 3d; frogs 19th; month cold and cloudy.

*Whitefield, N. H.*—Flowers 5th; frogs 8th; auroras 10th, 14th, 17th, 18th.

*Mount Washington, N. H.*—Thunder snow-storm 11th; snow, three days, to 13th.

*Tamworth, N. H.*—Plowing 4th; brilliant aurora 17th; flowers 20th.

*Contocookville, N. H.*—Month  $3^{\circ}.5$  above average; rain on seventeen days.

*Amoskeag, N. H.*—Aurora 17th; a wet but forward April.

*Craftsbury, Vt.*—Frogs 7th; butterflies 8th; first thunder 21st.

*Troy, Vt.*—Auroras, bright crimson, 9th, 13th, 18th; diffused 14th.

*Woodstock, Vt.*—Frogs 7th; first thunder-storm 11th; auroras 17th, 18th.

*Kingston, Mass.*—Brilliant auroras 17th, 18th; peach blossoms 19th.

*New Bedford, Mass.*—White magnolia opening 9th, purple 10th; dandelion 24th; peach and cherry full bloom 25th.

*Lunenburg, Mass.*—Month very dry; vegetation a fortnight early.

*Williamstown, Mass.*—Auroras 13th, 14th, 16th, 17th; shade tree blossoms 26th.

*Hinsdale, Mass.*—Snow 2d, with rain 3d; thunder-showers 20th.

*Newport, R. I.*—Brilliant aurora 17th; thunder-showers 20th, 28th.

*Middletown, Conn.*—Hot April day 8th; thunder-storms 11th, 21st, 28th, 29th; auroras brilliant 13th, faint 16th, 17th; frost and ice 18th.

*Southington, Conn.*—Swallows, barn 20th, bank 26th; whippowil, 30th.

*Moriches, N. Y.*—Auroras 9th, 10th, 16th, 17th, 18th, 23d, 24th; peach blossoms 25th; whippowil 30th. Month rather cold; severe frost on 25th.

*South Hartford, N. Y.*—Toads 4th; auroras 14th, 17th; lake and canal open 17th.

*Garrisons, N. Y.*—Month damp and cloudy, but not much rain.

*Brooklyn, N. Y.*—An early spring and "good growing weather."

*North Hammond, N. Y.*—Splendid aurora 9th; martins 23d; early season.

*Cazenovia, N. Y.*—Fine aurora 17th; four thunder-showers, three frosts.

*Depauville, N. Y.*—Fine farming weather except the rainy last week.

*Palermo, N. Y.*—First thunder-storm 7th; swallows 21st; daffodils 25th.

*Nichols, N. Y.*—Cherries in full bloom 30th; driest March and April known here.

*Newark Valley, N. Y.*—A mild month; crops all in except corn.

*Little Genesee, N. Y.*—Month fine for farm-work; no snow; little rain.

*Buffalo, N. Y.*—Lake open 3d, canal 24th; month 3°·2 warmer than average.

*Jersey City, N. J.*—Snow 1st, 2d; auroras 5th, 9th, 13th, 17th, 19th.

*South Orange, N. J.*—Cherry blossoms 16th, peach 17th, pear 21st, apple 29th.

*Moorestown, N. J.*—Month dry, springs low; six frosts, did little injury.

*New Germantown, N. J.*—Thunder-storm and hail 11th; corn planting 30th.

*Greenwich, N. J.*—Peach blossoms 3d, apples 9th; roads dusty 25th.

*Dyberry, Pa.*—Hottest April day known here 9th; cold rain 27th, 28th.

*Fallsington, Pa.*—Rain 1st, with snow 2d; auroras 9th, 13th, 17th, 18th.

*Horsham, Pa.*—Month dry; vegetation suffering; fine for farm work.

*Plymouth Meeting, Pa.*—Warmest April on record, and driest till 27th.

*Egypt, Pa.*—Swallows 22d; plums full blown 25th, peaches 27th, cherries 30th.

*Factoryville, Pa.*—Pleasant April, warm, with frequent slight rains.

*Reading, Pa.*—First martins 3d—in 1869, March 26; in 1870, April 9.

*Carlisle, Pa.*—Trailing arbutus 8th; corn planting 24th.

*York Springs, Pa.*—Drought ended and corn generally planted 30th.

*Fountain Dale, Pa.*—Month fine; no frost; ten days earlier than in 1870.

*Tioga, Pa.*—Frogs 7th; swallows 25th; plum and peach in bloom 30th.

*Grampian Hills, Pa.*—Month dry till 19th, and cool after 10th.

*Johnstown, Pa.*—Peach full bloom 9th; cherry 23d; sugar maple 30th.

*Brownsville, Pa.*—Dry month till 18th; river lower than in twenty-seven Aprils.

*Connellsville, Pa.*—Frosts 14th, 15th, killing some fruits in blossom.

*Newcastle, Pa.*—Month 4° above April average of ten years.

*Beaver, Pa.*—Dry; streams low; fruit nearly all killed by frost of 16th.

*Canonsburg, Pa.*—Dandelions 4th; martins 6th; auroras 9th, 13th.

*Milford, Del.*—Month dry; strawberries suffering from drought.

*Woodlawn, Md.*—Cowslips 7th; auroras 9th, 13th, 15th, 16th, 17th, 18th, 19th, 22d; dandelions 10th; dogwood 14th; fire-flies 19th; whip-powil 21st.

*Emmitsburg, Md.*—Warmest April in several years.

*Johnsontown, Va.*—Lilacs 3d, white clover 11th, red clover 17th, dogwood 22d.

*Hampton, Va.*—Month 6° above April, 1870; no ice and no frost.

*Surry Court-House, Va.*—Martins 2d; white aurora 9th.

*Comorn, Va.*—Month mild, spring early, frosts slight, rains light.

*Fairfax Court-House, Va.*—Aurora 11th; frost injured fruit 15th; drought ended 30th.

*Accotink, Va.*—Month warm, dry, smoky, with much thunder; spring two to four weeks early; rye in head by 20th, wheat by 30th.

*Piedmont, Va.*—Peach blossoms 9th; severe frost 13th, with ice 24th.

*Wytheville, Va.*—Apple blossoms 7th, dogwood 8th; hail-storms 28th, 30th.

*Oxford, N. C.*—Earthquake at 9 p. m. 18th, rattled doors and windows.

*Atlanta, Ga.*—Much thunder and lightning 15th, 20th, 27th, 28th, 30th.

- Moulton, Ala.*—April wet and damp, advanced like May.
- Selma, Ala.*—Every rain was with thunder and much wind.
- Coatapa, Ala.*—Whippowil 2d. Thunder and lightning on thirteen days.
- Jacksonville, Fla.*—Month 2°·59 above average, and very dry.
- Ocala, Fla.*—Frost killed tender plants 4th; great thunder-storm 15th.
- Clarksville, Texas.*—Heavy thunder-storms 10th, 13th, 15th; frost 21st.
- Oakland, Texas.*—Best season in several years; cotton "forms" 27th.
- Bluff, Texas.*—Last frost 1st; thunder-storm with hail 26th.
- Victoria, Texas.*—Ripe dewberries 13th. Very dry month.
- Ponchatoula, La.*—Ripe blackberries 26th; thunder and hail-storm 27th.
- Grenada, Miss.*—Heavy rain and hail storms 27th, 30th.
- Brookhaven, Miss.*—Fire-flies 4th; "bob-white" 18th; frosts 22d, 23d.
- Tennessee.*—Sharp frosts about 23d at various stations, injuring some fruits and vegetables, and wheat in bloom in one section.
- Trenton, Tenn.*—Spring forward but wet, delaying planting.
- Pine Grove, Ky.*—Frost, ice, killing all tender fruits, &c., and much wheat, 23d. Dry till 25th; several damaging wind-storms in April.
- Shelby City, Ky.*—Aurora 9th; killing frost 23d. Month 4° above average of ten years, and rain 2.70 inches less than average of same period.
- New Lisbon, Ohio.*—Frost and ice 16th—killed peaches and cherries, not apples.
- Salem, Ohio.*—Frost, ground frozen 2d; auroras, fine 9th, 13th.
- Cleveland, Ohio.*—Cherry blossoms 7th, peach 12th; auroras 9th, 13th.
- Sandusky, Ohio.*—Auroras 1st, 9th, 13th; apricots blossom 7th, (24th in 1870.)
- Carson, Ohio.*—Peach blossoms 9th; frosts 13th, 14th, 15th, 22d.
- North Fairfield, Ohio.*—Peach blossoms 10th, pear 19th, apple 28th; ice 16th.
- Westerville, Ohio.*—Severe frosts 2d, ice 14th, 15th, 16th, 23d, 24th.
- North Bass Island, Ohio.*—Peach blossoms 27th; auroras 9th, 13th, 29th.
- Hillsboro, Ohio.*—Spring two weeks early; some fruit killed by frost 23d.
- Kenton, Ohio.*—Martins 4th; frost, ice 16th, 23d—some fruit killed.
- Urbana, Ohio.*—Month 4° above average, but fruit much injured by frost 23d.
- Cincinnati, Ohio.*—Auroras 1st, 9th, 14th; light frosts 23d, 24th. Month dry.
- Ann Arbor, Mich.*—Frogs 4th; auroras 9th, 13th, 17th; peach full bloom 30th.
- Litchfield, Mich.*—Season a fortnight earlier than last year.
- Northport, Mich.*—Frogs 3d; Phebe-birds 8th; daffodils 26th.
- Copper Falls, Mich.*—A stormy, unpleasant, backward April.
- Ontonagon, Mich.*—Robins 15th; frogs 20th; plowing 24th.
- Fort Wayne, Ind.*—Auroras 1st, 9th, 13th, 15th; frost, ice 16th.
- Vevay, Ind.*—Peach blossoms 2d, cherry 5th, lilac 8th; sharp frost 23d.
- Laconia, Ind.*—Apple blossoms 4th; auroras 9th, 13th, 17th; killing frost 23d.
- Knightstown, Ind.*—Dry month; early season; killing frost 11th.
- Merom, Ind.*—Peach blossoms 4th; martins 5th; frost, ice 23d.
- Aurora, Ill.*—Most favorable April for farmers in ten years.
- Louisville, Ill.*—Apple blossoms 9th; sharp frost 23d. Dry month.



- Belvidere, Ill.*—Warm to 8th, rest moderate; ground in good order.
- Hennepin, Ill.*—Light rains, no killing frosts; windy after 10th.
- Dubois, Ill.*—Peach blossoms 2d, apples 10th. Month very dry.
- Andalusia, Ill.*—Season favorable and forward, frosts slight.
- Oquawka, Ill.*—Martins 3d; cherry blossoms 20th; ice 11th, 22d; windy month; on 8th drifts of sand on the railroad 18 inches high.
- Manitowoc, Wis.*—Auroras, red, white, blue, and green 9th, red and white 13th; thunder-storms 19th, 27th. Lowest barometer on record.
- Hingham, Wis.*—Plowing 5th; sowed wheat 14th; very wet after 15th.
- Milwaukee, Wis.*—Snow 11th, 16th; storm, lightning 19th; ice 22d.
- Waupacca, Wis.*—Ice out of lake 2d; hurricane, almost, 8th.
- Embarrass, Wis.*—Frogs 1st; hail 12th, 19th; ice 14th, 15th.
- Mosinee, Wis.*—Season late, soil wet, little oats or wheat sowed yet.
- Baraboo, Wis.*—Warmest April on record; May flowers on 15th to 25th.
- Bayfield, Wis.*—Thunder-storms; clearing ice out of the bay 7th to 10th.
- St. Paul, Minn.*—Month cloudy and stormy, seven days' rain, three of snow, (6 inches.)
- Minneapolis, Minn.*—Snow 7 inches 10th, 11th. A warm April.
- Sibley, Minn.*—Frogs 5th; heaviest snow this year 10th; hail 18th.
- Koniska, Minn.*—Windy, frequent thunder; waters very low.
- Litchfield, Minn.*—Pleasant to 8th, rest disagreeable and cool.
- Clinton, Iowa.*—Frogs 1st; flowers 2d; martins 3d; hard frost 27th.
- Monticello, Iowa.*—Frogs; black birds 2d. No rain worth mention.
- Durant, Iowa.*—Hard frost 30th; vegetation advanced; ground dry.
- Fort Madison, Iowa.*—Peach blossoms 9th, apple 15th; ice 11th, 12th, 13th.
- Guttenberg, Iowa.*—A fine month for farmers and their stock.
- Independence, Iowa.*—Thunder-storms 2d, 26th; severe gale 8th; ground froze 11th; auroras 11th, 13th; martins 17th; ice 22d; peach blossoms 28th.
- Iowa Falls, Iowa.*—Terrible gale 8th; ground frozen hard 22d.
- Algona, Iowa.*—Snow, (6 inches,) sleet and rain 10th; rain with snow 19th to 21st.
- Fontanelle, Iowa.*—High winds 2d, 8th; ice 9th, 11th, 12th, 21st, 22d.
- Council Bluffs, Iowa.*—High winds 2d, 5th, to 8th; ground froze hard 11th.
- St. Louis, Mo.*—Very high winds 2d, 18th, 19th, 20th; thunder-storms 19th, 20th.
- Allenton, Mo.*—Heavy frosts 12th, 22d, 23d; the last killed much fruit.
- Hematite, Mo.*—Dryest spring in many years, ground baked hard.
- Rolla, Mo.*—Month about 5° warmer than in 1869 and 1870.
- Oregon, Mo.*—Great storms 8th, 10th, 18th to 20th; ice half an inch 11th; corn planting 17th; rye heading 29th. Cold injured some fruits.
- Atchison, Kans.*—Frost, ice 11th; aurora 18th; changeable and windy.
- Williamstown, Kans.*—Peach blossoms 1st, apples 7th; rye heads 28th.
- Paola, Kans.*—Terrific thunder-storm 10th; month windy in hard gusts.
- Baxter Springs, Kans.*—Frost 22d, ruined and damaged fruits.
- Lawrence, Kans.*—Month 5° warmer than mean of three Aprils.
- Burlingame, Kans.*—Severest wind-storms known here 7th, 8th, 10th, 17th, 18th; damaging tender vegetation, and some fruits.
- Omaha Agency, Nebr.*—Severe drifting snow-storms 10th, 19th, 20th.
- Bellevue, Nebr.*—Aurora 17th. A cloudy windy month.

*Nebraska City, Nebr.*—High winds 2d, 10th, 18th; hard frosts 11th, 22d.

*Dakota City, Nebr.*—Dry, windy 1st to 9th, 12th to 16th; snow 6 inches, 10th to 16th.

*Santee Agency, Nebr.*—More rain fell on 10th and 14th than in a year before.

*Harrisburg, Utah.*—Cold month; grasshoppers at work in places.

*Taylorville, Cal.*—Snow 6 inches 7th, snow, rain, hail; sunshine 14th to 17th.

*Monterey, Cal.*—Earthquakes, two shocks at 8 p. m. 2d, one at 2.30 p. m. 4th.

*Virginia City, Mont. Ter.*—Auroras 9th, 10th, 13th, 15th, 17th, 18th.

*Deer Lodge City, Mont. Ter.*—Month cold as winter, season backward.

*Missoula, Mont. Ter.*—Coldest April known, six heavy frosts, some ice.

*Denver, Col.*—Thunder snow storm 8th; severe winds 2d, 8th; aurora 17th.

*Port Angelos, Wy. T.*—Cloudy month, no gales, aurora 24th.

*Laramie, Wy. Ter.*—Severest wind known here 18th, 19th. A boisterous, rough month.

#### MAY, 1871.

*St. John, N. B.*—Coldest May in eleven years. Mean temperature  $44^{\circ}$ S. Faint auroras 8th, 13th, 18th. Swallows, 12th.

*West Waterville, Me.*—Swallows and bobolinks 16th. First blossoms of plum and cherry 20th; of apple, 25th.

*Gardiner, Me.*—Auroras 8th, 10th, 11th, 14th, 18th, 19th, 21st, 26th.

*Stratford, N. H.*—Barn swallows 2d; hard freeze 11th.

*Whitefield, N. H.*—Strawberry blossoms 9th; aurora 12th.

*Contocookville, N. H.*—Sugar maples in blossom 3d; auroras 13th, 14th.

*Craftsbury, Vt.*—Swallows 6th; auroras 8th, 9th, 10th, 11th, 12th, 14th. Mean temperature of the month  $.08^{\circ}$  above that of the last five Mays.

*Castleton, Vt.*—Dandelion blossoms 1st, strawberry 2d, apple 20th.

*Kingston, Mass.*—May has been very hot and dry, closing with a severe drought. Not moisture enough to make seeds vegetate. Pastures very dry and bare.

*New Bedford, Mass.*—Pear blossoms 9th; hoar frost 11th.

*Lunenburg, Mass.*—Cherry blossoms 1st, pear 15th, apple 20th; the average time of the latter for seventy-four years being May 21st.

*Williams College, Mass.*—Apples in full bloom 24th.

*Middletown, Ct.*—Faint auroras 8th, 9th, 19th. Ice formed 9th, 11th. Thunder-storm 22d. Mean temperature of first ten days of May lower than for ten years past; of the last eleven days the highest for thirteen years.

*South Hartford, N. Y.*—Chimney swallows 11th. Thunder 22d and 30th.

*Garrison's, N. Y.*—Ice 9th, 10th, 11th. Heavy thunder-storm, from southwest, 16th.

*Glasco, N. Y.*—Auroras 8th, 10th. Heavy shower, with hail of size of robins' eggs, doing much damage to grain, fruit, &c., 28th. Heavy wind from south, tearing up trees, with heavy showers, 30th.

*Cooperstown, N. Y.*—First part of the month cool and wet, the latter part hot and dry.

*Depauville, N. Y.*—Wild plum blossoms 10th. Auroras 10th, 12th, 13th, 17th, 19th.

- Buffalo, N. Y.*—Cherry and plum blossoms 3d; apple 20th.
- New Germantown, N. J.*—A favorable month for farmers. Auroras, faint, 7th, 8th, 10th, 25th.
- Vineland, N. J.*—The month drier than usual. Hay and strawberries suffer from drought.
- Greenwich, N. J.*—Wheat in head 12th; strawberries ripening 14th.
- Brownsville, Pa.*—Flood in the Monongahela, 22 feet in the channel, 7th. As a whole the month has been dry.
- Grampian Hills, Pa.*—Peach, pear, and cherry blossoms 1st; wild plum and apple 6th.
- Horsham, Pa.*—The month has been exhaustingly dry.
- Hazleton, Pa.*—Heavy thunder-storm from the west, with short, forked, and exceedingly vivid lightning, 6 to 7 p. m. 16th.
- West Chester, Pa.*—Rye in head 1st. Auroras 1st, 25th.
- Plymouth Meeting, Pa.*—Hard frosts, with ice, 8th, 11th, 14th. This spring the warmest in eighty-one years.
- Dyberry, Pa.*—The first half of the month cold and backward, the last warm and dry.
- Beaver, Pa.*—The month has been cold, dry, and frosty.
- Philadelphia, Pa.*—The warmest May since 1864; and the warmest spring known for twenty years.
- Woodlawn, Md.*—Humming-bird and king-bird 5th. Auroras 8th, 19th. The rain-fall of April and May has been very small, and the hay crop will be quite short.
- Accotink, Va.*—Very little rain since the 5th, but some heavy thunder-showers near by.
- Caperville, Va.*—Heavy thunder-storms 15th, 17th, 22d. A very dry month, and all crops suffering. The season three weeks earlier than usual; wheat ready for harvest.
- Johnsontown, Va.*—Dewberries ripe, fifteen days earlier than usual.
- Albemarle, N. C.*—Thunder on the 1st, 2d, 3d, 4th, 5th, 17th, 24th, 30th, 31st. On the 3d, 4th, and 5th a succession of thunder-clouds from southwest, with occasional vivid lightning, various neighboring points being struck; also intermittent rains in large quantity.
- Smith's Ford, S. C.*—A favorable month for farming operations.
- Quitman, Ga.*—Thunder-showers 4th, 10th, 11th, 18th, 28th; that on the 18th accompanied by some hail.
- Houlton, Ala.*—The first part of the month cloudy and rainy. No frost during the month, and little thunder.
- Austin, Tex.*—Thunder and lightning 1st, 8th, 9th, 15th, 16th, 19th, 20th, 24th; severest storm of season being on the 24th.
- Oakland, Tex.*—Corn tasseling 6th; cotton in bloom 22d.
- Ponchatoula, La.*—Thunder-storm, continuing throughout night of the 3d. Much thunder on 14th.
- Near Brookhaven, Miss.*—Heavy rain-storms with hail from southwest; the hail-stones three-fourths of an inch in diameter 1st and 2d. Heavy thunder-showers, with vivid lightning, 9th.
- Shelby City, Ky.*—The month a dry one for the garden, notwithstanding heavy rains on the 3d and 9th.
- Salem, Ohio.*—The month was marked by numerous frosts and dry weather. Wheat and corn doing well.
- North Fairfield, Ohio.*—Apple trees in full bloom 3d. Hard frosts 9th, 10th, 18th. A dry month.
- Bowling Green, Ohio.*—Rye in head 18th; wheat 27th.
- Kenton, Ohio.*—Frosts every morning from 6th to 11th, completing ruin of early fruit.

*Bethel, Ohio.*—On the 30th a heavy rain with thunder relieved a severe drought.

*Urbana, Ohio.*—The mean temperature of May 3°.28 above the average for nineteen years. Vegetation two weeks earlier than usual.

*Mount Auburn, Ohio.*—On p. m. of 30th the first severe thunder-storm of the season, the rain falling in torrents and doing much damage. Some small hail fell.

*Ann Arbor, Mich.*—Apple trees in bloom 8th. Auroras 25th, 26th.

*Monroe, Mich.*—Violent storm of rain, hail, wind and thunder, p. m. of 16th.

*Merom, Ind.*—Locust trees in bloom 1st. Wheat beginning to blossom 25th.

*Marengo, Ill.*—Thunder-showers 2d, 24th, 27th. Apple blossoms 11th.

*Tiskilwa, Ill.*—A fine month; all crops looking extremely well.

*Dubois, Ill.*—First appearance of the bobolink 4th.

*Manitowoc, Wis.*—Auroras 8th, 19th, 21st, 22d, 26th. Thunder-storms 20th, 25th.

*Mosinee, Wis.*—First heavy dew 12th. Whirlwind 2½ p. m. 14th.

*Baraboo, Wis.*—The last days of May were warmer than ever before known here.

*St. Paul, Minn.*—The mean temperature of May ranges higher than in any of the twelve preceding years.

*Minneapolis, Minn.*—The warmest May on record.

*Litchfield, Minn.*—Sand swallows in large numbers 5th. Strawberry blossoms 9th.

*Durant, Iowa.*—Barley heading out 31st. At close of May the ground is very dry, but all crops at least two weeks earlier than usual.

*Independence, Iowa.*—Burr oaks in blossom 2d; dandelions 8th.

*Algona, Iowa.*—Thunder-showers 15th, 20th, 24th. Crops of all kinds looking unusually well.

*Grant City, Iowa.*—Thunder on 16th, 20th, 24th. First auroras 22d, 23d.

*Hannibal, Mo.*—At 4 p. m. 24th commenced a heavy thunder-storm from south-southeast; and at 4:50 a violent hail-storm, lasting five minutes, and destroying two-thirds of the fruit. The hail was of large size.

*Oregon, Mo.*—Fall wheat heading out and locust blossoms 5th.

*Corning, Mo.*—A large number of meteors evening of 22d.

*Williamstown, Kans.*—Strawberries ripening 3d.

*Burlington, Kans.*—Very heavy storm from the west 1st.

*Lawrence, Kans.*—Severe thunder-storm 8th. A fine month.

*Douglas, Kans.*—At 11 p. m. 30th a gale—thunder, rain and hail—destructive, but of very short duration.

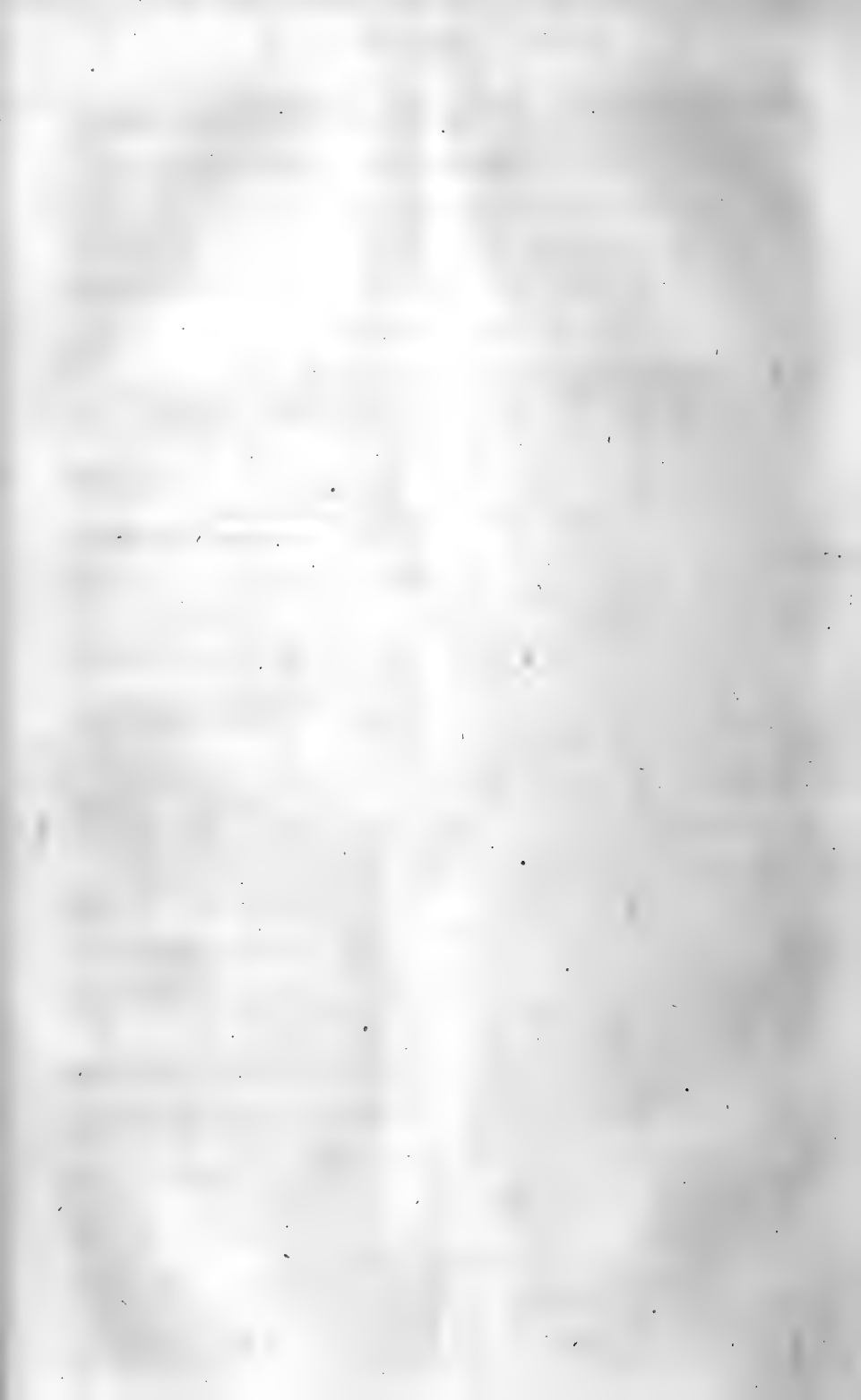
*Nebraska City, Nebr.*—The last half of the month dry and hot.

*Watsonville, Cal.*—The month unusually cold. Much frost and high winds.

*Deer Lodge City, Mont. Ter.*—Ice 12th, 13th. Gale lasting all day, with remarkable fall of the barometer 27th. Coldest May ever known here.

*Laramie City, Wy. Ter.*—Unusually calm weather during the month.





MONTHLY REPORT



OF THE

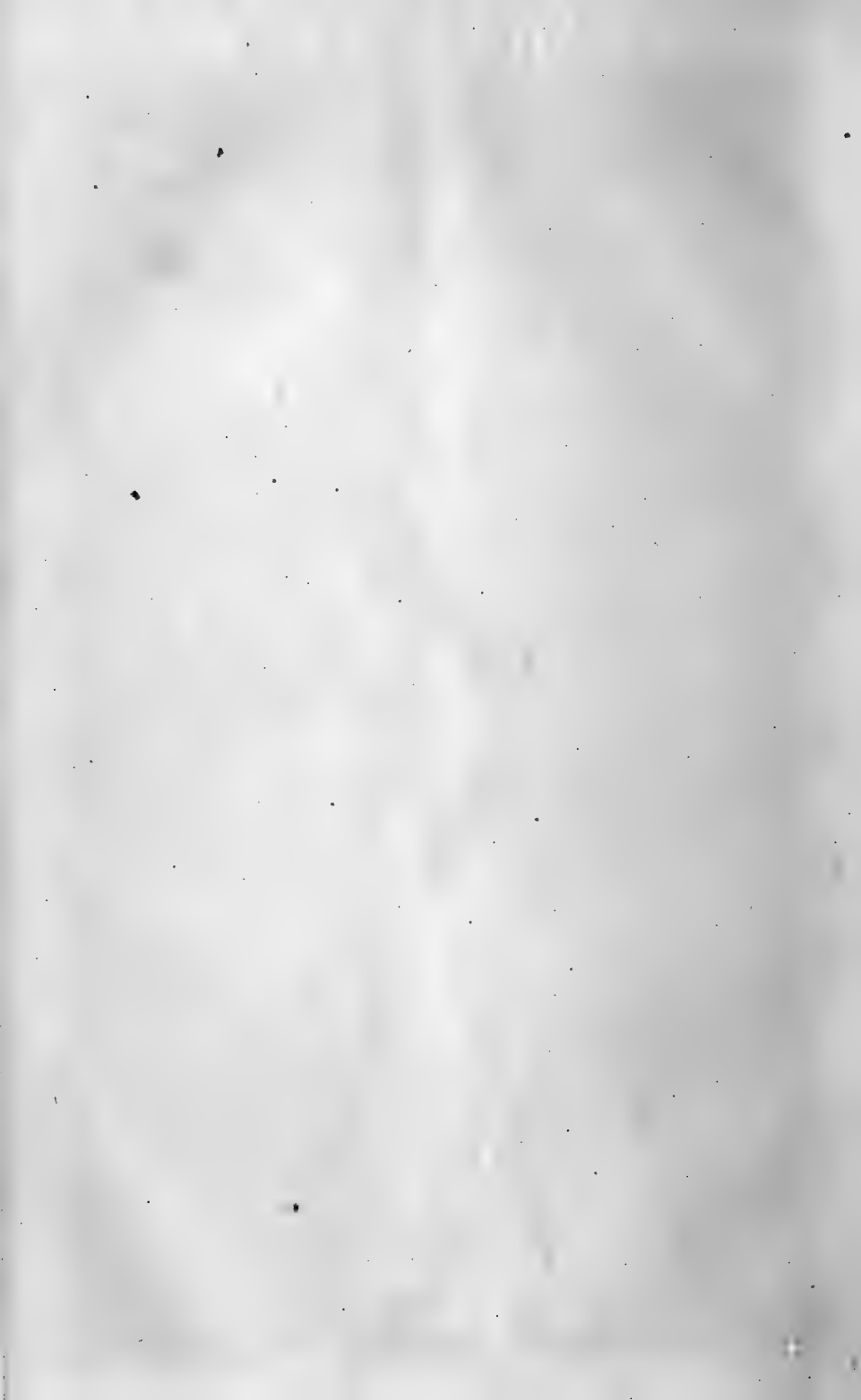
DEPARTMENT OF AGRICULTURE

FOR

JULY, 1871.



WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1871.





# MONTHLY REPORT.

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DEPARTMENT OF AGRICULTURE, STATISTICAL DIVISION,  
July 17, 1871.

SIR: I present herewith, for publication, a summary of reports on the condition of the crops, with extracts from regular statistical returns and from casual correspondence; also, a brief history of the Department of Agriculture, and a notice of the resignation of Commissioner Capron; a chapter of recent scientific notes, a record of market prices, meteorological tables, &c.

J. R. DODGE, *Statistician.*

Hon. HORACE CAPRON,  
*Commissioner.*

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## CONDITION OF THE CROPS IN JULY.

An average amount of rain fell during the past month, but its distribution was quite unequal. While one locality suffered from drought, another was deluged with rain. One station in Georgia returned a rainfall of nearly sixteen inches, while another reported but three and one-half inches; in Galveston, Texas, it was almost nine inches, and in San Antonio less than a third of an inch. Inequalities in amount of precipitated moisture always exist, but not always in a degree so marked. There is also reported a wide daily range of temperature in some of the most fertile sections, with summer heats by day and low temperatures and sometimes frosts by night—atmospheric conditions unfavorable to the growth of corn and some other crops.

### CORN.

The returns of July show an increase of acreage, slight in some States, large in others; the New England States and New York, California, and Oregon failing to make an extension of the corn area. The area of the past year, assumed to be above thirty-nine millions of acres, appears to have been increased by fully three millions, of which two millions are in the Southern States. The increase of acreage in the United States is larger than ever before reported to this office, the average for all the States being above 8 per cent. This increase will not make a corresponding enlargement of the aggregate product, the average yield of the Southern States being less than the general average. The acreage in corn in eleven Southern States exceeds four-tenths of the total area of this crop, but fails to produce so large a proportion of the aggregate yield. The percentage of increase is calculated as follows: New Jersey, 2; Pennsylvania, 1; Delaware, 3; Maryland, 1; Virginia, 5; North Carolina, 9; South Carolina, 12; Georgia, 10; Florida, 7; Alabama, 11; Mississippi, 14; Louisiana, 15; Texas, 15; Arkansas, 24; Tennessee, 7; West Virginia, 5; Kentucky, 3; Missouri, 10; Illinois, 6; Indiana, 4;

Ohio, 3; Michigan, 3; Wisconsin, 7; Minnesota, 11; Iowa, 15; Kansas, 50; Nebraska, 30.

In Maine, New Hampshire, Vermont, and Rhode Island corn is not in high condition. June was too cool for this crop in Northern New England, and some injury was occasioned by frost as late as the 24th. Drought, with cool or frosty nights, has been injurious to the crop in New York. There is complaint of slow germination and backward condition in part of New Jersey, and considerable injury from a brown worm in Warren County. Frost and drought have wrought injury to corn in Pennsylvania, but recent showers and higher night temperatures are bringing the crop into fine condition. The crop is late, but improving, in Maryland.

The influence of cool nights has been felt in Virginia and throughout the valleys and plateaus of the Alleghenian systems; corn is consequently not so far advanced in growth as usual, except in warm soils, and its growth has been retarded by heavy rains which have obstructed cultivation; still it is vigorous, of good color, and promises a fine crop. Its condition is quite as good in North Carolina, and still better in South Carolina.

In the Gulf States heavy and frequent rains have deluged the bottom lands, upon which most of the crop of that section is grown; fields are therefore grassy and unpromising, yet the fine weather of the last two weeks has given great encouragement, and hopes are entertained that the injury may be fully recovered during the present month. Should this improvement continue, the enlarged area planted will give an unusually large aggregate of production and save the expense of heavy purchases elsewhere at a burdensome cost for transportation.

In the great corn granary of the country, the basin of the Ohio, Upper Mississippi, and Missouri, between the elevations of 500 to 1,500 feet above the sea level, the condition of the crop is above an average. Frosts have been injurious in some of the Territories. In portions of Utah the crop has been nearly destroyed by grasshoppers; in the northern portions of the Pacific coast corn is late but of good color. The following items of correspondence, from many of similar import, will illustrate further the condition of this important cereal:

*Orleans County, Vt.*—June 24, a heavy frost cut down the corn in the valleys.

*Norfolk County, Mass.*—The corn crop is a little backward.

*Carroll County, N. H.*—June was cool, and corn grew but little.

*Wyoming County, N. Y.*—Corn is not uniform. Some pieces are very forward; others are backward from the effects of drought and frost.

*Eric County, N. Y.*—Frosts about June 18 injured some pieces of corn; early planted fields are quite forward.

*Ontario County, N. Y.*—Corn looks well; some fields injured by a heavy frost June 17.

*Niagara County, N. Y.*—We have had the least rain for the last three months that has been known for thirty years.

*Livingston County, N. Y.*—June a cool month. Corn in some parts of the county damaged by a slight frost June 17.

*Chautauqua County, N. Y.*—The season has been dry since April.

*Morris County, N. J.*—Much corn was slow in coming up, owing to the drought, and many corn fields are therefore backward.

*Union County, Pa.*—Corn was planted late, but looks well and promises a good crop.

*Delaware County, Pa.*—Recent rains have brought forward the corn.

*Clearfield County, Pa.*—Between frost and drought the corn has had a hard struggle.

*York County, Pa.*—Late rains have been of much benefit to the corn.

*Elk County, Pa.*—Corn injured by frosts June 29 and 30.

*Cecil County, Md.*—Corn somewhat stunted in its early growth, but recent rains have benefited it.

*Calvert County, Md.*—Corn has been largely increased owing to the scarcity of tobacco plants.

*Augusta County, Va.*—Corn of good color and fine promise; season favorable for cultivation and destruction of weeds, but the nights are rather cool for rapid growth.

*Henrico County, Va.*—Greater acreage in corn than usual; crop promising in spite of drought.

*King George County, Va.*—In spite of late plowing and seeding, the corn is better and more forward than usual. Perhaps it has been too much stimulated. Promises an abundant crop.

*Nelson County, Va.*—Corn, whenever it has been kept clean, is very promising.

*Norfolk County, Va.*—Corn, up to June 15, looked better than for five years. Heavy rains then injured it, causing a loss estimated in some cases at one-third.

*Northampton County, Va.*—Corn in some places injured by hail.

*Rockbridge County, Va.*—Corn looks well, but short for the season. May have a fair crop.

*Washington County, Va.*—Worms injuring the corn.

*Bath County, Va.*—Corn short, but stands well and is of good color.

*Alamance County, N. C.*—Corn has been well worked and looks tolerably, but it has been much injured.

*Bertie County, N. C.*—Corn crop looked finely till waist high, when the *bud worm* and *scatter worm*—probably the same insect—have nearly destroyed the crop, although it was generally replanted.

*Duplin County, N. C.*—Corn a poor stand, especially in low, wet lands.

*Greene County, N. C.*—Corn 25 per cent. better than last year.

*Mecklenburg County, N. C.*—Corn well worked, and promises, with good weather, a better crop than last year.

*Rockingham County, N. C.*—With continued favorable weather, the corn crop will be larger than for ten years.

*Union County, N. C.*—Corn promising; early planting now silking and tasseling.

*Sampson County, N. C.*—Corn promising on light lands.

*Newberry County, S. C.*—Corn promises better than for ten years past; season has been excellent.

*Carroll County, Ga.*—Upland corn fine, but best land too wet for good crops.

*Chattahoochee County, Ga.*—Corn injured by the rains of May and June.

*Dougherty County, Ga.*—Corn increased 10 per cent. in acreage, but heavy rains have injured it, causing it to shoot and tassel at three feet high; the crop cannot exceed last year's.

*Early County, Ga.*—Corn cut short by heavy rains, occurring nearly every day from the middle of May, with wind, hail, and lightning. Last year this county raised 60,000 bushels of corn.

*McDuff County, Ga.*—Rain has stimulated the corn and made it grassy.

*Monroe County, Ga.*—Too much rain for the corn, which does better on stiff clay than on light lands.

*Quitman County, Ga.*—Acreage one-third greater than last year, and crop, so far, good, though injured by wet in the uplands.

*Spalding County, Ga.*—Upland corn looks well; bottom corn injured by rain.

*Sumter County, Ga.*—Corn good, and promises, with continued good weather, a large crop.

*Jackson County, Ga.*—Corn on bottom land almost a failure through excessive rain.

*Jackson County, Fla.*—Corn crop excellent, promising a heavy yield; acreage doubled.

*Madison County, Fla.*—Rapid growth of stalk and shuck, but grain cut short by unfavorable weather.

*Clarke County, Ala.*—Corn on the uplands better than last year; creek and river bottoms drowned out; late planting up, but the grass has got the start again.

*Greene County, Ala.*—Corn prospects gloomy; acreage planted 20 per cent. in advance of last year, but heavy rains drowned out much, and delayed working till more was lost.

*Marengo County, Ala.*—Corn crop short; on rich lowlands have had too much rain.

*Pike County, Ala.*—Much corn washed out by rain, which continued so as to prevent replanting.

*Randolph County, Ala.*—Acreage planted 150, but drowning out of bottoms will reduce to 130; had but five or six clear days in nearly three months.

*Dallas County, Ala.*—Corn has deteriorated; sudden change from excessively wet weather to drought has injured the corn.

*Attala County, Miss.*—We never had poorer crops of corn, but, with favorable weather, they will greatly improve.

*Grenada County, Miss.*—Long continued rain has injured the corn, but it has improved since the weather became propitious. Corn, acreage about 15 per cent. increase. Daily range of thermometer in the shade from 85° to 92° F.

*Lee County, Miss.*—Corn in many places in bad condition, the grass rendering it difficult to clean the rows; where well cultivated it grows finely.

*Yalabusha County, Miss.*—Corn injured by rain and scarcity of labor.

*East Baton Rouge County, La.*—Corn seriously damaged but more will be planted; the cold, wet spring and the May storms of rain and wind seriously interfered with farm work.

*La Fayette County, La.*—Much larger acreage in corn, but the crop will be cut down to an average by rain.

*St. Mary's County, La.*—The violent storms of May and June may have injured the corn 25 per cent., but otherwise it looks well.

*Washington County, La.*—Corn has suffered from excessive rain, but with improved weather comes a prospect of an average crop.

*Claiborne County, La.*—Heavy rains have made the grass grow so fast as greatly to impede corn cultivation.

*Carroll County, La.*—Corn very good, better than for many years.

*Rapides County, La.*—At least one-half the acreage planted will not return the seed; there will not be a bushel of home-produced corn in the county by Christmas.

*Bee County, Texas.*—Corn planted at the last of January did best; general time of planting is in February. Later plantings are getting dry.

*Lampasas County, Texas.*—Severe drought. If it does not rain within a week there will not be a half crop of corn.

*Rusk County, Texas.*—Drought and extreme heat are cutting short the corn.

*Dallas County, Texas.*—No rain in four weeks; without speedy rain corn will be seriously injured.

*Union County, Ark.*—More corn and less cotton than last year; scarcity of corn and consequent loss of stock has stimulated this cereal growth. Laborers are neglecting their own crops and working round for corn and meat for their families.

*Dyer County, Tenn.*—Corn more promising than for years.

*Grainger County, Tenn.*—Late rains and hot weather have greatly benefited the corn.

*Robertson County, Tenn.*—Corn now growing well, but has been damaged by the blue bug.

*Obion County, Tenn.*—Best corn crop seen in the State.

*Anderson County, Ky.*—Corn acreage the largest ever known; double that of last year, and the crop in better condition than for years.

*Henry County, Ky.*—Corn looks exceedingly well, promising an abundant crop; with continued fine weather, the crop of the county will be the largest ever grown.

*McCracken County, Ky.*—Corn suffering for rain.

*Shelby County, Ky.*—Corn looks fine and is unusually forward, but somewhat injured by chintz.

*Cole County, Ky.*—Corn doing excellently. The sweet-corn sent by the Department is now in silk.

*Daviess County, Ky.*—Corn crop very large and looks better than for ten years past. The chinch-bug is attacking it.

*Berkeley County, W. Va.*—Corn uneven and unpromising. Fields have generally been replanted, and in some instances this has been repeated.

*Brown County, Ohio.*—An unusual breadth of clover sod plowed during winter months and planted with corn, but worms have been destructive and much corn ground has been replanted.

*Portage County, Ohio.*—Corn exceedingly fine, dry weather not having hurt it at all.

*Adams County, Ohio.*—Corn healthy but uneven in size, owing to much replanting, caused by cut-worm and web-worm.

*Huron County, Ohio.*—Corn never looked so well this time of year.

*Morrow County, Ohio.*—Corn never known to be more promising; the acreage is large.

*Holmes County, Ohio.*—Corn never promised a heavier crop at this time of the year.

*Washington County, Ind.*—Corn short and suffering for rain.

*White County, Ind.*—Corn promises the best crop ever raised in the county.

*Jasper County, Ind.*—Crops never looked better.

*Hancock County, Ind.*—Corn suffering from chinch-bugs, worms, and moles.

*Brown County, Ind.*—Weather too dry; scarcely any rain in June; corn wilts in the heat of the day; with rain it will yet make a good crop, for it has been well worked.

*Calhoun County, Mich.*—Corn on low lands injured by cold winds and occasional frosts.

*Clinton County, Mich.*—From May 5, no rain fell for six weeks. About one-third of the corn planted failed to grow.

*Branch County, Mich.*—Corn never better and very forward.

*Gratiot County, Mich.*—June was a cold month. A heavy frost on the night of the 15th cut down the corn in some localities, but it has nearly recovered.

*Will County, Ill.*—Corn much in advance of last year, but the crop will not exceed the average.

*Wauke County, Ill.*—If we have rain soon, we will have the largest crop of corn ever raised here.

*Macoupin County, Ill.*—Corn promises exceedingly well.

*Fayette County, Ill.*—Corn looks well but needs rain. The chinch-bug did much damage to corn adjoining wheat fields.

*La Warr County, Ill.*—Chinch-bugs in the corn, doing much damage. More corn has been planted than usual, and it seems unusually vigorous.

*Putnam County, Ill.*—Corn excellent; some damage by the chinch-bugs.

- Macon County, Ill.*—Chinch-bugs have commenced on the corn.
- Sangamon County, Ill.*—Chinch-bugs at work on corn, and will bring the crop below average.
- Clinton County, Ill.*—Corn suffering for want of rain.
- Wabash County, Ill.*—Drought threatens the corn.
- Crawford County, Ill.*—Dry weather injuring the corn.
- Greene County, Ill.*—Chinch-bugs injuring the corn.
- Tazewell County, Ill.*—The fly has attacked the corn-fields, and I fear many acres will be destroyed.
- Schuyler County, Ill.*—I fear the corn crop will be materially damaged by the chinch-bug, which has attacked it four weeks earlier than usual. Some farmers plowed under spring wheat destroyed by the bug and planted the ground with corn. In every instance the corn has been utterly destroyed.
- Efingham County, Ill.*—The chinch-bug is damaging the corn crop. The loss will depend much on the season; if rain is plenty, it will be light; if dry, much greater.
- Iroquois County, Ill.*—In some localities the chinch-bug is injuring the corn, but the crop is, nevertheless, unusually promising.
- Peoria County, Ill.*—Chinch-bugs leaving the wheat and going for the corn.
- Lee County, Ill.*—Corn never better. It never was as forward, stands well on the ground, is healthy and large. The weather is all that could be desired.
- Montgomery County, Ill.*—Chinch-bugs injuring a fine stand of corn. Weather favorable.
- McHenry County, Ill.*—Corn in tassel.
- Hancock County, Ill.*—Corn unusually promising. The chinch-bugs have done some injury, but generally they only injure from ten to twenty rows.
- Williamson County, Ill.*—The acreage of corn has been greatly increased in consequence of the clearing of new ground and the diminished acreage of cotton. An abundant yield is promised.
- McDonough County, Ill.*—Chinch-bugs have attacked the corn, and are doing some injury.
- Green County, Wis.*—Corn never looked better.
- Dane County, Wis.*—Corn, of which there is an increased acreage, is unusually promising.
- Dunn County, Wis.*—Corn looks well and bids fair to be a good crop.
- Bremer County, Iowa.*—Corn looks better than ever before at this season.
- Dallas County, Iowa.*—Our corn crop is unusually fine; I never saw a better prospect at this season.
- Chickasaw County, Iowa.*—Corn and other crops very forward for the season.
- Jackson County, Iowa.*—Corn promises a fine crop.
- Muscatine County, Iowa.*—Corn more than usually promising.
- Hardin County, Iowa.*—Our corn now gives the best promise for twenty years.
- Cherokee County, Iowa.*—Corn is earlier than usual, and looks remarkably well.
- Decatur County, Iowa.*—Chinch-bugs, after destroying the wheat, have commenced on the corn.
- Page County, Iowa.*—Corn never looked better. The chinch-bug has, however, been at work upon it.
- Marshall County, Iowa.*—Corn far ahead of other years.
- Allamakee County, Iowa.*—Corn three weeks earlier than usual, and the best crop in fifteen years.
- Story County, Iowa.*—We never had a finer prospect for corn at this season.
- Johnson County, Iowa.*—The prospect for corn is better than ever known.
- Delaware County, Iowa.*—Earliest corn known for many years; the harvest will be nearly one month earlier than usual.
- Floyd County, Iowa.*—Corn never so fine at this season.
- Marion County, Iowa.*—Corn is growing finely, and promises an enormous yield.
- Hancock County, Iowa.*—Corn is larger than we ever saw it before on the 1st of July; generally four feet high.
- Washington County, Iowa.*—Corn was never farther advanced at this season.
- Adams County, Iowa.*—Corn very forward; some now stands shoulder high.
- Wayne County, Iowa.*—Chinch-bug leaving the wheat and attacking the corn.
- Mahaska County, Iowa.*—Corn never looked so well at this date; it is now as high as the horses' backs.
- Sherburne County, Minn.*—Corn looks well, but in spots cut-worms have been at work.
- Steele County, Minn.*—Corn looks well; the crop will equal the average.
- Freeborn County, Minn.*—Corn splendid.
- McLeod County, Minn.*—Corn looks well; in some fields it is seven feet high.
- Chase County, Kans.*—The best prospect for corn ever known.
- Osage County, Kans.*—Chinch-bugs in countless millions at work on the corn crop.
- June 28th a great storm badly damaged corn.
- Atchison County, Kans.*—Weather too dry for corn.

*Leavenworth County, Kans.*—Corn very fine.

*Neosho County, Kans.*—Corn never better in Southern Kansas.

*Nemaha County, Kans.*—Chinch-bug injuring the corn.

*Morris County, Kans.*—Corn never looked better.

*Howard County, Kans.*—Corn splendid; never looked better.

*Sedgwick County, Kans.*—Corn planting commenced the last of March, and continued to the middle of June. Season good.

*Coffey County, Kans.*—Corn is doing finely. A few pieces would have been injured by the chinch-bug but for the heavy rains.

*Bates County, Mo.*—Corn could not be better; this season has been remarkably favorable; crops four weeks in advance.

*Clay County, Mo.*—Bad weather has interfered with corn culture, but vegetation being vigorous, the crops will be large.

*Clinton County, Mo.*—Chinch-bugs are injuring the corn.

*Holt County, Mo.*—Chinch-bugs at work at the corn, which otherwise would surpass any previous crop.

*Jackson County, Mo.*—Corn promises a heavy yield in spite of injury from storms during the last few days.

*Lincoln County, Mo.*—Two good rains at the proper time would make beautiful crops of corn.

*Moniteau County, Mo.*—Corn looking unusually well, but the chinch-bug is working on old lands.

*Montgomery County, Mo.*—No such prospect for corn in ten years past.

#### WHEAT AND RYE.

The crop of winter wheat has been harvested, the work commencing the first week in June, and much of it ending in June, that of the more northern sections terminating the first or second week in July. The ripening was fully a week earlier than usual. The condition of the plant in early spring was remarkably promising, and while rust on the blades was quite general in its prevalence, and insects were abundant, particularly the chinch-bug, the returns for the 1st of July indicate a condition somewhat above an average. The States showing a comparatively low condition are as follows: New Hampshire, Vermont, Massachusetts, Connecticut, Virginia, and all other Southern States except Texas. All the Western States present comparatively high averages, except Kentucky, (35 per cent. below,) and Indiana, (7 per cent.) The California average is 17 per cent. below. Among the States presenting higher average are Ohio, 4 per cent. above; Michigan, 8; Illinois, 7; Missouri, 3; Kansas, 7; Nebraska, 10; Oregon, 1 per cent. The winter wheat of Iowa and Wisconsin is in equally high condition, but in area it bears an insignificant proportion to the spring variety.

The returns concerning spring wheat are more unfavorable than for many previous years. Only Maine, New Hampshire, Connecticut, and Oregon exceed an average, while the percentages below an average are as follows: Missouri, 36; Illinois, 30; Indiana, 2; Ohio, 7; Michigan, 4; Wisconsin, 20; Minnesota, 30; Iowa, 18; Kansas, 15; Nebraska, 11; California, 5. The chinch-bug has been more destructive to the spring wheat than in any season since the inauguration of these reports. The extent of the mischief from insects, rust and drought, cannot be determined until the spring wheat has matured, and the yield and quality of the berry are indicated by the thresher.

The following items are presented from a mass of similar information in the July correspondence:

*Carroll County, N. H.*—Grasshoppers numerous, and damaging beans, potatoes, and grain. If dry weather continues, they will seriously damage grain.

*Rockingham County, N. H.*—All kinds of grain crops look well and better than last year.

*Caledonia County, Vt.*—Weather dry; crops suffering.

*Addison County, Vt.*—Drought has seriously affected many crops.

*Windsor County, Vt.*—The dry season continues.

*Essex County, Vt.*—Vegetation generally looking well. Warm days and cool nights in June.

*New London County, Conn.*—Weather dry in May and early part of June; heavy rains after June 15.

*Hartford County, Conn.*—Copious rains in June told favorably on all crops.

*Genesee County, N. Y.*—Wheat harvest will begin about 15th July. Straw short, but more than an average crop is promised.

*Westchester County, N. Y.*—The weather for the last two weeks has been cool, with showers which have helped winter grain and grass very much.

*Seneca County, N. Y.*—Early wheat cut July 1. The crop will be the best raised in the county for ten years. The last three weeks have been cool and very favorable for the filling of the berry. Only late-sowed wheat will be rusted.

*Ontario County, N. Y.*—A heavy frost June 17.

*Onondaga County, N. Y.*—Winter wheat has succeeded admirably; is a superior crop. Spring crops injured by drought.

*Lewis County, N. Y.*—July 4th the first rain for seven weeks fell in this county.

*Allegany County, N. Y.*—June unusually cold and dry.

*Delaware County, N. Y.*—Rye slightly damaged by a frost June 17, which killed beans.

*Warren County, N. Y.*—Frosts June 17 and 30 did no damage except to corn.

*Livingston County, N. Y.*—The crop of winter wheat and barley is unusually promising. Recent rains will insure filling. Slight frost June 17. Weather cool and favorable.

*Niagara County, N. Y.*—We have had the least rain for the last three months that has been known for thirty years. A frost June 30 did slight injury. Winter wheat looks better than it has for many years.

*Putnam County, N. Y.*—Crops generally are looking much better since recent rains, previous to which they had almost ceased to grow.

*Cattaraugus County, N. Y.*—Slight frosts June 16 and 17. Weather cool and dry.

*Steuben County, N. Y.*—Spring wheat, oats, and barley much improved by rains 13th, 24th, and 27th June.

*Yates County, N. Y.*—Cold and dry weather last three weeks of June. White frost June 18 and 30.

*Warren County, N. J.*—The wheat and rye crop never looked better. It is considered at least 20 per cent. above average.

*Sussex County, N. J.*—Wheat and rye looking finely.

*Ocean County, N. J.*—Wheat and rye have revived very much in consequence of June rains, and now promise more than a full crop.

*Mercer County, N. J.*—Wheat is fine, and if harvested in good condition will be an extra crop.

*Morris County, N. J.*—Heavy rains have improved the crops. Grain is better than was expected.

*Salem County, N. J.*—Wheat good, and well harvested.

*Lycoming County, Pa.*—Wheat is generally short, but stands well on the ground; is well headed and well filled with a fine, plump berry.

*Huntingdon County, Pa.*—Harvest is much earlier this season than it has been for many years. Winter grain will all be cut by July 4.

*Butler County, Pa.*—Wheat mostly cut and better than an average yield. Harvest earlier than for many years. Slight frosts June 29 and 30.

*Lebanon County, Pa.*—The wheat and rye harvest is half finished. Old farmers consider the wheat crop the best for forty-six years, and the rye crop the best ever grown. Heads with ninety to ninety-five grains can readily be found. The average length of rye-stalks in some lots is about eight feet. Some measure over nine feet.

*Indiana County, Pa.*—The wheat crop is good, and one-half has been cut and shocked. Harvest at least two weeks earlier than usual.

*Bucks County, Pa.*—The average of the rye crop is this year high, both on account of the low average of the crop for the past few years and the very heavy crop this year, exceeding the yield for many years, both in straw and grain.

*Mifflin County, Pa.*—We are just in the midst of wheat harvest, and it is much the best we have had for many years. A new variety of wheat, called Fulty wheat, originated in this county some five years ago, is about the only kind that will be sown. I think it a very fine variety of smooth wheat.

*Luzerne County, Pa.*—A warm, dry spring, with very cold nights occasionally.

*Armstrong County, Pa.*—Season generally cool and dry. Wheat short, but well-headed, and grain plump. Slight frost June 30.

*Westmoreland County, Pa.*—Harvest well advanced. Winter wheat promises to be a most prolific crop. A sharp frost June 30, injuring grapes.

*Franklin County, Pa.*—Grain nearly all cut, and of superior quality.

*Lycoming County, Pa.*—A long continued drought retarded all crops, but late rains have greatly improved them.

*Bucks County, Pa.*—Copious rains since the 15th of June have given an impetus to all growing crops.

*York County, Pa.*—The wheat and rye crops are generally housed, the harvest being about two weeks in advance of other years, and the yield promising to be full measure, even running over.

*Snyder County, Pa.*—The wheat crop is the best harvested for many years.

*Pike County, Pa.*—The prospect of wheat and rye has not been fully realized; the fly did more injury than was anticipated. Some kinds of wheat and rye did not fill well. There will, however, be more than an average crop. Harvest commenced June 26, the earliest harvest in forty years.

*Union County, Pa.*—Wheat now harvesting is a good yield, and well filled in the grain, but the straw is short.

*Delaware County, Pa.*—Much of the wheat has been housed in good condition; remainder ready; weather uncertain.

*Lawrence County, Pa.*—The season has been very dry. Fall wheat is above an average.

*Clearfield County, Pa.*—Wheat is short owing to the drought, but is well-headed and filled. Some has been cut—at least two weeks earlier than usual.

*Greene County, Pa.*—Wheat is all cut, and is a good crop. The Tappahannock still maintains a good reputation.

*Baltimore County, Md.*—Wheat magnificent in quantity and quality. Rye never better.

*Cecil County, Md.*—Wheat much better than was anticipated. The early rust affected only the leaves and not the stems. Heads well filled. Harvest unusually early.

*Frederick County, Md.*—Wheat, in quantity and quality, exceeds any crop of the past sixteen years.

*Montgomery County, Md.*—Wheat promises better than for several years past.

*Queen Anne County, Md.*—White wheat so far as threshed yields poorly, but red wheat is turning out well, though the grain seems pinched by too hasty ripening. Wheat, as a whole, below average.

*Washington County, Md.*—Wheat will average 20 bushels per acre. Some fields reaching 30 bushels. Barley about 30 bushels.

*Augusta County, Va.*—Wheat thin on the ground, but large and well filled. Harvest ten days earlier than usual.

*Loftcourt County, Va.*—Wheat looked promising within a few days of harvest, and then began to dry up. Many fields died out in a few days.

*Buckingham County, Va.*—Wheat—yield about the same as last year, with 25 per cent. more of acreage. Probably one-fourth of the crop has been lost by smut. It will be very difficult to obtain good wheat in many localities.

*Jauquier County, Va.*—The wheat crop not of uniform excellence, but of better average character than for years, and harvested in better condition.

*Hemico County, Va.*—Wheat did not come up to general expectation at harvesting. Considerable drought.

*King George County, Va.*—Wheat harvest earlier than in forty years previous, and better than for several years past. The threshing is expected to be fair in quantity, and of superior quality—at least two-tenths better than last year.

*Nelson County, Va.*—Wheat crop of fair quality, and above the average of the past five years. Smut appeared, however, a few days before harvest, and the rapid drying of the straw forced an earlier cutting—at least a week before it would otherwise have been done. The grain will probably show considerable shriveling.

*Spotsylvania County, Va.*—Fair weather favored the maturing of the wheat, which was harvested ten days earlier than usual. A large proportion has been already threshed, and the yield is superior in quality, and abundant in quantity. Not half the phosphates used as in former years, and but little appreciable benefit where used.

*Montgomery County, Va.*—Wheat and rye harvested, and found to be below average in quantity, but superb in quality. Dry weather up to 20th June.

*Nicholas County, Va.*—Wheat a failure in many localities; highlands tolerable. Injured by rust, midge, joint-worm and weevil.

*Layette County, Va.*—Wheat looked well, but much of it having fallen had to be cut before ripening.

*Alamance County, N. C.*—Wheat crop the worst failure ever known—not more than 40 per cent. of an average crop—good land not producing more than three or four bushels and much poor land not over one, two, or three bushels to one sown.

*Mecklenburg County, N. C.*—Wheat half a crop; thin on the ground and injured by rust. Many fields not worth cutting.

*Fowan County, N. C.*—Wheat, grain well developed; but only half the average amount of straw on the ground.

*Caldwell County, N. C.*—Wheat damaged with rust—not redeeming the fair promise of a month ago.

*Martin County, N. C.*—Wheat much injured by rust.

*Greene County, N. C.*—Wheat and rye almost a failure through a cold spell in May. Many farmers will not get back their seed.

*Spartanburgh County, S. C.*—Wheat short of expectations; much not worth cutting.



- Burton County, Ga.*—Wheat almost a failure.
- Gwinnett County, Ga.*—Wheat crop meager and inferior in quality, in consequence of rust and fly.
- Heard County, Ga.*—Wheat threshes out poor; season extremely wet.
- Milton County, Ga.*—Rust and fly have injured wheat very badly.
- Murray County, Ga.*—Wheat crop entirely worthless; many fields have not been cut, and of those cut many did not return the seed actually sown; whole crops not sufficient to resow the land. This misfortune the result of excessive rains, producing rust.
- Wilkes County, Ga.*—Barley, wheat, and oats have been threshed; wheat poor, mainly from rust.
- Spalding County, Ga.*—Wheat injured more by rust than was anticipated; some crops, however, were very fine, yielding from 20 to 30 bushels per acre.
- Kaufman County, Texas.*—Wheat, rye, and barley all yielded better than last year.
- Williamson County, Texas.*—Spring wheat cut from 10th to 15th June; quality, good; yield, 15 to 20 bushels per acre; drought for three weeks.
- Bezar County, Texas.*—All small grain harvested the first days of June; wheat averaged 16½ bushels per acre; in some cases reaching 40.
- Washington County, Ark.*—Wheat harvest June 10, ten days earlier than usual; crops light; injured by frost in April, and afterwards by red rust.
- Henry County, Tenn.*—Wheat crop small; many fields yielding but three or four bushels per acre.
- Humphreys County, Tenn.*—Reduced the wheat crop one-half; some fields not cut.
- Jefferson County, Tenn.*—Wheat crop an entire failure in some parts of the county; general average not over 50 per cent.; harvested in good condition, but it has not matured well; grain not plump; red-bearded or Lancaster wheat the best in the region.
- Knox County, Tenn.*—Bearded wheat did better than the smooth, and on elevated lands better than on low lands.
- Rhea County, Tenn.*—Rust has injured wheat; some farmers pastured their wheat.
- Sullivan County, Tenn.*—Wheat half a crop, but harvested in good condition between 8th and 18th June, ten days earlier than usual; Tappahannock decidedly the best variety.
- Gibson County, Tenn.*—Wheat greatly damaged; some fields on low lands not worth cutting; wheat market opens at \$1 50 per bushel, the usual price being \$1.
- Adair County, Ky.*—Wheat almost a total failure; scarce enough harvested for seed.
- Franklin County, Ky.*—Early wheat frost-killed and plowed up. Late wheat thin on the ground, but the grain is good and heavy, though injured by late frost. Rye almost a failure; straw heavy, but light-headed.
- McCracken County, Ky.*—Early in the spring wheat looked finely, but about the time of heading it took the blade-rust, causing the straw to become thin and soft, so that the wheat lodged and fell down. Some crops almost ruined.
- Mercer County, Ky.*—Georgia, white, Tappahannock, and all the early varieties of wheat were greatly injured by the frosts of spring, which opened at least two weeks earlier than usual.
- Pulaski County, Ky.*—Wheat promising on the 1st of March, but since then the fly-rust and frost have nearly destroyed it.
- Shelby County, Ky.*—Early wheat almost an entire failure, but the later rains have raised the later wheat to almost 65 per cent. Rye looked well, but on harvesting was found deficient in grain.
- Scott County, Ky.*—Wheat in good condition and of superior quality, but crop short; about 90 per cent. of average crop.
- Columbiana County, Ohio.*—Wheat harvest commenced June 22, and promises to be excellent, both in quality and quantity.
- Crawford County, Ohio.*—Wheat nearly all cut; a few farmers finished cutting in June, which has not happened more than once in a quarter of a century. Plenty of rain in June.
- Lorain County, Ohio.*—Winter wheat coming out finely; it is partly harvested.
- Fairfield County, Ohio.*—Wheat, especially the smooth varieties, injured by frost.
- Holmes County, Ohio.*—Wheat was all harvested July 6; a portion of it too ripe. The first wheat cut in the county was on June 17.
- Morrow County, Ohio.*—Wheat promised an unusual crop, but rust and weevil have injured part of it.
- Adams County, Ohio.*—June 24, wheat nearly all harvested. The quality of the grain is not as good as last year, in consequence of frost, midge, rust, and scab.
- Portage County, Ohio.*—Wheat is fully an average crop, with as plump a berry as could be desired. No trouble from insects.
- Champaign County, Ohio.*—Wheat reduced below average by frost in April, which damaged early varieties, and rust, which nearly destroyed the late stools. Tappahannock is more injured than any other variety.
- Tuscarawas County, Ohio.*—Weather favorable for the wheat harvest, which is nearly completed. The berry shows that our soil is deficient in lime; not being filled out as

plump and full as one would expect, from the favorable spring we have had. It was a common remark, that the spring was as desirable as could be wished to develop the wheat crop, being cool and comparatively dry.

*Erie County, Ohio.*—Weather favorable for wheat harvest, much of which has been cut; fine plump berry, and the crop is the best for several years.

*Meigs County, Ohio.*—The fly was active in wheat sown on high ground, especially stubble, but on bottom lands the crop is heavy and fully up to the average.

*Coshocton County, Ohio.*—Wheat harvesting commenced June 20, unusually early. The dry weather of May shortened the crop in some localities, but the grain is of excellent quality.

*Vinton County, Ohio.*—A dry spring, fly and drought have shortened the wheat crop.

*Miami County, Ohio.*—Wheat is being rapidly harvested. It is much the largest crop ever harvested in the county. Barley all harvested in splendid condition; it will average 45 bushels per acre.

*Hamilton County, Ohio.*—Wheat cut, and considered the best for ten years.

*Hardin County, Ohio.*—Many fields of wheat were struck with rust on the leaves, and although it did not get on the stock, it stopped the growth, causing the grain to shrink to half its size, and the straw to break down before it could be cut; of five acres of the Tappahannock wheat, my crop will be almost an entire failure, although it looked very promising a week or ten days before harvest; the same has been the case with almost all kinds of wheat in certain localities.

*Huron County, Ohio.*—The wheat prospect is not as good as in May. "Rust and blight on the leaves will shrink the grain."

*Madison County, Ohio.*—Wheat never known better.

*Medina County, Ohio.*—Spring wheat is the greatest failure I ever knew. Drought and worms have so damaged it that not one-fourth of the fields are worth harvesting. Some farmers have plowed them up and sown corn for fodder, and more would have done so but for the grass seeds sown with the wheat.

*Ashland County, Ohio.*—The season has been very favorable—every crop more forward than usual, a large amount of wheat already cut.

*Johnson County, Ind.*—Wheat is threshing out below the expectations of the farmers. The average of this county will not exceed ten bushels.

*Fountain County, Ind.*—Season forward, and all vegetation far advanced. Some wheat is short, owing to dry weather, but the berry is generally very good.

*Washington County, Ind.*—Season dry, and all crops suffering for rain. Wheat all harvested in good order. It stood thin on the ground. The berry of all bearded varieties is full and plump; a part of the smooth varieties very much shrunk. The crop is below average.

*White County, Ind.*—The wheat crop is one of the best ever raised in this country and has been harvested two weeks earlier than in any preceding year.

*Howard County, Ind.*—Wheat cut two weeks earlier than usual, but the berry was not well filled in some fields.

*Franklin County, Ind.*—Wheat abundant in straw, but not well filled generally, owing to rust on the blades and fly.

*Pike County, Ind.*—The grains of wheat are good, but the yield will be reduced 33 per cent.

*Jasper County, Ind.*—Crops never looked so well. Showers every day.

*Elkhart County, Ind.*—Wheat ready for the reaper June 23 and 24. Some cut on these days, but on the 26th the harvest was general. It never was so early. Twenty-five years ago wheat was harvested June 28.

*Madison County, Ind.*—Weather very dry in Indiana. Wheat not so good as was anticipated; all harvested.

*Ripley County, Ind.*—Red rust attacked the wheat blades before the wheat headed, ruining them. The fly was also injurious in some places. The wheat crop will fall considerably below the average.

*Marion County, Ind.*—The wheat crop is about an average in quantity and quality. The harvest was the earliest ever known.

*Parke County, Ind.*—Wheat all harvested; the weather has been too warm and dry, and the yield will not be over nine bushels per acre.

*Noble County, Ind.*—Wheat harvest earlier than usual. The greater part of the crop will be cut before July 4. Wheat generally of good quality, although in some localities somewhat injured by rust. The yield will be more abundant than for many years. Weather favorable for harvesting.

*Dubois County, Ind.*—Wheat all cut; yield average. Some fields of poor or hilly ground were not cut; straw fallen and no grain. Barley is very fine; on some good ground the heaviest ever seen in the county.

*Cass County, Ind.*—Wheat all cut in good order, and some in the stack. Tappahannock wheat, sent from the Department, doing the best.

*Boone County, Ind.*—The wheat crop, in quantity, is not sustaining the prospect of a month ago; frost, midge, chinch-bug, and dry weather are charged with this result.

White and smooth varieties are quite a failure, and portions of red and bearded varieties are not worth harvesting. Barley is extra.

*Jennings County, Ind.*—We have suffered from drought eight weeks.

*Newton County, Ind.*—This has been the best season that has been in fifteen years, all things considered. We have the best crop of winter wheat I ever saw in this State or Ohio. I feel safe in putting the county down at an average of twenty-five bushels per acre.

*Brown County, Ind.*—Wheat harvest commenced June 13 and ended about the 20th. Scarcely any rain in June.

*Warren County, Ind.*—Wheat all cut during June, ten days earlier than usual. Some fields were very good; others, owing to the chinch-bug, did not pay to cut. The acreage is one-third larger, hence a good yield in the county.

*Benzie County, Mich.*—Drought very severe. Hard frosts June 9 and 15; did much damage to wheat away from the influence of Lake Michigan.

*Washtenaw County, Mich.*—Weather very favorable, and the wheat crop is one of the finest ever raised in the county.

*St. Joseph County, Mich.*—Wheat mostly cut and in shock. It is one of the best crops ever harvested in the county.

*Muskegon County, Mich.*—Wheat looks well; slight indications of rust on heavy soils.

*Calhoun County, Mich.*—Wheat was cut 23th June, but the general crop will be ready the first week in July. The yield is above the average.

*Clinton County, Mich.*—I finished cutting my wheat in June. So far as I can learn, no wheat was ever cut in the county in June before, and no one else has yet cut any. The variety is Diehl. It grew on warm, gravelly soil.

*Branch County, Mich.*—The prospects for the farmer are, upon the whole, cheering. Wheat fine.

*Ottawa County, Mich.*—June was very dry; crops benefited by recent rains.

*Macomb County, Mich.*—Weather in June was dry, injuring the spring wheat. Barley and winter wheat in good condition. Harvest will commence July 3.

*Genesee County, Mich.*—A protracted drought in May and early June injured spring crops, but does not seem to have produced any bad effect upon winter wheat.

*De Witt County, Ill.*—“Winter wheat was all harvested before July 1, being at least two weeks earlier than ever known. Spring wheat, our main dependence, is an entire failure, owing to the chinch-bug. Not an acre will be harvested in the county. Our farmers are talking of abandoning, altogether, the sowing of small grains.”

*Fayette County, Ill.*—Wheat good and all safely harvested. A larger acreage and better wheat than for several years.

*Winnebago County, Ill.*—We hope to get fine, plump wheat, but the yield will be somewhat diminished in consequence of unfavorable weather.

*Hancock County, Ill.*—Wheat (winter) on old ground is the best we have ever had. Spring wheat almost totally destroyed by chinch-bugs. All other crops are favorable. Altogether this is the great crop year, and will no doubt exceed any crop for years to come. The same favorable condition of the crops extends for one hundred miles around. Fall wheat is averaging twenty-two bushels to the acre, by measurement as threshed. We have had new flour to use in June, which has never been the case before. Vegetation and harvest have been two weeks earlier than usual.

*Iroquois County, Ill.*—Spring wheat destroyed by the chinch-bug; rye injured slightly.

*Peoria County, Ill.*—The chinch-bugs have destroyed the spring wheat and barley.

*Massac County, Ill.*—For four weeks before harvest the wheat suffered from rust; nearly every crop was injured more or less.

*Lee County, Ill.*—Wheat stands thin on the ground, but there is a plump, good berry. Wheat, rye, and barley never looked better.

*Williamson County, Ill.*—Wheat not as well filled out, nor the grain as plump as usual.

*Bureau County, Ill.*—Wheat almost a failure, from the effects of hail and the ravages of the chinch-bug.

*McDonough County, Ill.*—Spring wheat is greatly damaged by the chinch-bug. Very many farmers say that the spring wheat crop ought to be abandoned, and by them will be abandoned forever. It so happens that fall wheat, which our farmers have sown liberally, was never better, and, by ripening early, escaped the bugs.

*Putnam County, Ill.*—Spring wheat almost ruined by the chinch-bug; winter wheat good, but not much of it cultivated.

*Macoupin County, Ill.*—Wheat all harvested, and is the best crop ever harvested, both in quality and quantity.

*Will County, Ill.*—Spring wheat is nearly destroyed by the chinch-bug.

*Schuyler County, Ill.*—The probability is that the crop of spring wheat will be reduced below the average by the chinch-bug. Much of the wheat is utterly destroyed.

*Tazewell County, Ill.*—The fly has entirely destroyed the spring wheat. “I have not heard of a piece worth cutting.”

*Kankakee County, Ill.*—The chinch-bug has been so destructive to the spring wheat that it is very probable that not an acre in the county will pay for harvesting.

- Greene County, Ill.*—Spring wheat "burnt out." Chinch-bug injurious to all crops.
- Stark County, Ill.*—The chinch-bug has injured the spring wheat, but the yield will still be better than last year.
- Crawford County, Ill.*—Weather dry; season very early.
- Wabash County, Ill.*—Wheat shrunken to some extent, the Tappahannock being worst, and the English least.
- Carroll County, Ill.*—The heads of spring wheat are filling hopefully. The production of winter wheat is nearly abandoned, but what little there is looks well.
- Livingston County, Ill.*—The chinch-bug is doing great injury to wheat and barley. Season fine.
- Clinton County, Ill.*—Weather hot and dry for six weeks. Wheat will average 15 to 16 bushels per acre, and is number one in quality.
- Sangamon County, Ill.*—Winter wheat has yielded a fair average crop; spring wheat almost a total failure, owing to the chinch-bug. Some few farmers plowed under wheat and planted corn. This, however, in some cases, has merely afforded a new supply of food for the bug. The winter-wheat harvest commenced June 10; weather in June remarkably dry.
- Ogle County, Ill.*—Spring wheat is a staple crop; injured somewhat by rust, but will yield an average crop.
- Fond du Lac County, Wis.*—Wheat is short, and generally thin; some pieces will scarcely yield the seed. The cool, wet weather is improving the crop.
- Dane County, Wis.*—Wheat below the average; rust and chinch-bugs have done much damage.
- Pierce County, Wis.*—Spring wheat, early sown on new land, promises a full average; on most old land it is very poor, and the crop will be below average.
- Outagamie County, Wis.*—Spring wheat will not be a half crop in the county, with the most favorable weather; insects and blight the cause. Winter wheat will be injured some with the rust; cold nights and warm days supposed to be the cause.
- Brown County, Wis.*—The excessive heat of May retarded the growth of all crops, and had the effect of bringing them to a premature development.
- Waukesha County, Wis.*—Wheat will be more than an average crop. Timely rains and sunshine have forced all products grown in this latitude like a hot-bed.
- Dunn County, Wis.*—The extremely hot, dry weather of the latter part of May and the 1st of June injured small grain very much, causing the wheat to dry up and turn yellow near the root.
- Green County, Wis.*—Spring wheat will fall below average, owing to rust and chinch-bug. "A few farmers were bold enough to sow winter wheat a year ago, and they will reap a bountiful harvest."
- Richland County, Wis.*—There is some complaint of rust and ravages of the fly in wheat.
- Washington County, Wis.*—Winter wheat affected by rust about the middle of June, and Canada club-wheat one week later. Spring wheat is damaged in some localities by worms. The season is too wet.
- Grant County, Wis.*—Spring wheat scalded by the hot, dry weather in June.
- Ozaukee County, Wis.*—Rain and cold weather have injured spring wheat considerably; whole fields look yellow, and will not be worth cutting.
- Green Lake County, Wis.*—Wheat rusted; the indications are that the crop will be reduced one-half.
- Hancock County, Iowa.*—Spring wheat in favorable condition; there has been some rust on the blades, but heads have not been injured.
- Jefferson County, Iowa.*—Dry weather and chinch-bug have injured spring wheat seriously. Many fields will not be cut.
- Marshall County, Iowa.*—Wheat slightly injured by rust.
- Decatur County, Iowa.*—Spring wheat is the great bread-crop of this county, and the chinch-bug has taken every acre.
- Davis County, Iowa.*—Spring wheat has been entirely destroyed by the chinch-bug.
- Clarke County, Iowa.*—"Spring wheat was very good until about three weeks ago, when the southern half of the county was attacked with rust. The chinch-bug then followed and totally destroyed many crops—nearly all. Some farmers have set fire to the wheat and burned off the straw, hoping to kill the bugs and thereby save the corn. There was very little fall wheat raised in the county, but what was raised was No. 1."
- Page County, Iowa.*—The chinch-bug has destroyed the spring wheat. The average will not be much over one bushel to the acre. The average for spring wheat for the last three years in this county is 25 or 26 bushels. That of fall wheat is 60 bushels.
- Cherokee County, Iowa.*—The straw of wheat will be short, but the grains well filled.
- Bates County, Mo.*—Wheat has been largely thrashed and averages over 20 bushels per acre.
- Cass County, Mo.*—Wheat about average yield per acre. Rainy weather threatens damage in the shock.

*Clinton County, Mo.*—Chintz-bugs numerous and destructive, destroying nearly all the spring wheat and barley.

*Holt County, Mo.*—Rye has become quite a crop in this county, and has obtained a good reputation. The season has been exceptional and capricious. Chinch-bugs entirely destroyed spring wheat.

*Marion County, Mo.*—Wheat, after promising the largest crop ever given in the county, turns out, after cleaning up, to be greatly diminished in quantity but of good quality. Straw very heavy.

*Montgomery County, Mo.*—Very dry till the 20th of June. Wheat, though plump and good, does not turn out well to the head, yet more is raised in the county than ever before.

*Pike County, Mo.*—Wheat harvest earlier than ever known, commencing in May and closing June 24. Straw heavy, but heads not well filled.

*Platte County, Mo.*—Wheat acreage smaller than last year, but the quality is superior.

*Putnam County, Mo.*—Three-fourths of the spring wheat so badly injured by chinch-bug as not to be worth cutting.

*Vernon County, Mo.*—Drought till June 24, when the ground was thoroughly wet Chinch badly damaged the wheat.

*Wayne County, Mo.*—Acreage in wheat 25 per cent. greater than last year, but frost and fly greatly reduced the yield.

*Caldwell County, Mo.*—Tappahannock wheat has done well but is not our best wheat—heads too small.

*Clay County, Mo.*—Wheat has done very well and will be mostly saved.

*Clarke County, Mo.*—Wheat prospects the best for five years.

*Mercer County, Mo.*—Winter wheat of excellent quality and harvested two weeks earlier than usual. Spring wheat almost a failure through drought and chinch-bugs.

*Franklin County, Mo.*—Wheat wintered well, and in spite of rust, drought, chinch, and joint worm, has produced a better crop than last year, and three weeks earlier.

*Phelps County, Mo.*—Wheat cut two weeks earlier than usual—Tappahannock by June 10.

*Muscatine County, Iowa.*—The wheat crop, as usual of late years, is one of loss to the producer. Very early in the season it was attacked by red rust, and since then the chinch-bug has appeared.

*Harrison County, Iowa.*—Wheat is generally short, and has the appearance of being light, but there is time yet for improvement.

*Tama County, Iowa.*—Weather highly favorable to growing crops. The blades of wheat are somewhat rusted; no injury yet to the berry.

*Bremer County, Iowa.*—Wheat thin in many cases and lower leaves rusty. Many farmers sow too thin. Some complaint of chinch-bug.

*Mahaska County, Iowa.*—Some rust on the wheat, and chinch-bugs in a few localities. Harvesting spring wheat has commenced, which is ten days earlier than usual.

*Scott County, Iowa.*—Until a short time ago barley looked above average condition, but heavy rains have colored the berry. The harvest will be large in bushels. Wheat is injured by rust, and will not yield over 75 to 80 per cent. of an average crop.

*Wayne County, Iowa.*—Since the 1st of June the chinch-bug and rust have taken three-fourths of the entire crop of spring wheat. They have not done much harm to winter wheat.

*Washington County, Iowa.*—It has been very dry until the middle of June, but abundant showers have lately fallen—too late, however, to help the wheat.

*Cathoun County, Iowa.*—Wheat injured by drought; stalks short and heads small.

*Lee County, Iowa.*—Spring wheat almost entirely destroyed by chinch-bug. Spring barley also damaged some by the bug.

*Pottawattamie County, Iowa.*—Prospect for spring wheat unfavorable; rust and chinch-bugs plenty; will not be over half a crop; weather favorable, neither too wet nor dry.

*Audubon County, Iowa.*—Great falling off in wheat; it will be far below average in consequence of drought in June.

*Des Moines County, Iowa.*—Fall wheat ripe middle of June, and is a heavy crop. Spring wheat is being cut, and will be about half a crop, owing to the destructiveness of the chinch-bug.

*Marion County, Iowa.*—Spring wheat injured by the drought and chinch-bug. Winter wheat is a good crop, above average, and is harvested. Rye is a fair, average crop, and was harvested in good order.

*Plymouth County, Iowa.*—Recent rains have helped the wheat. Barley is being harvested, and the yield is encouraging.

*Palo Alto County, Iowa.*—Best prospect for crops in this county for five years.

*Story County, Iowa.*—So far no bug, insect, or worm preys upon any kind of grain.

*Allamakee County, Iowa.*—Wheat leaves badly rusted; heads short; straw healthy; the crop may be nearly an average in quantity, but cannot be of first-rate quality.

*Lee County, Iowa.*—Harvesting winter grain commenced June 12, twenty days earlier than usual. Grain saved in good condition.

*Sherburne County, Minnesota.*—Spring grain nearly ruined by drought. Some fields plowed up; others will hardly pay for harvesting.

*Meeker County, Minnesota.*—Spring wheat severely injured by dry weather. In some localities the fields were almost destroyed by a hail-storm June 30.

*Blue Earth County, Minnesota.*—The Hessian fly is in some wheat fields, but has done no damage.

*Kandiyohi County, Minn.*—June was dry, and crops suffered for want of rain. June 31 a hail-storm cut down many fields of grain.

*McLeod County, Minn.*—This county has suffered very much from drought. Wheat generally short and thin. "Farmers who plow deep and keep their lands free from weeds have promise of good crops."

*Watonwan County, Minn.*—Wheat injured by drought, so that half a crop is barely possible. Many fields will not be harvested.

*Winona County, Minn.*—No rain from middle of May, except two light showers. Seed spring wheat did not come up well, and is much too thin.

*Freeborn County, Minn.*—Drought and rust have damaged wheat to a considerable extent, but not so much as to give cause for serious alarm. Recent rains have revived the crop, but it will still fall below the average.

*Steele County, Minn.*—The drought in the latter part of May and first half of June seriously injured the wheat crop, which will scarcely equal the average, notwithstanding the recent heavy rains.

*Leavenworth County, Kans.*—From some inexplicable cause wheat, which promised the best and largest yield for years, is undoubtedly a poor crop. Chinch-bug is found in wheat everywhere, even on new sod broken last year. Fine rains lately.

*Woodson County, Kans.*—Chinch-bugs very destructive to spring wheat. Some fields are a total failure. The uplands suffer the most this year. We have been comparatively exempt from the ravages of the chinch-bug for nearly six years. In this warm country they are worse, we think, than farther north. They seem to survive the winter and commence early in the spring, hence spring crops suffer most. The Tappahannock wheat, sent me from the Department, has never, until this year, had a fair trial, owing to accident, but this season the yield will reach, from one bushel sowing, 45 bushels, and others report even more favorably; one farmer says that from 33 pounds he raised 25½ bushels.

*Chase County, Kans.*—Winter wheat injured materially by late frosts. Spring wheat rusting and not filling well.

*Wyandotte County, Kans.*—Season very wet. It is thought some wheat will grow in the shock. "I never saw a more luxuriant growth of all crops than the fields and orchards now present. Droughty Kansas is a myth."

*Osage County, Kans.*—Spring wheat entirely injured by the chinch-bug. May wheat cut June 9.

*Johnson County, Kans.*—Winter wheat filled well. Late wheat injured by the fly but little. Barley badly damaged by chinch-bug.

*Jefferson County, Kans.*—Wheat looked well until near cutting-time, when the chinch-bug inflicted some damage.

*Nemaha County, Kans.*—Spring grain much damaged by chinch-bugs.

*Riley County, Kans.*—Winter wheat all harvested, and is a heavy crop. Spring wheat almost a total failure, from rust and chinch-bugs.

*Franklin County, Kans.*—Wheat harvest is over. The yield is better than was anticipated a month ago. All crops more advanced than usual. Fine growing weather.

*Neosho County, Kans.*—Crops never more promising. Wheat will not yield quite as well as was anticipated.

*Clay County, Kans.*—Winter wheat all harvested. Spring wheat is being cut; it is injured by weeds. Farmers will sow a largely increased breadth of winter wheat the coming fall.

\**Morris County, Kans.*—Wheat injured by frost in the spring.

*Sedgewick County, Kans.*—Wheat on low lands injured by rust; on high ground said to be 20 per cent. better than last year. Harvest not yet commenced, owing to cool weather.

*Coffey County, Kans.*—Winter wheat now being threshed. Grain somewhat shrunk. The yield will not be as good as was expected before threshing. The early May wheat is the largest-sown variety, but, contrary to all previous years, is now in worse condition than most other kinds.

*Jackson County, Kans.*—Fall wheat is first-rate. Spring wheat not of much value.

*Siskiyou County, Cal.*—Prospect for more than average wheat crop till June; since, considerably injured by crickets.

*San Joaquin County, Cal.*—Season dry; wheat crop very small.

*Lake County, Cal.*—Wheat crop a little larger than last year; price last year \$1 per 100 pounds; present price \$2.

*San Diego County, Cal.*—Nothing raised within thirty miles of the coast, except some small crops in the mountains, by irrigation, as wheat, &c.

*Alameda County, Cal.*—Season dry; wheat and barley not more than half an average crop; quality good.

*Mendocino County, Cal.*—Wheat and barley in valleys one-half more than an average; on upland short.

*San Bernardino County, Cal.*—Wheat crop largest and of best quality for several years; grasshoppers very destructive.

*Dakota County, Nebr.*—Season very dry; wheat, rye, and barley more or less injured. *Dixon County, Nebr.*—Long-continued drought; Arnavka wheat four to six inches taller than other varieties cultivated here.

*Jefferson County, Nebr.*—Season fine; wheat and other crops look well; two weeks earlier than usual; harvest July 1.

*Lancaster County, Nebr.*—Serious drought the last four weeks; wheat has suffered much.

*Nemaha County, Nebr.*—Wheat badly injured by chinch-bugs.

*Otoe County, Nebr.*—Wheat and other grains considerably injured by drought; some pieces of wheat entirely destroyed by chinch-bug.

*Osage County, Nebr.*—Chinch-bugs appearing in large numbers; fears that they will damage spring wheat.

*Washington County, Nebr.*—Weather hot and dry; wheat crop in many places nearly ruined by drought; Arnavka wheat appears to be the best variety grown.

*Doña Ana County, N. Mex.*—Wheat, corn, beans, and red pepper principal crops; some fields of barley cultivated; look promising; all cultivation dependent upon irrigation.

*Ada County, Idaho.*—Wheat and barley seriously injured by drought and heat.

*Gallatin County, Mont.*—Hard frosts in June injured grain crops.

*Clackamas County, Oreg.*—Spring wheat threatened by drought.

*Douglas County, Oreg.*—Wheat and other grains above the average.

*Marion County, Oreg.*—The warm weather of June has brought crops forward very fast; wheat very fine.

*Kane County, Utah.*—Wheat considerably injured by grasshoppers.

*Millard County, Utah.*—Tappahannock wheat sent by the Department bids fair to be a success in this region.

*Morgan County, Utah.*—Severe frosts on the 3d and 4th of June will diminish the yield of wheat and other grains.

*Rich County, Utah.*—Wheat and other grains almost entirely destroyed by drought and grasshoppers.

*Salt Lake County, Utah.*—Spring wheat seriously affected by drought; mountain streams lower than for ten years past.

*Weber County, Utah.*—Prospect for wheat and all other crops never better than this year.

*Clarke County, Wash.*—Little wheat or other grain has been sown, owing to excessive rains.

#### COTTON.

The July returns do not materially change the cotton crop prospect reported in June. Severe rain storms have continued to obstruct cultivation and check growth in the States upon the Gulf coast. The States of Louisiana, Mississippi, Alabama, and Florida average lower in condition than at the date of the last report; the Georgia and Texas averages remain unchanged, and an improvement is indicated in the Carolinas, Tennessee, and Arkansas. The percentage in each State, as compared with the July statement of last year, is as follows:

	July, 1870.	July, 1871.		July, 1870.	July, 1871.
North Carolina.	94 per cent.	99 per cent.	Mississippi....	95 per cent.	80 per cent.
South Carolina.	96 "	100 "	Louisiana.....	101 "	75 "
Georgia.....	101 "	82 "	Texas.....	97 "	93 "
Florida.....	98 "	88 "	Arkansas.....	101 "	90 "
Alabama.....	102 "	81 "	Tennessee.....	85 "	98 "

While no estimate can, at this early date, be authoritatively made, this information leads to the following conclusions: With a reduction of 14 per cent. in acreage, the continuance of the present relatively low condition, and a season as long as that of 1870, there should be gathered a crop of 3,200,000 bales, or about as large as that of 1869; with a season of average length, 2,900,000; with an early frost, and a very unfavorable season for picking, 2,700,000. The prevalence of insects, with

other unpropitious circumstances, would probably reduce the crop to 2,500,000 bales. This is presented as a fair statement of the range of probabilities, based upon the most extensive and reliable data, and uninfluenced by the clamor of the speculators of the cotton exchange.

*Duplin County, N. C.*—Cotton blossomed June 13, two weeks earlier than usual. Crop clean and in good condition—finest prospect for many years.

*Greene County, N. C.*—Cotton 15 per cent. better than last year, with 10 per cent. greater acreage.

*Martin County, N. C.*—Cotton has mostly done well. Promises a good crop and is two weeks earlier than usual.

*Perquimans County, N. C.*—Cotton backward. Wet weather gave the start to grass, but in the last two weeks of dry weather the crop has been cleared.

*Union County, N. C.*—Cotton early planted, on good land, and well worked is doing well. There is much poor cotton in the county, and grass has injured one-fifth of the crop.

*Brooks County, Ga.*—Crops on low lands abandoned.

*Burton County, Ga.*—Favorable weather will make the cotton three-fourths of last year's yield.

*Chattahoochee County, Ga.*—Much low-land cotton drowned out. Much depends on the season, but the crop cannot reach an average.

*Dougherty County, Ga.*—Cotton acreage decreased 10 per cent. Crop will aggregate about half of last year's.

*Forsyth County, Ga.*—Cotton has gained considerably during the month, but will be short.

*Gwinnett County, Ga.*—Cotton reduced in acreage and backward.

*Milton County, Ga.*—Finer weather has improved cotton, and it may be an average crop.

*Scogee County, Ga.*—Continued rain has prevented any improvement in cotton. Condition 75 per cent.

*Newton County, Ga.*—Cotton has improved very much in thirty days, and where free from grass, is growing rapidly.

*Pulaski County, Ga.*—Cotton backward; first blooms June 16.

*Quitman County, Ga.*—Cotton exceedingly poor, and reduced in acreage one-third.

*Talbot County, Ga.*—Rain has injured cotton, but it has improved.

*Upton County, Ga.*—Cotton seriously injured.

*Autauga County, Ala.*—Cotton backward, very grassy.

*Chambers County, Ala.*—Cotton backward, but with good weather will make a fair crop.

*Dallas County, Ala.*—On loam and swamp lands cotton crop will be but one-half. On up or sandy lands cotton has improved.

*Greene County, Ala.*—Cotton small, grassy, and poor, but as the weather is fine it will probably improve.

*Lauderdale County, Ala.*—Grassy and deficient in stand.

*Lowndes County, Ala.*—Has been injured by hoes in removing the grass.

*Macon County, Ala.*—Cotton almost ruined, especially upon the bottoms, where the grass has taken full possession. Poorest cotton prospects for thirty years.

*Marengo County, Ala.*—Cotton stand poor; plant small; prospects improving with the weather.

*Perry County, Ala.*—Cotton in a very unpromising condition.

*Sumter County, Ala.*—Cotton late planted and badly in grass.

*Gadsden County, Fla.*—Rain has injured cotton.

*Jackson County, Fla.*—Cotton doing well; a little too much rain in places.

*Madison County, Fla.*—Acreage in cotton reduced one-fourth, and crop injured by wet; not over half a crop expected.

*Nassau County, Fla.*—Cotton on low lands seriously injured by rain.

*Wilkinson County, Miss.*—Full 10 per cent. of cotton planted was abandoned on account of rain; crop condition poor.

*Smith County, Miss.*—Cotton prospects exceedingly poor.

*Sunflower County, Miss.*—Cotton grassy; too much rain.

*Madison County, Miss.*—Cotton in bad condition; grassy.

*Clark County, Miss.*—Some cotton fields plowed up for corn and cow-peas.

*Lauderdale County, Miss.*—Acreage reduced 15 per cent., and 5 per cent. of the planting turned out.

*Washington Parish, La.*—Cotton has suffered from continued rains.

*Union Parish, La.*—Cotton may come to an average.

*East Feliciana Parish, La.*—Cotton has not been so unpromising since 1846.

*Rapides Parish, La.*—Cotton three weeks behindhand, and not over half a stand. 15 per cent. of the planting thrown out.

*Austin County, Texas.*—Dry weather has enabled farmers to clean their cotton fields, and the crop looks fair.



*Jefferson County, Texas.*—Cotton depends upon the rains of July.

*Matagorda County, Texas.*—Lowland cotton injured by rain; upland promises better.

*Milan County, Texas.*—Acreage in cotton increased 50 per cent.

*Upshur County, Texas.*—Acreage in cotton reduced.

*Williamson County, Texas.*—Drought threatens to shorten the cotton crop.

*Sebastian County, Ark.*—Cotton acreage one-third reduced.

*Columbia County, Ark.*—Cotton late and grassy; bad condition.

*Little Rock County, Ark.*—Cotton looks well on high lands, but drowned out on low lands; prospects greatly improved within a week.

*Dyer County, Tenn.*—Cotton reduced in acreage, but better in yield.

*Giles County, Tenn.*—Cotton culture being abandoned.

*Lake County, Tenn.*—Cotton culture ceasing from reduction in market price, and scarcity of reliable labor.

#### POTATOES.

The indications are that the crop of potatoes (*Solanum tuberosum*) will be a full average. It has had to contend with drought and late frosts in many of the States devoted to its culture, with grasshoppers in some of the Eastern States, and with the Colorado bug in nearly all of the Western States; but to offset these unfavorable conditions the season as a whole has been favorable; there is an increase in the aggregate acreage; rot is not reported; and the farmers, knowing the perils to which the crop was exposed, have shown unusual diligence in caring for it. Thus, the Colorado bug has been industriously fought wherever it has appeared, while the losses sustained from frosts by the early varieties are compensated by increased attention to those which are later in maturing. Late rains in June were propitious, and if the remainder of the season prove favorable there will be no scarcity of this staple crop. The Colorado bug is extending its ravages. It is moving eastward and southward, having been this season very destructive in Ohio, where it did but little damage last year, and made its appearance in great numbers in Kentucky. It has done much damage in all the Northwestern States. On the other hand, it seems to be leaving portions of Minnesota, Iowa, Illinois, Michigan, Wisconsin, and Indiana. What injury the young may do to the present crop after the old ones have disappeared can only be conjectured, but the presumption is that it will be very slight. The principal remedy yet relied upon for the destruction of the bug is Paris green, but there is greater activity this year in hand-picking than was shown last year. Insect enemies of the bug have also appeared. In the Southern States sweet potatoes promise a large yield, and wherever Irish potatoes have been planted they have almost invariably done well. Some extracts from correspondence are subjoined, to show, mainly, the influences that are at work to destroy the Colorado bug.

*Lapeer County, Mich.*—The potato crop looks fair. The old bugs have nearly disappeared; the young ones may yet do some damage.

*Carroll County, Mich.*—The bugs appeared in great numbers; but the "lady-bugs" have eaten their eggs, and Paris green has kept them at bay.

*Scott County, Ill.*—The potato bug is being destroyed by another small bug, which is about the same size, with a long, sharp bill.

*St. Clair County, Ill.*—Industrious people, who have gathered the bugs and destroyed them, will have fine crops of potatoes.

*Columbia County, Wis.*—Potatoes look well. By perseverance and Paris green the bugs have been kept at bay.

*Douglas County, Wis.*—Colorado bugs more numerous than last year. They were on the ground before the potatoes were up.

*Ozaukee County, Wis.*—Everybody has fought the potato bug, and the yield of potatoes will be good.

*Richland County, Wis.*—Colorado bugs do not seem to be doing any harm. There is a bug that is killing them.

*Green Lake County, Wis.*—Bugs leaving. They have left a few eggs and some young bugs, but the latter are doing no harm. The crop looks well.

*Franklin County, Ind.*—Potatoes doing better just now. Colorado bug gone; driven off with Paris green. When too strong it injured the tops. One ounce of green to one and a half pounds of flour, dusted on, will do.

*Howard County, Ind.*—The Colorado bug has almost disappeared.

*Washington County, Ind.*—The Colorado bug has almost eaten up the potatoes; what they left the striped bug is now eating.

*Jennings County, Ind.*—Colorado bugs plenty. The only remedy which promises relief from the potato bug is industry in its destruction.

*Cass County, Ind.*—Colorado bugs have almost entirely disappeared. Their eggs are destroyed by a small bug about one-third of an inch in length; red, with black spots.

*Benton County, Minn.*—Colorado bug disappearing; old ones have about all gone; the young ones don't seem to thrive as in previous years.

*Sherburne County, Minn.*—Colorado bug destroyed by Paris green. In some cases the remedy is about as bad as the bugs, owing to its too free use.

*Licking County, Ohio.*—The Colorado bugs made their appearance about the 1st of June, but have not done much damage, as they have been killed by the bushel.

*Franklin County, Ohio.*—The Colorado potato bug has been a great pest here this season, and has injured the crops 10 per cent. The farmers fought them unceasingly, or they would have stripped the fields. Paris green 1 pound, and flour 10 pounds, we found a perfect dead-shot for these pests of the potato-patch. I have seen no evil effects following its application.

*Eric County, Ohio.*—Colorado bug doing some damage; most people keeping them off by hand picking.

*Crawford County, Ohio.*—Colorado bug plenty; has been kept in check by constant picking and arseniate of copper.

*Shelby County, Ky.*—A gentleman got rid of his potato bugs by turning his Muscovy ducks into the field. In twenty-four hours there were no bugs left.

#### HAY AND PASTURES.

The season has been unfavorable for the grasses, owing mainly to the prevalence of drought. The drought of last season has also had an unfavorable effect on meadows and pastures. There will be a short hay crop. In Maine, where hay is a leading staple, the yield will not much exceed two-thirds of an average crop. In all of the New England and Middle States the condition of clover, timothy, and pastures is reported below average. In most of the Southern and Western States, and in Oregon, the pastures are above average, and the condition of clover and timothy, where grown, is equally good. In California clover and timothy have had a fine growth, while pastures are in relatively low condition. In sections where pastures and meadows have partially failed it is not yet too late to supplement them with corn as a soiling crop.

*York County, Me.*—I have about two acres Alsike clover from seed you sent me in 1868. Grown alone it falls to the ground; mixed with other grasses it is profitable.

*Penobscot County, Me.*—Grass badly winter killed.

*Sagadahoc County, Me.*—Hay must be much below the average, owing to the severe drought last season, the open winter, and dry spring.

*Hillsboro County, N. H.*—Clover of last year's standing all killed by last year's drought; timothy and other grasses are thin.

*Norfolk County, Mass.*—Pastures show the effect of last summer's drought, but are improving some because of frequent rains. Clover is not sown as a distinct crop, but in seeding new meadows it is customary to sow from 8 to 12 pounds of seed with herds' grass and red top.

*Orleans County, Vt.*—Farmers are now cutting their hay. Pastures are better than the hay crop. Weather too dry.

*New London County, Conn.*—Pastures and meadows have greatly improved since late rains.

*Litchfield County, Conn.*—The drought of last year killed the valuable grasses.

*Columbia County, N. Y.*—Timothy was affected by the drought of last year, and has not recovered.

*Queens County, N. Y.*—Hay is a principal crop. The rains and cool weather of June have materially helped the crop.

*Warren County, N. Y.*—Clover and timothy sowed a year ago were a failure in great part, owing to the dry weather.

*Westchester County, N. Y.*—Late rains and cool weather have helped grass very much.

*Chester County, Pa.*—Late rains have helped the pastures very much.

*Butler County, Pa.*—The frosty May and dry, hot June ruined our pasture fields and meadows, so that our cattle suffer to some extent for want of good pasture. The meadows will not yield 50 per cent. of an average crop; many cannot be cut.

*Beaver County, Pa.*—The drought ended with a nice shower June 17, and rains have since helped the pastures. The last of June was unfavorable for making clover hay.

*Wayne County, Pa.*—Owing to the drought that prevailed in this county last summer and fall, timothy meadows are found this spring almost entirely killed, and much damage was also done to clover and pasture fields. The months of May and June have been extremely dry.

*Medina County, Ohio.*—A severe drought in May and June injuriously affected grass crops, but recent rains have greatly benefited them.

*Portage County, Ohio.*—There is an uncommon growth of white clover this year; pastures are a full average.

*Morrow County, Ohio.*—Meadows and pastures have come forward rapidly since the late rains.

*Alpena County, Mich.*—Hungarian grass is raised in considerable quantities in this county, and with perfect success.

*Winnebago County, Ill.*—Clover and timothy have done remarkably well.

*Clarke County, Mo.*—Prospect for timothy the best in five years.

*Cole County, Mo.*—First crop of clover well secured; second fine, owing to copious rains.

*Franklin County, Mo.*—Pastures dried up. But few acres of either clover or timothy will be harvested.

*Cedar County, Iowa.*—Meadows light, but improving fast with late rains.

*Marion County, Iowa.*—Meadows on dry ground very light. Hundreds of acres barely worth cutting and saving.

*Woodson County, Kans.*—Clover, timothy, and blue grass flourish in Kansas.

*Anderson County, Ky.*—Meadows taken to some extent by white blossom and other weeds.

*Franklin County, Ky.*—Pasture good; clover and timothy injured by white top; not over half a crop.

*Jefferson County, Ky.*—Timothy not so good as clover—infested with white weed or daisy.

*Lincoln County, Ky.*—Pasture not so good as usual; clover and timothy injured by white top.

*Shelby County, Ky.*—Timothy and clover cut short by drought and white blossom.

*Jefferson County, W. Va.*—Hay crop short. The best crop of the season was fifteen tons on five acres.

*Wilson County, Tenn.*—Pastures splendid; clover average crop; timothy 50 per cent. below last year.

*Giles County, Tenn.*—Greater attention paid to grass crops.

*Carroll County, Md.*—Hay not one-half a crop; poorest yield in forty years.

*Howard County, Md.*—A farmer who cut fifty tons of hay last year will this year cut but five tons. This is a good sample of the county.

*Greenville County, Va.*—Clover grows luxuriantly, affording cow feed by the 1st of April; timothy, also, does well on the heavy soils.

*Bertie County, N. C.*—Experimental crops of clover sown in the spring.

*Greenville County, S. C.*—First crop of red clover hay harvested June 9; best was 2½ feet high.

*Cobb County, Ga.*—Clover and timothy raised on a small scale.

*Winnett County, Ga.*—Clover and timothy becoming more common.

*Wilkes County, Ga.*—Clover just introduced. First crop cut and very fine.

*Colbert County, Ala.*—Increased disposition to grow clover. Good experimental crop of red clover reported 3 or 4 feet high.

*Manatee County, Fla.*—Red clover might be made valuable as a fertilizer.

*Hancock County, Miss.*—No artificial pastures in the county.

*La Fourche County, La.*—No grasses planted for pasturage, and wild grasses do not exhibit much difference from year to year.

#### OATS.

In the New England States oats have had a rapid growth and are in excellent condition. In all these States, except Vermont, their condition is reported above average. In the Middle States the condition of the crop is slightly below average, Pennsylvania and Maryland being the lowest—the former being 13 and the latter 20 per cent. below. Drought in May and June has prevailed in all these States. Only one of the Western States, Minnesota, reports a condition greatly below

average, 24 per cent. Ohio is 3 per cent. above average; Wisconsin 4 per cent.; Kansas 8 per cent. The other Western States are slightly below average. In all the Western States the chinch-bug has been very destructive. Of the Southern States, Mississippi and Texas present the best showing, each being 10 per cent. above average. The other States of the South fall below average, owing principally to rust. The aggregate crop of the year will probably be a full average.

#### FRUIT.

Frosts in April and May, following the remarkably early opening of spring, greatly lessened the prospect of a good crop of apples. A short crop is indicated in all the States where they are most largely grown; probably the crop will be three-fourths of an average. Peaches have escaped with less damage, and in the States where special attention is given to their culture the yield will be unusually large. In Maryland it is estimated to be a full average; in New Jersey, 8 per cent. above; in Delaware, 40 per cent. above. In South Carolina, the yield is 25 per cent. above average; Georgia, 10; Florida, 10; Alabama, 79; Mississippi, 43; Louisiana, 47; Texas, 24; Arkansas, 8; Tennessee, 10; Michigan, 5; Iowa, 2. In all the remaining States the yield is below average. Pears promise well, and plums seem to have suffered less from the curculio than in late years. Cherries, strawberries, and other small fruits have been abundant. Grapes have seldom presented a more favorable prospect. They have met with no serious disaster in any of the grape-growing sections.

Table showing the condition of the crops, &amp;c., on the 1st day of July, 1871.

STATES.	CORN.		WHEAT.		RYE.		OATS.		BARLEY.		PASTURE.		CLOVER.		TIMOTHY.		POTATOES. (Solanum tuberosum.)		POTATOES. (Batatas edulis, sweet.)	
	Average compared with last year.	Average condition July 1.	Average condition of winter wheat July 1.	Average condition of spring wheat July 1.	Average condition of winter rye July 1.	Average condition of spring rye July 1.	Average condition July 1.	Average condition of winter barley July 1.	Average condition of spring barley July 1.	Average condition July 1.	Average condition July 1.	Average condition July 1.	Average condition July 1.	Average condition July 1.	Average compared with last year.	Average condition July 1.	Average compared with last year.	Average condition July 1.	Average compared with last year.	Average condition July 1.
Maine.....	97	99	101	105	97	104	105	102	102	63	69	106	104	100	100	100	100	100	100	
New Hampshire.....	100	99	98	101	101	102	100	96	95	82	82	82	82	103	100	100	100	100	100	
Vermont.....	98	99	93	98	100	96	95	102	95	96	84	83	83	102	98	110	107	106	106	
Massachusetts.....	97	100	98	98	99	96	105	102	100	96	85	85	85	110	107	110	106	106	106	
Rhode Island.....	96	96	97	105	105	103	107	96	96	77	81	107	106	110	107	106	105	105	105	
Connecticut.....	99	105	97	105	101	103	107	99	99	85	85	85	85	100	100	100	100	100	100	
New York.....	100	96	108	97	103	94	96	94	94	77	78	99	99	100	100	100	100	100	100	
New Jersey.....	102	98	112	102	112	103	96	73	73	83	83	83	83	100	100	100	100	100	100	
Pennsylvania.....	101	97	110	93	106	86	96	85	85	85	85	85	85	100	100	100	100	100	100	
Delaware.....	103	118	110	100	100	100	90	90	90	90	90	90	90	100	100	100	100	100	100	
Maryland.....	101	101	115	108	108	100	60	60	117	77	70	86	86	100	100	100	100	100	100	
Virginia.....	105	104	98	98	99	99	93	93	117	97	70	93	93	100	100	100	100	100	100	
North Carolina.....	109	105	70	92	92	99	18	18	100	100	100	100	100	102	104	103	101	100	96	
South Carolina.....	112	110	66	72	72	72	72	72	94	103	103	103	103	106	106	106	106	106	106	
Georgia.....	110	95	63	63	96	96	77	77	94	115	119	115	119	108	111	113	105	103	103	
Florida.....	107	97	87	87	87	87	87	87	93	111	111	111	111	105	105	105	105	105	105	
Alabama.....	111	88	69	69	89	89	69	69	93	117	117	117	117	100	101	101	101	101	101	
Mississippi.....	114	93	91	93	93	100	110	110	93	107	121	107	121	100	101	101	101	101	99	
Louisiana.....	115	69	76	76	93	100	76	76	100	103	103	103	103	100	101	101	101	101	99	
Texas.....	115	69	100	88	93	88	110	102	76	103	103	103	103	100	104	104	104	104	96	
Arkansas.....	124	69	68	68	99	99	69	69	98	100	100	100	100	100	106	106	106	106	99	
Tennessee.....	107	106	59	59	51	51	60	60	98	98	100	100	100	100	106	106	106	106	99	
West Virginia.....	103	101	103	103	98	98	86	86	98	103	103	103	103	100	102	102	102	102	100	
Kentucky.....	103	104	65	65	87	90	59	59	100	89	82	82	82	101	96	96	96	96	100	
Missouri.....	110	115	103	64	105	100	91	91	107	101	92	92	92	100	98	98	98	98	98	
Illinois.....	106	110	107	70	105	107	90	90	103	107	105	100	100	100	100	100	100	100	102	
Indiana.....	104	102	93	98	96	91	90	90	105	100	100	100	100	100	94	94	94	94	99	
Ohio.....	103	106	104	83	103	103	103	103	105	102	100	100	97	100	103	103	103	103	94	
Michigan.....	103	99	108	96	105	102	86	86	92	88	88	88	88	100	102	102	102	102	97	
Wisconsin.....	107	110	106	80	108	87	104	104	85	114	107	107	107	107	109	107	107	107	84	
Minnesota.....	111	105	98	70	97	90	76	76	81	114	107	107	107	107	109	107	107	107	84	
Iowa.....	115	113	108	82	104	99	96	96	107	114	107	107	107	107	109	107	107	107	84	
Kansas.....	150	117	107	85	107	85	108	108	110	100	98	98	98	100	103	103	103	103	102	
Nebraska.....	130	107	110	80	96	95	102	102	110	112	110	110	110	109	108	108	108	108	102	
California.....	100	90	83	85	75	75	93	93	85	81	100	100	100	108	103	103	103	103	102	
Oregon.....	100	93	101	110	96	105	108	108	101	113	113	113	113	108	106	106	106	106	80	



## THE DEPARTMENT OF AGRICULTURE.

## RESIGNATION OF COMMISSIONER CAPRON AND APPOINTMENT OF HIS SUCCESSOR, HON. FREDERICK WATTS.

Since the last Monthly Report was issued, an important change has occurred in the administration of this Department. Hon. Horace Capron has tendered to the President his resignation of the office of Commissioner of Agriculture, to which he was appointed November 29, 1867, and the resignation has been accepted, to take effect on the 1st day of August next. The following correspondence on the subject has passed between the Commissioner and the President:

DEPARTMENT OF AGRICULTURE, *Washington, June 27, 1871.*

DEAR SIR: In fulfillment of an engagement with representatives of a foreign government, the nature and circumstances of which I communicated to you early in May last, it becomes necessary to tender my resignation as Commissioner of Agriculture, to take effect on the 1st day of August next. In doing so, I desire to express my high appreciation of your confidence and kindness, officially and personally expressed, and I assure you of their indelible impression upon my mind and heart.

I have the satisfaction of leaving the Department in efficient working order; its buildings and improvements erected, without increasing the moderate annual appropriations; its finances unembarrassed; its current pecuniary obligations without, as heretofore, the necessity of deficiency appropriations, and an enlarged fund for the next fiscal year. Its usefulness has been satisfactorily tested, not only in the exercise of its well-known public functions, but in answer to thousands of personal inquiries, involving every aspect of scientific agriculture, and tending to advance the public weal with private welfare; and its importance asserted in decided terms by industrial authorities, official and personal, of all quarters of the globe. I scarcely need ask from you a continuance of that intelligent appreciation and fostering care accorded hitherto, and essential to the full development and highest utility of this Department of the National Government.

I have the honor to be, your obedient servant,

HORACE CAPRON,  
*Commissioner of Agriculture.*

THE PRESIDENT OF THE UNITED STATES.

EXECUTIVE MANSION, *Washington, June 28, 1871.*

DEAR SIR: Your letter of the 27th instant, tendering your resignation as Commissioner of Agriculture, is just received. Appreciating as I do the value to the country at large of the Department over which you have so ably presided for years, I should regret receiving or accepting your resignation were it not for the importance attached to the new position which you are called on to fill, and which, no doubt, will be filled with credit and to the inestimable value of the nation which has secured your services.

In the new place of which you have accepted the responsibilities I predict results creditable to yourself and to the nation which has so honored you, as well as the rapid advance of commerce between that nation and all others. Such a result cannot prove otherwise than beneficial to the world's interests, leaving out of the account that of ourselves as a single nation.

Your resignation is accepted from the date proposed by yourself, with anticipations that you will realize all that is expected from your new duties.

With sincere wishes for your future success, I subscribe myself, very sincerely, your obedient servant,

U. S. GRANT.

Hon. HORACE CAPRON, *Commissioner of Agriculture.*

The engagement to which General Capron refers in his letter above given was made with commissioners of the Japanese government, who were deputed to visit this country and make arrangements for the introduction into Japan of American methods of agriculture and a knowledge of other industrial arts of our advanced civilization, including our railroad and mining systems. General Capron has been selected to perform this important work. He is empowered to introduce into Japan models of implements and machinery connected with our indus-

trial achievements, together with furniture, utensils, and all the other mechanical accompaniments of our business, social, and domestic life. He will be assisted by a corps of scientific gentlemen, including two of the officials of the Department of Agriculture—Dr. Thomas Antisell, chemist, and Dr. Stuart Eldridge, librarian, both of whom have resigned the offices they respectively held. After the 1st of August the address of the commission will be Yokohama, Japan.

General Capron's mission cannot fail to result in many and enduring benefits to the people of Japan, who, through its instrumentality, will learn the arts that have made us a mighty nation, while the people of our own country will be benefited in return by the demand for the products of our mines, manufactories, and farms, to which the industrial development of Japan will surely lead. It will strengthen the friendly relations which now exist between the two nations, and it will aid greatly in extending the influence of our civilization to the neighboring empire of China.

General Capron bears with him to Japan letters of the most complimentary character from the President, the General of the Army, the Secretary of War, the Secretary of the Navy, the Acting Secretary of State, and Her Britannic Majesty's minister at Washington. The employés of the Department of Agriculture have also formally united in the following testimonial, presented at a meeting called for the purpose on the afternoon of July 13:

Whereas, the Hon. Horace Capron, Commissioner of Agriculture, having resigned, for the purpose of accepting a high position under the Japanese government: Therefore,

*Resolved*, That we congratulate him upon the distinguished compliment he has received in being selected by the government of Japan to guide and aid in the development of the agricultural resources of that country.

*Resolved*, That, in the retirement of Hon. Horace Capron from the Department of Agriculture, the people of the United States have lost an honest, faithful, and able public servant, and the agricultural interest of the country one of its most intelligent, zealous, and progressive advocates.

*Resolved*, That, as employés of the Department of Agriculture, we hereby testify our sincere regret at the severance of those genial relations, official and personal, which we have hitherto sustained to Commissioner Capron; that we will ever cherish a warm remembrance of his uniform courtesy and kindness, and that we tender to him our best wishes for his entire success in the important mission to which he has been called.

*Resolved*, That a copy of these resolutions, properly engrossed, be presented to the retiring Commissioner.

Hon. Frederick Watts, of Carlisle, Pennsylvania, has been appointed successor to General Capron as Commissioner of Agriculture, to date from the 1st of August. Judge Watts is a native of Carlisle, and was educated at Dickinson College, where he was graduated at the age of nineteen. Immediately after his graduation he went to Erie County, Pennsylvania, and there lived three years with an uncle, working daily on his farm. It was while residing with this uncle that the taste for farm life, which has characterized his whole career, was fully formed, and a practical knowledge of its essential requirements thoroughly learned. Returning to Carlisle, he studied law with Andrew Carothers, and was admitted to the bar. He practiced his profession until 1848, when he was commissioned by Governor William F. Johnston as president judge of the ninth judicial district of Pennsylvania, composed of the counties of Cumberland, Perry, and Juniata. This office he held for three years, when, it having been made elective, and the district being under the control of the political party with which he was not in sympathy, he retired from the bench and returned to the bar. He did not, however, actively engage in his profession, a large portion of his time being devoted to the personal superintendence of a farm near Car-



lisle. For many years he had been a farmer as well as a lawyer, and had become known as one who believed in the application of science to the tilling of the soil. In 1858 he abandoned entirely the practice of law, and since then has been exclusively a farmer. During the last few years he has resided on his farm, giving to all the details of its management his personal attention. He is also the owner of another farm, which he manages through a tenant.

Judge Watts's prominence as a farmer led to his election, in 1856, as the first president of the Pennsylvania Agricultural Society, which office he held until 1862, when he declined a reelection. He was elected the first president of the board of trustees of the Agricultural College of Pennsylvania, a position which he still holds. He has never been prominent as a politician, although entertaining at all times positive views of public policy, and has never been a candidate for either congressional or legislative honors. He was not an applicant for the distinguished position to which he has just been appointed, and its duties and responsibilities have been accepted with reluctance.

Judge Watts is a practical and scientific farmer. He has devoted his life to the practice of progressive methods of diversified agriculture, and has always manifested a deep interest and genuine enthusiasm in the advancement of the farmer's calling. In his new office he may be expected to give to all the agricultural interests of the country the same intelligent and industrious attention he has bestowed upon the varied operations of his own farm and the agriculture of Pennsylvania.

#### SKETCH OF THE DEPARTMENT OF AGRICULTURE.

The census establishes the fact that one-half the population of the United States is either directly engaged in agricultural pursuits or wholly dependent upon them for support, while no census is required to prove that the whole country is mainly indebted for its prosperity to the quiet labors of the independent farmer. Our commerce and manufactures are of vast importance, but they are of secondary interest when compared with our stake in agriculture. Unlike some of the nations of Europe that do not produce food enough to supply the necessary wants of their people, poorly as some of them are always fed, the United States annually produces more food than her people can consume or waste. We are large exporters of meats and breadstuffs and of other agricultural productions. We are distinctively and preëminently a nation of farmers, and such we shall undoubtedly remain. The temperate and stimulating climate of our country, the variety of soil and range of latitude and elevation, the rural tastes of our people, and the vast domain yet open to homestead occupancy, combine to assure a continuance of the interest heretofore manifested in agricultural pursuits. It is somewhat strange, therefore, in view of all these facts, that so much attention has been bestowed from the foundation of the Government upon the encouragement of commerce and manufactures and so little upon the encouragement and improvement of agriculture; stranger still, that any professedly patriotic citizen should ever have given utterance to the sentiment that "agriculture can take care of itself." Not only has the attention of politicians and statesmen been diverted from this chief of all the industries, but farmers themselves have been slow to press their claims to more favorable recognition. It is true that Washington, and the presidents who immediately succeeded him, urged the importance and propriety of placing agriculture under the direct fostering care of the Government, and that the subject was considered

by committees of both houses of Congress during the early days of the Republic, but constitutional and other objections, and the lack of general interest in any suggestion for the improvement of agricultural methods, constantly postponed favorable legislative action.

To Hon. Henry L. Ellsworth, of Connecticut, son of Hon. Oliver Ellsworth, third Chief Justice of the United States, is the country more indebted than to any other person for the recognition by Congress of the claims of agriculture. Mr. Ellsworth's services date from 1836, in which year he was appointed the first Commissioner of Patents. The Patent Office had been just then reorganized. Owing to its subsequent intimate association with the interests of agriculture, the origin of this office requires a brief notice before we refer to Mr. Ellsworth's administration of its duties.

The first article of the Constitution provides for promoting the progress of science and the useful arts by securing to authors and inventors the exclusive right to their respective writings and discoveries. This clause is the foundation of our laws regulating copyrights and patents. Up to 1793 the granting of letters-patent was confided by act of Congress to the Secretary of War, the Secretary of State, and the Attorney General, the records of patents to be kept in the office of the Secretary of State, and all models and drawings to be deposited there. On the 21st of February of that year the duty of acting upon applications for patents was assigned exclusively to the Secretary of State. The examination of these applications was performed by a single clerk in the office of the Secretary, who, in 1821, received the title of Superintendent of the Patent Office. In 1830 this office was further recognized by law, and made the subject of a special appropriation. On the 4th of July, 1836, it was made a separate bureau of the Government, and the office of Commissioner of Patents was created: In December of the same year, Blodgett's Hotel, a three-story brick building, used for Government offices, which stood where the Post Office building now stands, and fronted on E street, was burned to the ground. In one or two of the upper rooms was located the Patent Office, and its contents were entirely consumed. Afterwards until 1840 the business of the bureau was transacted in rooms appropriated to its use in the City Hall. In 1840 the Patent Office was removed to the building erected expressly for its accommodation and now occupied by it.

Mr. Ellsworth was Commissioner of Patents from 1836 to 1845, and one of the first subjects which engaged his attention after assuming the duties of the office was the impulse which had been given at that day to improvements in the implements of agriculture, and the "aid which agriculture might derive from the establishment of a regular system for the selection and distribution of grain and seeds of the choicest varieties for agricultural purposes." During the administration of John Quincy Adams, the consuls of the United States had been instructed to forward to the State Department rare plants and seeds for distribution, and a botanical garden was established at Washington. Little was done in the collection and distribution of seeds thus authorized, but to the association of this enterprise with the Patent Office in the State Department Mr. Ellsworth was doubtless indebted for the hint of a more comprehensive system of seed distribution. In 1836 and 1837, the first two years of his incumbency, the Commissioner, without legal authorization, received and distributed many seeds and plants which had been gratuitously transmitted to him. In his first annual report, dated January 1, 1838, he called the attention of Congress to the subject, and strongly recommended that provision be made for the establishment at the

national capital of a depository of new and valuable varieties of seeds and plants, for distribution to every part of the United States. He further recommended that this depository be made a part of the Patent Office. No immediate action was taken by Congress upon the recommendations, but this neglect did not discourage the Commissioner from continuing his self-imposed task of distributing, under the frank of friendly members of Congress, improved varieties of wheat, corn, &c., the beneficial effects of which distribution were fully shown in testimonials from all parts of the country.

On the 21st of January, 1839, Hon. Isaac Fletcher, of Vermont, chairman of the Committee on Patents of the House of Representatives, addressed a letter to Commissioner Ellsworth, requesting the communication of information relative to the collection and distribution of seeds and plants; also relative to the practicability of obtaining agricultural statistics. To this letter of inquiry the Commissioner responded on the following day, reciting the action already taken by him to further the cause of agriculture, and assigning many reasons why his previous recommendations should be adopted. In this communication the Commissioner suggested that "arrangements could be made for the exhibition of different kinds of grain, exotic and indigeneous, in the new Patent Office." In the closing hours of the Twenty-fifth Congress, (act of 3d March, 1839,) the Commissioner was gratified by the passage of an appropriation of \$1,000, to be taken from the Patent Office fund, for the purpose of collecting and distributing seeds, prosecuting agricultural investigations, and procuring agricultural statistics. Thus originated the agricultural division of the Patent Office.

In his annual report of the following year, dated January 1, 1840, Commissioner Ellsworth stated that the diplomatic corps of the United States had been solicited to aid in procuring valuable seeds, and that the officers of the Navy had been requested to convey to the Patent Office such seeds as might be offered. As the sixth census was then about to be taken, agricultural statistics were deferred until its completion. In the next report, (January 1, 1841,) it was stated that 30,000 packages of seeds had been distributed during the preceding year, and that the agricultural statistics, based upon the returns of the census, were being compiled. "The importance of an annual report of the state of the crops in different sections, as a preventive against monopoly, and a good criterion to calculate the state of exchange," was commended to the consideration of Congress, and from this suggestion were evolved in time the annual agricultural reports.

In the report of 1842 were given tabular estimates of the products of agriculture in the United States in 1841. These estimates filled two pages, and were based upon the census returns of 1840, supplemented by such additional information as could be derived from agricultural reports, newspapers, and official correspondence with leading citizens in all parts of the country. The correspondence was mainly conducted by means of printed circulars, containing inquiries by the Commissioner, to which replies were returned on the same sheet. The same general plan of obtaining information is observed by the Department of Agriculture to-day. Fifteen pages of comment followed the tabular statement, embracing a survey of the agricultural condition and prospects of the country. Special subjects of comment were the manufacture of sugar from Indian corn, and lard oil as a substitute for whale oil as an illuminator. In this year Congress appropriated another \$1,000 from the Patent Office fund for agricultural purposes. There was no appropriation in 1840 and 1841. From 1842 to 1846 the annual appro-

priation from the fund was continued, but in the latter year it was again omitted. In 1847 it was revived, and afterwards annually renewed up to 1854, when the policy of appropriating money from the fund was abandoned; the whole amount (\$39,000) drawn from it was reimbursed in 1855. After 1853 appropriations for agriculture were made every year directly from the Treasury. In no one year, up to 1854, did the annual appropriation exceed \$5,500, and it was generally below that sum.

In his report of 1843 the Commissioner recommended "the constitution of an agricultural bureau, or at least an agricultural clerkship, at a moderate expense." He further recommended "a sufficient appropriation to allow a personal examination of the various parts of the country, by some one well qualified for such duty." Accompanying the report was an elaborate essay by the Commissioner, sixty pages long, on the condition and prospects of American agriculture; also, a tabular estimate of the crops of 1842, occupying two pages, the data for which were obtained from the sources previously relied upon. The preparation of the table was stated to have been "no easy task." Several communications, from farmers and others, on practical questions relating to agriculture, were printed in an appendix, and some of them were illustrated by cuts. From them may be dated the practice of publishing details of individual experience and elaborate essays in the annual agricultural reports.

The report of 1844 was still more voluminous than its predecessor. The tabular estimates, letters from correspondents, and remarks by the Commissioner were continued. The statement was made that the labor of the Commissioner in compiling agricultural information was chiefly performed out of office hours. The remarks on the condition of the crops and the growth of agriculture challenge admiration by their comprehensiveness, (120 pages,) their minuteness of detail, and the thorough acquaintance manifested by the writer with the agricultural resources of the country. A more extended system of investigation was recommended. The distribution of foreign seeds had been continued during the preceding year, and 12,000 packages would be distributed during the year then current.

The report of 1845 showed increased industry and enthusiasm by the Commissioner. It was more voluminous than any of its predecessors. The potato-rot, which began in 1843, the ravages of the Hessian fly and other insects, and the various diseases to which wheat and other grains are subject, were referred to at length in the general review and in the papers contained in the appendix, and remedies were suggested. Some of the most valuable papers in the appendix were reproduced from the agricultural and news journals of the day.

On the 30th of April, 1845, Mr. Ellsworth resigned the office of Commissioner of Patents. We have given in some detail the facts in his official career, because he was really the founder of that branch of the Government now embraced in the Department of Agriculture, and as such entitled to honorable mention in these pages, and because the first successful steps in the work of securing Government recognition of agriculture deserve to be recorded. The patience, enthusiasm, and industry of Mr. Ellsworth in this work entitle his name to the grateful remembrance of American farmers.

Hon. Edmund Burke, of New Hampshire, succeeded Mr. Ellsworth as Commissioner of Patents. During the four years (1845-1849) of his administration of the office, the efforts of his predecessor for the advancement of agriculture were most ably seconded. The report of the Com-

missioner in 1846 was the largest that had yet appeared, filling 1,184 pages, less than 100 of which related to patents, the remainder being devoted to agricultural topics. The annual reports of the Department of Agriculture have seldom exceeded 700 pages, and have not averaged above 650 pages. Mr. Burke introduced into the report many new features, prominent among which were tables of British and United States imports and exports, and English cotton quotations. The papers in the appendix embraced a wide range of subjects. The potato disease was exhaustively discussed. The Commissioner stated that the number of packages of seeds distributed in 1846 would exceed 50,000. Additional facilities for obtaining information and purchasing seeds were declared to be necessary to the successful prosecution of the agricultural work of the office, a declaration which did not prevent Congress from withholding the appropriation of a single dollar for agricultural purposes for the ensuing year. When the Patent Office report of 1847 appeared, agricultural statistics, essays, correspondence, and newspaper articles were entirely omitted.

Congress saw and acknowledged its error, and the appropriation (\$3,000) from the Patent Office fund was restored. In 1848 a very valuable report appeared, which was especially rich in statistics relating to the products of labor and capital in the United States, the movements of these and foreign products on interior lines of transportation; the consumption and surplus for exportation of food products, the demands of foreign countries for these products, and tables of population, property, prices, &c. The volume was more profusely and expensively illustrated than any that had preceded it. In the report of the following year (1849) an increased amount of space was occupied by miscellaneous statistics, chiefly industrial. The quantity of seeds distributed in 1848 had increased to 75,000 packages, and it was announced that nearly as many had been obtained for distribution in 1849. In this report mention is made of foreign seeds having been submitted to the test of experiment by an intelligent gardener.

On the 30th of April, 1849, Mr. Burke retired from the Patent Office, and was succeeded by Hon. Thomas Ewbank, of New York. During his administration of the office some changes were made in the management of the agricultural division. By direction of the Secretary of the Interior, the task of collating and arranging the materials for the agricultural portion of the annual report was committed to a "practical and scientific agriculturist." Another change consisted in the publication of the agricultural portion of the report in a separate volume. The first of these volumes appeared in 1850, edited, in accordance with the Secretary's views, by a scientific gentleman, Daniel Lee, M. D. It contained many elaborate scientific and practical papers, by Mr. Lee and others, and numerous commercial and miscellaneous statistics, but no statistics of the agricultural productions of the preceding year. This departure from the uniform practice of Commissioners Ellsworth and Burke, Mr. Lee justified by declaring that all previously published statistics were unreliable, because of the insufficiency of the data from which they were calculated. He declined to "waste time and paper in printing crude guesses." The opinion was expressed that Congress or the State legislatures should devise and execute a plan for procuring accurate statistics, but Mr. Lee did not suggest a way by which the same result could be reached through the instrumentality of his own office. In the report of 1851 occurs the same important omission as in that of 1850; but in that of 1852 appeared the agricultural statistics of the seventh census, unaccompanied, however, by any analysis, comparison,

or other comment. In November, 1852, Mr. Ewbank retired, and was succeeded by Hon. Silas H. Hodges, of Vermont, Mr. Lee remaining. In the report of 1853 no attempt was made to add to the value of the census figures, and the reader was left in ignorance whether the agricultural productions of 1852 were greater or less than those of the census year. In the report of 1850 Mr. Lee introduced meteorological statistics, and the space accorded to this specialty annually increased during his editorship of the reports.

On the 25th of March, 1853, Mr. Hodges was succeeded as Commissioner by Hon. Charles Mason, of Iowa, and soon afterwards Mr. Lee, as editor of the reports, was succeeded by Mr. D. J. Browne. In Mr. Mason's four reports, appearing in the years 1854, '55, '56, '57, agricultural statistics have no place, the editor entertaining the same views as his predecessor concerning the value of statistics not collected by the State or through an annual visit from the census marshal. In these views he was sustained by the Commissioner. Mr. Browne, however, greatly systematized the arrangement of the matter of the reports, and during the four years above named greatly changed its quality. Fewer letters from correspondents were given, and more essays. A series of valuable papers on climatology and meteorology, by Lorin Blodget, esq., Professor Joseph Henry, and others, extended through the whole four reports. From Mr. Mason's first report (1854) may be dated the declension of the crop correspondent and the ascendancy of the essayist in the annual reports.

The agricultural and industrial cabinet, meditated by Mr. Ellsworth, seems to have received some attention prior to the accession of Mr. Mason, who refers in his first report to the variety and value of the collection of seeds, fibers, insects, &c., contained in it; but this collection must have been very insignificant when compared with the present museum of the Department of Agriculture.

The annual appropriation, which, up to and including 1853, had never exceeded \$5,500, was, in 1854, increased to \$35,000, and it has never since been less than that sum. The annual distribution of seeds, cuttings, and reports had so stimulated agricultural enterprise and the development of the resources of the nation, that Congress was led to adopt a more liberal policy of disbursement as a means of securing yet more bountiful results. In the first year of his administration, Commissioner Mason was thus enabled to extend his purchases of seeds and plants far beyond those of any of his predecessors.

In the list of plants ordered in 1854 to be imported, and which were imported in that and the following year, were two plants of Chinese origin—the Chinese yam and the Chinese sugar-cane. In 1856 a portion of the Government grounds in Washington, lying between Four-and-a-half and Sixth streets and Missouri avenue and the canal, embracing five acres, was set apart for the propagation of the seed of the sugar-cane, otherwise known as sorghum. Large quantities of the seed produced on this ground were distributed in 1856 and 1857, after which, the country being well supplied by individual enterprise, general distribution by the Patent Office ceased. Thus originated the propagating garden now attached to the Department of Agriculture, and which, it is proper to add, has not now and never has had any connection with the botanical garden established during Mr. Adams's administration, but with which it has often been confounded.

The subject of entomology as related to agriculture had received some attention from the Commissioners of Patents prior to 1854. In that year Commissioner Mason employed Mr. Townend Glover, present entom-

ologist of the Department of Agriculture, to investigate and report upon the habits of insects injurious and beneficial to vegetation, especially those infesting the cotton-plant. Mr. Glover's first report was published in the volume which appeared in 1855; another appeared in 1856, and another in 1859. From his engagement, which was temporarily interrupted in 1859, may be dated the origin of the entomological branch of the Department. In 1855 an arrangement was made with the Smithsonian Institution, which is now in force, for procuring and publishing meteorological statistics. In the same year a chemist and botanist were engaged. Their engagements were not permanent; nevertheless, the chemical and botanical branches of the Department of Agriculture may properly be said to have had their origin in this year. The report which appeared in 1857 was more profusely illustrated than any of its predecessors.

Mr. Mason retired in August, 1857, and in the following month was succeeded by Hon. Joseph Holt, of Kentucky, who served until March 14, 1859. During his administration two annual reports were issued—in 1858 and 1859—each edited by Mr. Browne, in accordance with his previous views. In the report of Commissioner Mason which appeared in 1856 much space had been devoted to the history and peculiarities of the Chinese tea-plant, and the belief had been expressed that it could be successfully cultivated in most if not all of the Southern States of this country. Commissioner Holt determined to practically test the adaptability of the plant to our soil and climate, and in his report of May 11, 1858, he announced that an agent had been sent to China to procure seeds of this and other plants. In the same year the plot of ground previously appropriated to the culture of the Chinese sugar-cane was thoroughly improved for the purpose of planting in it the seeds of the tea-plant when they should arrive, together with cuttings of native and foreign grape-vines, which it had been determined to propagate, with the view of stimulating and improving grape-culture. The tea seeds arrived in April, 1859, and subsequent efforts to germinate them and grow the young plants to maturity were crowned with the most gratifying success.

In 1858 Commissioner Holt extended invitations to a number of intelligent farmers, residing in different sections of the country, to meet at Washington for the purpose of considering the general interests of agriculture, and especially to inquire how these might be promoted through the instrumentality of the Patent Office. These gentlemen met at the Patent Office on the 3d of January, 1859, and continued in session eight days. The general plan of operations which had been pursued by the agricultural division of the office was unanimously approved.

Hon. William D. Bishop, of Connecticut, succeeded Mr. Holt May 23, 1859, and he in turn was succeeded February 16, 1860, by Hon. Philip F. Thomas, of Maryland. With the retirement of Mr. Holt, Mr. Browne ceased to edit the reports. The leading features of Mr. Bishop's report, appearing in 1860, corresponded substantially with those of the reports for the preceding ten years. Agricultural statistics received no attention; the essay was more prominent than ever. It was announced that there had been propagated and were ready for distribution 30,000 well-rooted tea-plants, 12,000 foreign and domestic grape-vines, and many other valuable exotic plants. Mr. Thomas resigned December 13, 1860, and issued no report. The report of the following year was edited by Hon. Thomas G. Clemson, superintendent of the agricultural division. It was an able document, but Mr. Ellsworth's favorite idea of giving

annually a résumé of the condition of the crops found no expression in its pages. An enlargement of the duties and an increase of the executive force of the agricultural division were recommended. In this and the preceding report meteorological observations were omitted.

From December 13, 1860, to March 28, 1861, S. T. Shugert, esq., was Acting Commissioner. He was succeeded on the date last named by Hon. David P. Holloway, of Indiana, whose annual report, appearing in the following year, (1862,) was the most complete agricultural manual the Patent Office had yet issued, but it did not contain one line of statistics relative to agriculture or related subjects, except some tables of milk production, nor a single letter concerning the condition of the crops. It was exclusively composed of essays. The report was the last of its kind. Thereafter the annual reports were devoted more to the presentation of the current facts of agriculture in the United States, especially the recording of its achievements, and less to the presentation of special theories and other matters which properly pertain to the province of the journalist and book publisher.

During Mr. Holloway's administration the Department of Agriculture was organized. Reference has already been made to the opinion expressed by several Commissioners in favor of an enlargement of the duties of the agricultural division. Commissioner Holloway, in his first annual report, which appeared in January, 1862, boldly and ably reiterated and enforced this opinion. He urged the creation of a separate Department of the Government—a Department of the Productive Arts—to care for all the industrial interests of the country, but especially agriculture. The Commissioner's earnest and elaborate plea, aided by other influential representations, prevailed with Congress. A portion of the plan for the establishment of a Department of Industry was adopted.

On the 15th of May, 1862, the act establishing the "Department of Agriculture" became a law, and on the 1st day of July the Department was formally organized in the rooms of the Patent Office previously occupied by the agricultural division of that bureau. The first section of the act declared the "general designs and duties" of the Department to be "to acquire and diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word, and to procure, propagate, and distribute among the people new and valuable seeds and plants," and the succeeding sections provided for the appointment by the President of a chief executive officer, to be styled the "Commissioner of Agriculture." It was not, however, provided that the Commissioner, although the head of an independent Department of the Government, should be a member of the Cabinet.

Hon. Isaac Newton, of Pennsylvania, who had been, since early in 1861, the superintendent of the agricultural division of the Patent Office, was appointed by President Lincoln the first Commissioner of Agriculture. Upon assuming the duties of his office, he at once proceeded to organize the Department in accordance with the liberal spirit of the act creating it. The time was pregnant with mighty events, and every Department of the Government felt the stimulus of the grave perils which beset the very existence of the nation. The clerical force of the former agricultural division was increased; a chemist (Charles M. Wetherill,) was engaged, and a laboratory established; a skillful horticulturist was placed in charge of the propagating or experimental garden; greater activity in the collection and dissemination of current agricultural facts was inaugurated, and a larger quantity of seeds and cuttings was distributed.



The first annual report of the Department was a great improvement on most of the reports which had preceded it. It treated mainly of fresh topics in agriculture and connected fields of investigation and development. But its most significant feature was the revival of the long-neglected agricultural statistics, presented in connection with observations on the leading facts they developed, and followed by full tables of agricultural exports. The eighth census furnished the data for the tables of agricultural production. The important feature thus revived was specially required by the terms of the act creating the Department, and it has never since been omitted. A statistical branch was organized early in 1863, and to it was committed the collection and analysis of all statistics. Mr. Lewis Bollman, of Indiana, was appointed statistician. To ascertain at the earliest practicable period the condition of the crops, their yield, the prices obtained for them, and other facts connected with current agricultural operations, the Commissioner issued, during 1863, periodical circulars to farmers in every county in the loyal States. The results thus obtained were given to the public through the medium of monthly reports, which have been continued to the present day, with such modification of their original features as time and experience have seemed to render necessary. The first monthly report was issued July 10, 1863. The publication in the monthly reports of monthly and bi-monthly meteorological tables, furnished by the Smithsonian Institution, was commenced at the same time. These tables were condensed for the ensuing annual report. The same arrangement is yet in force.

The employment of a skillful gardener was one of the most auspicious incidents of the first year of Mr. Newton's administration. He was fortunate in procuring the services of Mr. William Saunders, who has ever since given to the important duties assigned to him an intelligent and conscientious devotion. In the first report of the Commissioner, Mr. Saunders presented to the public a comprehensive programme of the uses to which he deemed it desirable to devote the experimental garden, and this programme is observed to-day.

In the second year of Mr. Newton's administration, (1863,) the number of packages of seeds distributed was 1,200,000, and of bulbs, vines, cuttings, and plants, 25,750. Mr. Townend Glover was employed as entomologist, a position which he has since continued to hold. The report issued in 1864, embracing the operations of the Department for 1863, contained the first attempt that had been made since the days of Ellsworth and Burke to ingraft upon the census returns the statistics of the yearly progress of agricultural production. The tables given in its pages, compiled from the monthly reports, showed the average yield per acre of the several crops of 1863, and the average prices obtained for them in the month of November of that year. From that day until this the Department has aided greatly, by the publication of tables of this character, in protecting alike consumers and producers from the exactions of grasping speculators. A Maine farmer once wrote to the Department: "Your monthly reports give me just the information I have wanted for years. Knowing the supply and demand, I am able to sell at my own price, and we can also foresee what will probably be wanted next year. Give practical farmers facts and let gentlemen of leisure theorize."

The annual report of the operations of the Department for 1864 contained a paper on "Pennsylvania barns," from the pen of Hon. Frederick Watts, recently appointed Commissioner of Agriculture. In this and the following year Mr. Henri Erni acted as chemist. In 1864

Government reservation No. 2, lying between Twelfth and Fourteenth streets, and the canal and B streets south, embracing thirty-five acres, was assigned to the Department for experimental purposes. During 1865, 1866, and 1867 a large force of laborers was engaged on this reservation in testing the merits of many varieties of cereals, grasses, potatoes, tomatoes, and other agricultural products. At one time seventy varieties of potatoes were in cultivation; at another, sixty-seven varieties of spring wheat and fifty-five varieties of fall wheat. In 1865 a geological and mineralogical cabinet was commenced, and extensive additions were made to the chemical laboratory and the museum of fibers, cereals, specimens in natural history, &c. The annual report for this year was prepared in 1866, and edited by J. R. Dodge, who had been engaged on the statistical work of the Department since its organization. In 1866 Mr. Dodge was appointed statistician of the Department, and has since edited all its reports. The annual reports for 1862, 1863, and 1864 were issued under the supervision of James S. Grinnell, esq., chief clerk of the Department. In 1866 Thomas Antisell, M. D., was appointed chemist.

Owing to the large increase in the business of the Department, it was found that the rooms appropriated to its use in the Patent Office building were entirely inadequate. Congress, therefore, in 1867, upon the earnest recommendation of Commissioner Newton, appropriated \$100,000 for the erection of a Department building on a portion of the Government reservation above described. The erection of the building, an ornamental brick structure, was commenced late in the summer of that year. Congress also appropriated \$10,000 for the purchase of the private museum of natural history and other objects owned by Mr. Glover, the entomologist, and the collection was accordingly transferred to the Department.

On the 19th of June, 1867, Commissioner Newton died in Washington, from the effects of overwork on the experimental farm in July, 1866. He was born in Burlington County, New Jersey, in 1800, and passed his early years and the greater part of his long life on a farm. Shortly after attaining his majority, he settled on a farm in Delaware County, Pennsylvania, which became celebrated for its neatness, order, and productiveness. He eventually took rank among the model farmers of the State; was one of the first and most active members of the State Agricultural Society, and for years was prominent in urging upon Congress the policy of establishing the Department of Agriculture over which he was subsequently called to preside. John W. Stokes, esq., the chief clerk of the Department, acted as Commissioner until November 29, 1867, when Hon. Horace Capron, of Illinois, was appointed Commissioner.

One of the first of Commissioner Capron's official acts was the abolishment of the experimental farm, previously determined upon, by which the expenses of the Department were at once greatly decreased. Attention was also promptly given to the execution of the plans previously prepared by Mr. Saunders, the superintendent of the experimental garden, for the improvement of the grounds of the farm with a view to producing a pleasing and artistic landscape effect. Embraced in these plans was the planting of an arboretum, comprising a complete collection of all hardy trees and shrubs, arranged in their natural orders. As a result of the joint efforts of the Commissioner and Mr. Saunders, the grounds surrounding the Department building are now the most attractive in Washington. They not only gladden the eye of the visitor to the national capital, but they help to educate the rural taste of the nation itself.

In 1868 the Department building was finished, and in August the records and other property of the Department, with the exception of the museum, were moved from the Patent Office building. The museum was moved a month or two later. In 1869 the small botanical collection of the Department was greatly enlarged by the transfer of the extensive and valuable collection of the Smithsonian Institution, which had been contributed by various Government surveying and exploring expeditions. Mr. C. C. Parry, a scientific botanist, was placed in charge of the herbarium thus created, and the botanical work of the Department has since remained in his hands. In 1870 the large conservatory of the Department was commenced, and in 1871 it was completed.

On the 27th of June, 1871, Commissioner Capron tendered to the President his resignation, to take effect August 1st, and Hon. Frederick Watts was commissioned in his stead. General Capron was born in New York, and was the son of Dr. Seth Capron, who served with distinction in the Revolutionary army. His attention was early directed to cotton manufacture, a business which he prosecuted for many years. In 1836 he became the owner of a large manufactory of cotton goods and of another manufactory of cotton machinery at Laurel, Maryland. He also became the owner, at the same place, of an exhausted farm of 1,200 acres. This farm he brought to a high state of fertility, and by his management of it, and his frequent contributions to the agricultural press, he became widely known as a progressive farmer. In 1854 he removed to Illinois and again engaged in farming on a large scale. In 1862 he recruited the Fourteenth Regiment of Illinois Cavalry, and served with it to the close of the war. He was successively commissioned lieutenant colonel and colonel of the regiment, and at the close of the war was made brigadier general by brevet. November 29, 1867, he was appointed the second Commissioner of Agriculture.

The total expenditures by the Government for the encouragement of agriculture, from the first appropriation of \$1,000, in 1839, to the 30th day of June, 1871, exclusive of the cost of printing the agricultural reports, were \$2,019,893. The total cost of the building erected for the use of the Department of Agriculture, furniture included, was \$140,000, and the cost of the conservatory was about \$25,000.

#### HON. HENRY L. ELLSWORTH.

The following sketch of the life of Hon. Henry L. Ellsworth, first Commissioner of Patents, and founder of the agricultural division of that bureau, is furnished by one of his near relatives, and is given here as written, in lieu of a longer sketch, the preparation of which has been meditated:

Hon. Henry L. Ellsworth was born at Windsor, Connecticut, in the year 1790. He was the twin-brother of Hon. William W. Ellsworth, late chief justice of Connecticut, also deceased. His father was Hon. Oliver Ellsworth, third Chief Justice of the United States. His mother was Abigail Wolcott, a relative of Oliver Wolcott, a signer of the Declaration of Independence. Mr. Ellsworth was a graduate of Yale College in 1810, was a classmate of Professor Morse, and perhaps did more than any other single man, when Commissioner of Patents, to secure the appropriation from Congress to test the practicability of the telegraph, in which he firmly believed.

He studied law at the Litchfield (Connecticut) Law School, and married for his first wife Nancy Goodrich, daughter of Elizur Goodrich, treasurer of Yale College. His father, Oliver Ellsworth, was both a farmer and a lawyer, in the days when the men of mark lived in the country and upon farms—not simply at country-seats—and not in the towns; and he himself was in the same way a farmer, living first at Windsor, Connecticut, and carrying on the home farm, at the same time that he commenced the practice of law at Hartford. He, however, soon removed to Hartford, and preferred to engage in politics and various pursuits rather than adhere to his profession. My impres-

sions are that he was once a candidate for mayor of Hartford, and again for the legislature. In one case, I think, the twin-brothers ran against each other, and Henry L. was defeated. He was by President Jackson appointed commissioner to the Indian tribes of the then far West, and afterward Commissioner of the Patent Office, which, under his advice and suggestion, was created a separate bureau of the Government. When Commissioner to the Indians, on one of his trips toward the Rocky Mountains, Mr. Ellsworth was accompanied by Washington Irving. He was the first head of a bureau who was invited to take a seat in the Cabinet.

His mind possessed great quickness and versatility, and he thoroughly enjoyed the duties of his position, and was always ready to listen with eagerness and interest to any suggestion of possibilities in the matter of progress and invention. He was the most thoroughly amiable of men, and always accessible to all. His interest in agriculture was genuine and enthusiastic, and his appreciation of the agricultural wealth of the country, and the growth of the newer portions of it, was far in advance of his time. In fact, he had the misfortune to be in advance of his time on the entire subject of agricultural processes, machinery, &c., and of course incurred the charge of being visionary. That he was a theorist rather than a practical farmer was his glory; that he was an enthusiast was a great merit; that much which he discussed and felt hopeful of proved to be fallacious was to be expected in one whose business was at that early day to stimulate and encourage progress and discovery. His motto as to all inventions was, "With hopefulness to all, and prejudice toward none." The country will perhaps never know the debt it owes to him for the stimulus given by his labors and publications in the Patent Office.

Early in 1834, or soon after, he commenced to make investments in wild lands at the West, principally in the vicinity of Lafayette, Indiana. He was one of the earliest to foretell the value of prairie lands, and invested in these when others laughed at his folly, declaring that they were so far from timber as to be forever uninhabitable. He also interested capitalists and public men from all sections of the country in the same class of investments, and in some counties at the West almost the entire lands in the county were entered by him for himself and the parties he represented; as, for instance, the counties of Warren and Benton, in Indiana.

On leaving the Patent Office, in 1845, he removed to Lafayette, Indiana, to take charge personally of his large landed interests. He had already improved large sections, though still residing in Washington, and now, though residing in the town, he commenced other large improvements in Tippecanoe, Benton, and Warren Counties, Indiana. He was always experimenting and striving after improved results, and the use of machinery in agriculture—an idea at that time considered nearly chimerical. He probably used the first mowing machine ever introduced upon the prairies. He was especially interested in the improvement and propagation of swine, and, much to the annoyance of his family, when living in Washington he had extensive piggeries in the vicinity of that city.

Mr. Ellsworth was an earnest Christian, and his purity in thought and language, and his courtesy and polish, were something remarkable in one who disregarded the externals of dress and equipage so entirely as he seems to have done. His life was exceedingly active and laborious, and he finally became a victim of overwork, like so many of the men of the present time, leaving his estate to be a subject of controversy between the members of his family and Wabash College, Indiana, on the one side, and the corporation of Yale College and various religious and charitable societies on the other, growing out of the existence of two wills. With a good sense and temper rare on such occasions, the controversy was withdrawn from the courts and compromised to the satisfaction of all parties.

Mr. Ellsworth was thrice married. The second time to Miss Marietta Bartlett, of Guilford, Connecticut, and the last time to Miss Catharine Smith, of Durham, Connecticut, who survived him. He died at Fair Haven, Connecticut, December 27, 1858, having removed from Indiana only a few months before his death, and was buried at New Haven, Connecticut. As the father of the Patent Office in several important particulars, his portrait should certainly grace its walls, and especially the walls of the Department of Agriculture.

## EXTRACTS FROM CASUAL CORRESPONDENCE, ETC.

### SEDGWICK COUNTY, KANSAS.

A letter from William Packard, one of our correspondents in this new county, says:

This county was organized in April, 1870. By comparing the election returns we find that the number of voters in one year, to April, 1871, had increased nearly nine to

one; and in traveling through the county we see that land has been brought into cultivation in nearly the same proportion. That portion of the county lying south and west of the Arkansas River, where one year ago was a vast uninterrupted prairie, is now dotted with houses, shanties, dug-outs, and tents, and in some cases the settler is still living in his wagon, with from five to forty acres of corn and potatoes growing on his newly-taken homestead, he and his being animated by the hope of a pleasant home all their own. Those who have matured one crop are now old settlers, and those who have raised two crops are the oldest settlers. The old settlers have at least doubled their crops, as many who had 30 or 40 acres planted last year have increased to 80 or 100 acres. The amount of land brought into cultivation so soon is explained by stating that we do not fence; the sod is turned and the crop planted.

We have our troubles as well as other agriculturists. The blackbirds and the yellow-breasted blackbirds take the young corn so badly that it is hard to get a good stand. We fear your entomologists can do nothing for us, as the birds eat the young and tender shoot when it is three or four inches high. They will eat the white and tender part of the stalk, leaving the roots and tougher blades as a monument of their mischief. Those who are farming in the older parts of the country may think this a little thing to complain of, but we begin to think it quite serious; for three springs in succession we have had to plant three times each year, and then have a slender stand, with seed corn that was worth from \$2 to \$4 per bushel, besides the labor and disadvantage in throwing the ground into a bad condition to cultivate. We have a few potato-bugs here, but as we have no railroad near enough to dispose of our quails and prairie hens, there is little danger of the bugs doing much harm.

Our sand-plums which grow wild are now ripe; they are small and tart, and recommended only for their earliness. I set last spring a small orchard of trees one year old from the seed, to see what they will be under cultivation.

#### WESTERN PENNSYLVANIA EXPERIMENTAL FARM.

Pennsylvania has three experimental farms, all under the control of the faculty of the State Agricultural College, assisted in each instance by a local committee. They have a regular system of rotation prescribed for them, running through a period of five years. The prescriptions are very minute, extending in certain cases so far as to require the transplanting of corn, when necessary to make up the required number of three in a hill. The experiments are conducted on plots containing one-eighth of an acre each, and there are one hundred and fifty of these plots on each farm. The farm at Indiana contains 119 acres of land of medium quality, part lying on gentle slopes, and part being flat and wet. Operations have been conducted for two years, during which time many practical experiments have been made. This year fourteen varieties of wheat have been tested, including the Tappahannock and Touzelle; one new variety of rye, the Bremen; several varieties of barley, of which the common four-rowed is the only one found desirable; twelve varieties of oats, including the White Schonen and Excelsior; forty-three varieties of potatoes, including the Early Rose; and several varieties of corn. We hope the superintendent, Mr. A. J. Hamilton, will publish detailed results of his experiments as soon as they may be completed, that the farmers of Pennsylvania and the country may be immediately benefited by them. Unnecessary delay frequently occurs in giving to the public the results of experiments conducted by State institutions.

#### IRRIGATION.

A large meeting of farmers was held at Waterloo, San Joaquin County, California, early in June, to devise means for the speedy construction of a canal to lead the waters of the Mokelumne River southward for the irrigation of farming lands. It was announced at the meeting that the San Joaquin and Calaveras Water and Irrigating Company proposed to irrigate the lands of farmers residing on the route of the proposed canal for 75 cents per acre per annum, for a period of four to six years, and

that it would commence the construction of the canal as soon as they should be guaranteed the payment of this rate upon 50,000 acres for the next four years. It was considered highly probable that the proposition would be accepted by the farmers at a subsequent meeting. The construction of this canal, it is said, would forever insure against the effects of drought over 200,000 acres of land, and make that large tract the most valuable land in the State.

#### RUST ON WHEAT-BLADES.

Our correspondent in Ontario County, New York, writes as follows:

The drought of the last half of May, continuing until the 23d of June, has materially reduced the average condition of the spring crops, excepting corn and potatoes. Not one in five thousand of the leaves of winter wheat in this county has escaped the red rust. This commenced on the 25th of June, after the rain of the 24th, and the wheat fields now wear a brown and somber hue. Observing farmers regard this blighted condition of the leaf at this critical period in the growth of the plant as most fortunate, insuring a plump and perfect berry at maturity. The theory is, that when the leaf rusts just previous to the ripening of the crop, the flow of sap in the straw is in a measure arrested, so much so that thereafter no excessive flow can occur to burst its outer coatings and produce "black rust"—the only rust that seriously diminishes the yield and shrinks the berry. The winter wheat crop of Ontario County is therefore considered assured, and it will be bountiful.

#### WHEAT IN ILLINOIS.

Mr. C. H. Murray, of Clay City, Illinois, writes us as follows, under date of June 17:

To-day about finishes one of the grandest wheat harvests that have ever been known in Southern Illinois. It is now safe in the shock, and almost beyond the possibility of being injured in any way. The crop, both as to quality and quantity, is believed by many to be superior to any ever before harvested in this part of the country. Many fields will yield as many as 35 bushels per acre, while the general average will be much above 20 bushels. The quality could hardly be better. The grain is clear and almost bursting with richness. The crop between this place and Saint Louis, and throughout Richland, Wayne, and Clay counties, is especially heavy.

#### RAMIE.

The interest in this new textile is increasing in the South. We hear recently of many experiments in its cultivation this year on a larger scale. Mr. F. T. De Laeroix, of New Iberia, St. Martin's Parish, Louisiana, is this season cultivating eleven acres of the plant, and is represented to be so well assured that it is a profitable crop that he proposes next year to plant it more extensively. In New Orleans may now be frequently seen dress-patterns, handkerchiefs, &c., made of ramie, which strongly resemble silk.

#### BEEF SUGAR IN WISCONSIN.

A beet-sugar manufactory was established last year in Black Hawk Valley, twelve miles from Sauk City, in Sauk County, Wisconsin, by thirty-four German farmers, upon the coöperative principle. They planted 180 acres in roots, one-sixth of which failed through drought; the remainder averaged about ten tons per acre. The manufacturing operations of the company were embarrassed by a variety of causes, prominent among which was the delay in receiving machinery from Europe, caused by the Franco-Prussian war. The manufacture was not commenced till the middle of February, when it was found impossible to work up the entire crop, the larger portion of which was fed to stock. Under all these disadvantages some 40,000 pounds of sugar were made

and marketed at an average rate of 10 cents per pound, including all grades. The coming year at least 200 acres will be cultivated with sugar beet, and operations will be gradually extended. The machinery in use was partly imported from Europe and partly from Fond du Lac, Wisconsin, and Chatsworth, Illinois. It cost \$25,000, and the building \$10,000. The capital of the company is limited. Its distance from machine-shops for repairing, and the necessity of wagoning twelve miles the sugar product and some of the material used in its manufacture, are drawbacks to the enterprise; but under the efficient management of Mr. Wifferling, the superintendent, the company is sanguine of success, both in making good sugar and in realizing a fair profit upon the investment.

#### MODE OF CURING FIGS IN ASIA MINOR.

E. J. Smithers, esq., United States consul at Smyrna, communicates to the Department some facts in regard to the process of curing figs in that region. The fruit is allowed to ripen on the tree and to fall to the ground, where it is allowed to remain three or four days, or until dry enough to bear transportation. It is then collected in hair sacks, and tightly pressed, in order to save space and to prevent fermentation. The sacks are then taken early in the morning to the local market, where professional packers resort to purchase material for the day's packing. At the packing-house the different qualities are assorted, and the fruit skillfully manipulated and moistened with salt water. Each quality is then placed in boxes of different sizes for the general market. The refuse is either sold on the spot for distillation of spirits, or packed indiscriminately, with the feet, into large boxes, to be sold as the commonest quality. Figs grown here are of a large whitish variety, thin skinned, very juicy and sweet, but unpalatable when fresh. The first is largely cultivated in the neighborhood of Aidin, but the best quality is grown at Nasli.

#### COTTON AND CORN IN TEXAS.

John Dickinson, esq., of Houston, Texas, writes to the Department as follows, under date of July 1, in relation to the cotton and corn crops in Texas:

The months of April and May were too wet in many portions of the State, and heavy driving rains did much injury by washing the soil. June was very favorable; dry and hot, enabling every one to free their fields from grass and weeds. Showers everywhere are needed now, particularly for the late corn, the bulk of the planting. If the dry weather continues a few weeks longer this crop will be seriously diminished. If no rain falls soon we may look for the very early maturing of cotton, at the expense, however, of great wastage, shedding of forms, blooms, and bolls. The general opinion is that the Texas crop this year will be one-fourth less, under even ordinary picking facilities, than that of last year, and that it will be sent earlier to market, and be of a much better quality, as far as careful handling is concerned. The number of bales already received at our ports is 300,000, and it will reach a little beyond it. The crop, apparently, is pretty well in.

#### HEAVY WOOL-CLIPS.

The correspondent of the Department in Alameda County, California, sends us a sample of wool taken from the hip of a fleece that weighed 78½ pounds, sheared from a French merino ram, bred by John D. Patterson, esq., on his breeding ranch in that county, from stock imported by him direct from France; length of wool on the hip, one foot. The first fleece sheared from this ram, when he was sixteen months old,

weighed  $42\frac{3}{4}$  pounds. The fleece from which the sample sent to the Department was taken was the second shearing. The first two fleeces taken from this wonderful ram therefore weighed  $121\frac{1}{4}$  pounds.

Our correspondent in Clinton County, Michigan, writes that a farmer in that county sheared 160 pounds of wool from twenty-eight ewes, the breed not stated.

#### WHEAT IN IOWA.

A correspondent of the Department, writing from Page County, Iowa, says:

Fall wheat has made a good harvest. Last winter being a mild one, the stand left this spring was good. The season has been favorable to its growth and ripening. On account of the character of our soil, being light, sandy, vegetable mold, winter wheat freezes out badly, hence it has not been cultivated extensively until within the last two years. Our farmers have ascertained they can succeed by planting it with the drill. Spring wheat, however, is yet our main dependence for the supply of this kind of farm product. It has been cut short two-thirds by the ravages of the chinch-bug, (*Micropus leucopterus*, of Say.) Why this should have occurred is rather a mystery, for we have been abundantly favored with heavy rains in sufficient quantities to make the season a genial one. The heavy rains ought to have destroyed the bug, but they did not.

#### COTTON IN ILLINOIS.

The correspondent of the Department in Williamson County, Illinois, writes as follows:

Cotton has almost ceased to be cultivated in this county. It cannot be raised for much less than five cents per pound in the seed. It is generally sold to the merchant or speculator in the seed. Last fall and winter the price was uniformly three cents per pound. The great drawback to its culture is the picking, which has all to be done by hand, and which costs from a cent to a cent and a half per pound. A good average day's picking, for a boy or girl of from twelve to sixteen years of age, is from fifty to seventy-five pounds. But, inasmuch as it is a cash article, if the farmers could be sure of four and a half or five cents per pound, a large breadth of ground would be planted.

#### THE COMPASS PLANT.

In the monthly report of this Department for March and April reference was made to the compass plant, (*Silphium laciniatum*), which it was therein stated "is alleged to possess the remarkable tendency to have the plane of its leaves directed north and south to such a degree that these points of the compass can readily be determined from their examination." A letter, inclosing a diagram of a leaf of the plant, has since been received by the Department from S. J. H. Snyder, of Monrovia, Kansas, in which the opinion is expressed that the plant does possess the quality attributed to it. The writer says:

Having been a resident of Kansas for sixteen years, I have had abundant opportunity to become fully acquainted with the plant and its habits, and I am fully persuaded that the course north or south is so infallibly indicated by its leaves, that I would not hesitate to follow their directions for hundreds of miles. The leaves of the plant from which the accompanying sketch has been made were taken from my orchard, which has been tilled for years, and the plants cut up and turned over and under, and every way; yet every time they come up, either from the old roots or from seed, they invariably turn their leaves in the same direction. There can be no question of this fact, and if, in a group of these plants here and there, a leaf varies a little from the true course, the appearance of the stem and its relation to the other leaves show the reason for such discrepancy. The average of such a group is infallible.

The stalk of the plant is from three to five feet high, leaf about twelve inches long, and the flower resembling a miniature sunflower. Mr. Snyder says it is sometimes called polar-weed, gum-weed, resin-weed, &c. The last names are given to it because of the resinous gum which exudes from its stem and leaves, especially when wounded. This gum is chewed, and the plant, as well as its resinous gum, is considered highly medicinal.



## SCIENTIFIC NOTES.

EFFECT OF VARIOUS MANURES ON THE GROWTH OF GRASS.—Experiments have been recently instituted by the Agricultural College at Worms, Bavaria, for the purpose of ascertaining the relative effect of several different manures upon the growth of grass. In presenting an account of the results obtained we may state, for the more satisfactory understanding of the subject, that the “morgen” amounts to nearly three-fifths of an acre. Muck increased the yield of hay, per morgen, by 7 cwt., but deteriorated the quality of the grass. But this is believed to have resulted from the use of muck not sufficiently seasoned by exposure to atmospheric action. Human excrement gave an increase of  $13\frac{3}{4}$  cwt. per morgen, while the growth was very thick even in the poorest places. The cows, however, refused to eat the grass, although they appeared to have no objection to the hay. It was believed that the grass of the following season would be palatable to them. Liquid manure from stable drains and sinks had a powerful effect, and increased the crop of hay by  $14\frac{1}{2}$  cwt. per morgen. The grass was good, but the flowering herbs disappeared. Two cwt. of bone-dust, fermented in a compost of earth and liquid manure, increased the yield of hay, per morgen, 12 cwt., and developed an abundance of white and red clover; and its influence, it was thought, would extend through several seasons. But the best effect as to the quality, though not the quantity of grass, was obtained by the application of potash salts. The grass was fine and tender, and almost free from the coarse herbs, with an increased yield of  $11\frac{1}{2}$  cwt. per morgen.

CULTIVATION OF ASPARAGUS.—The culture of asparagus was lately the subject of discussion by the members of the Horticultural Society in Dessau; and among the views expressed were the following: That the old method of burying large quantities of manure deep under the surface was objectionable, since asparagus does not derive its nourishment from a great depth, and the plants often become too deeply imbedded when the thick substratum of manure collapses by rotting. The preference often given to old plants, in making selections for a new bed, was also considered a mistake. Plants become sickly and less vigorous in the seed bed, so as to be much more sensitive to the change in transplanting. Southern exposure, shelter from cold winds, a porous soil, and the total absence of trees, were recommended as essential conditions to the highest success. The soil is to be turned to the depth of from two to three feet, and then manured to the depth of one foot. This is most conveniently done in autumn, during dry weather. Spring is the best time for planting, and the best direction of the trenches for the reception of the plants is from north to south. The earth taken from the trenches is “walled up,” as it is termed, between the rows, and upon these other vegetables may be cultivated while the asparagus bed is young; but they are eventually absorbed in filling up the ditch around and between the plants. Well-rotted manure, or suitable compost, is combined with the earth of the walls for this purpose. Besides giving constant attention to stirring the soil and weeding, the young plants need to be watered regularly whenever the state of the weather requires it.

A NEW FIBER, (APOCYNUM).—Nettings and cordage were to some extent, at one time, made in Virginia and other States of North America of the fiber of the bark of *Apocynum cannabinum*. Although the application has almost entirely gone out of use in America, we find in the report of the Russian exhibition in St. Petersburg, in 1870, that

various articles were there shown as made of a similar plant which are well worthy of attention. Woven fabrics of snowy whiteness and silken gloss, brownish-yellow fishing nettings, hunting pouches, shoes, &c., from Southern Siberia, were strikingly beautiful. They were all made from fibers of *Apocynum venetum* and *Apocynum Sibiricum*, the use of which, for such purposes, is quite common in Southern Siberia, along the Caspian Sea, the Steppes of Southern Russia, &c. The plant grows to the height of from two to eight feet, is easily stripped of its bark after roasting, is readily separated into its fibers, and, by bleaching, becomes of a beautifully white and clear luster.

**CATTLE INJURED BY EATING GREEN FLAX.**—Recent observations in Prussia have shown that the eating of green flax by cattle may be seriously injurious. A well-kept cow suddenly became ill, with high fever and violent diarrhœa, accompanied by trembling of the muscles, anxious look, drying up of the milk, and a lowering of the temperature at the extremities. On inquiry into the cause of this sudden attack, it was found that the animal had eaten a great quantity of the weedings from a flax field. Strict diet, without any medicine, improved her condition during the day, but the next morning, epileptic convulsions ensuing, her owner had her killed, when, on examination, solid masses of the flax were found within the stomach.

**FEEDING POTATOES TO HORSES.**—In Germany, where potatoes are so much cheaper than grain, the experiment has been repeatedly tried of feeding horses upon them, at least in part, and this, as we understand, has proved quite successful. In one instance five four-horse teams were kept hard at work and in good condition on a daily ration, for the twenty horses, of 1½ cwt. of hay, 8 bushels of potatoes, 50 pounds of meal, and a liberal allowance of chopped straw. The potatoes were steamed, mashed, and mixed with the meal while hot, and then covered up and allowed to remain for a time, during which they undergo a slight fermentation and evolve a quantity of carbonic acid. The chopped straw was worked in just before feeding. This trial was continued for more than four months, and found to agree with the horses, while at the same time it proved satisfactory in point of economy. As this food must be sweet and clean, great care is necessary to prevent the vessels in which it is kept from becoming sour.

**VALUE OF RAMIE FIBER.**—The practical difficulties attendant upon the manipulation of the Ramie fiber seem to be disappearing, as we find that this substance is now quoted in the Liverpool market at \$264, in gold, per ton. This will doubtless be good news to such of our readers as have either actually entered upon the cultivation of the plant or have it in contemplation, as at this price it is said to be considerably more profitable than cotton. Its advantages, as claimed, lie in its ready and vigorous growth, continued from year to year, and, once planted, it requires no renewal or attention for a long time. It is said not to be destroyed by worms, not to suffer from peculiarities of climate, soil, insect enemies, &c., and to require but little labor to establish a plantation; where it grows rapidly and yields largely, and commanding a ready market at a high price, there now seems nothing needed to stimulate its cultivation to a great extent. The portion of our country where this plant can be raised to advantage is perhaps limited; but within its natural area it is thought that it can be produced with greater profit than almost any other species of fibrous plant. The drawback to this flattering picture lies in the difficulty of separating the fiber from the bark, and the bark from the stalk; but this the editor of the New York Ship-

ping List thinks will be eventually overcome, as it is not often that any practical problem of this kind long resists the pertinacious attentions of modern inventors. As we have already informed our readers, the East Indian government has proposed a prize of \$25,000 for a machine or process that will accomplish this object. The award has not yet been made, the period having lately been extended, owing to the unsatisfactory nature of the competing machines. The offer, however, still holds good, and the prize will, we presume, be assigned in due course of time.

EXPERIMENTS ON THE GERMINATION OF SEEDS.—Mr. Vogel, of the Bavarian Academy of Sciences, has made a series of interesting experiments on the germination of seeds exposed to the action of different chemicals, either in a solid or a liquid condition. He found that many chemical combinations, though absolutely insoluble in distilled water, injured or destroyed the germs of seeds, and inferred that the process of germination itself produces vegetable acids which then act as solvents. He was actually able to determine, by sprouting barley, clover, and water-cress, the amount of said acids, which, though differing with different seeds, was always quite considerable. He experimented with prussian blue, carbonate of magnesia, oxide and carbonate of copper, chromate of mercury, sulphur, and antimonial preparations, and, more recently, with aniline and amorphous phosphorus, and found that all these insoluble substances prevented germination, either entirely or to a great extent, while the presence of sublimed indigo had not the least effect. Of solutions, he mentions chromate of potash (nitrate of silver) and arsenious acid, as especially injurious, and states that other mineral acids, when very much diluted, are less obnoxious. Remarkable for the anomaly is the destructive influence of acetic acid, so harmless to the animal organism, which, even in very small quantity, prevented germination as completely as the poisonous oxalic acid; prussic acid, on the contrary, only retarded the development of the germ. Being volatile, it disappears from the solution, and a great proportion of the seeds germinated, while arsenic acid, destroyed the germs entirely. Mr. Vogel also exposed his seeds to an atmosphere of coal gas, and found that when thoroughly purified its influence was not deleterious. Believing that the destructive action of the impure gas is due to the admixture of tar, he examined some of its constituents, and found naphthalin to be quite harmless to vegetation, while a minimum of carbolic acid was sufficient to kill every trace of germination.

RAISING FRUIT TREES FROM THE SEED.—Mr. A. Czerny, of Austria, states, as the result of long-continued observations and experiments, that the strongest and best fruit trees can be raised from seed, thus obviating a great deal of expense and disappointment to the pomologist. According to his observations, the extent and ramification of the roots of a healthy tree is to that of its crown in the ratio of three to two, so that the action of the roots is always preponderating. In this relation he finds the reason why fruit seeds from trees, budded or grafted upon indifferent stocks, have always been found unreliable, and he endeavors, as the first step, to obtain good trees grown upon their own stock, the seeds of which, he says, will reproduce their parents with certainty. To this end he layers a branch of a good tree, which, when well rooted, serves him as stock, into which he introduces buds or scions of such varieties as promise to improve the original fruit. By judicious cross fertilization he obtains fruit, the seed of which will propagate, to a greater or less extent, the good qualities of the varieties used in hybridizing, and thus a new fruit is originated which, when suitable, can always be reproduced

from its seed. Such trees, says Mr. Czerny, are more healthy and vigorous, (having never been wounded by the knife,) bear earlier, and when accidentally injured in the stem, throw out shoots identical with those of the original tree.

**PRESERVING THE FLAVOR OF BUTTER.**—The German Agriculturist says that a great portion of the fine flavor of fresh butter is destroyed by the usual mode of washing, and he recommends a thorough kneading for the removal of the buttermilk, and a subsequent pressing in a linen cloth. Butter thus prepared, according to our authority, is preëminent for its sweetness of taste and flavor, qualities which are retained a long time. To improve manufactured butter we are advised by the same authority to work it thoroughly with fresh cold milk, and then to wash it in clear water; and it is said that even old and rancid butter may be rendered palatable by washing it in water to which a few drops of a solution of chloride of lime have been added.

**NEW FODDER PLANT.**—A new kind of fodder plant (*Gymnothrix latifolia*) has recently been introduced into France from Uruguay. It is not unlike the sugar-cane in appearance, grows eight or nine feet high, and is said to make excellent fodder either when green or cured.

**DWARF RAGWEED.**—At a late meeting of the Academy of Natural Sciences of Philadelphia, Mr. Thomas Meeham exhibited a small plant of the common ragweed, *Ambrosia artemisiifolia*, which had grown in a pot in his hot-house. The plant, little more than an inch in height, was already provided with fertile flowers and also bulblets. He remarked that it was a common impression that when land was put down in grass the ragweed disappeared, but that after an unlimited number of years, when the ground was broken up, the weed reappeared, as supposed from the development of seeds, which had long remained in a dormant condition. If such pigmy plants as the one exhibited can perfect seeds, it is evident that a multitude of them might perpetuate themselves among the grass unnoticed from year to year, until under favorable circumstances a crop is produced, which becomes conspicuous from their size. Thus their occurrence may be explained without the necessity of an indefinite extent of vitality.

**CARBOLIC ACID FROM ANDROMEDA PLANT.**—It is stated that carbolie acid has lately been obtained from a species of *Andromeda*, occurring in the Neilgherry Hills of India, and that, being less deliquescent and far more pure than ordinary carbolie acid, it may be made to serve as a substitute in delicate medical cases. The discovery is considered one of importance by the East Indian government, and measures are proposed for utilizing it on a large scale. We have many species of this same genus in North America, but it is questionable whether, in the abundance of cheaper sources of supply, it would be a profitable business to go into the manufacture.

**VALUE OF THE SUNFLOWER PLANT.**—Attention is called by the editor of the Journal of Applied Science to the great value of the sunflower plant in various economical applications. According to this article, the sunflower can be cultivated very readily, an acre of land sustaining 25,000 plants at twelve inches distant from each other. The flowers are very attractive to bees and furnish a great amount of honey. The average production of seeds may be estimated at fifty bushels to the acre, yielding fifty gallons of oil. This is said to be equal to olive oil for table use, and is well adapted to burning in lamps, soap-making, and painting. The refuse of the above quantity of seed will produce 1,500

pounds of oil-cake, and the stalks may be either burnt to furnish potash, or, when treated like flax, may be made to yield a fiber as soft as silk, and in large quantity.

**EGG-OIL.**—Few of our readers are aware, we presume, that an oil can be made from the yolk of eggs, or that this is manufactured or used in any quantity. We are informed, however, that such is the case in Russia, and that a large quantity is there prepared for various purposes. The better qualities are used for salad dressing, and considered very much superior to olive oil; while from the more common kinds is manufactured the well-known Kasan soap. Both articles are too expensive for ordinary use, the soap especially, which is only employed among the cosmetics and toilet articles of the wealthy Russian ladies.

**SAND COMPOST.**—A German agricultural paper recommends the application of a kind of sand compost upon mossy meadows as highly successful. Sand, or sandy soil, is piled up, and daily watered with the liquid of stable drains or sinks. To prevent the escape of ammonia, a sprinkling of gypsum is applied. This compost is to be worked over, and after four to five weeks it is fit for use. The writer claims that the heavy sand smothers the moss, while the fertilizers promote the growth of grass, and he refers to his favorable results as proof.

**GROWTH OF PLANTS IN AQUEOUS SOLUTIONS.**—Experiments have been prosecuted of late by German physiologists in regard to the cultivation of plants in aqueous solutions of different substances, without the addition of any earth; and, as the general result, we are informed that a plant will grow, bloom, and ripen fruit, without being inserted in soil of any kind, but simply in a liquid which contains eight different substances, namely: potash, lime, magnesia, iron, sulphuric acid, phosphoric acid, chlorine, and nitric acid, the nitric acid being capable of being replaced by ammonia or hippuric acid, uric acid, &c. It is further more stated that neither the nitrogen compounds, iron, nor any other of these eight bodies can be omitted from the fluid in question if the plants are to pass through their various stages of development without becoming bleached or prematurely dwarfed. It is also shown by the experiments that while only these eight bodies are necessary elements of our culture-plants, others, found in ashes, such as silicic acid, manganese, copper, fluorine, and soda, are to be considered, if not essential, at any rate useful. Finally, the experiments appear to show that a plant is capable of deriving the whole of the carbon necessary for its growth, for the increase of its foliage, for the formation of sugar, starch, &c., from the atmospheric air, in the form of carbonic acid, by means of the stomata of its leaves. This novel method of prosecuting investigations upon the growth of plants and the formation of their tissues and components, it is believed, tends much toward securing exact results in such researches, and in time may enable us to acquire a thorough knowledge of the phenomena involved.

**DYEING WOOD OF DIFFERENT SHADES OF ANILINE RED.**—Mr. Stubenrauch, of Färth, has recently made the announcement that any woods naturally white, such as maple, linden, &c., can be easily dyed red, of varied and brilliant hues, by means of some of the aniline preparations, as corolin, rosein, &c. The wood is first soaked in or washed with Marseilles soap, after which a dilute alcoholic solution of the aniline color is applied, which may be repeated until the desired shade is produced. If the wood is impregnated with any pigment, it should be first bleached. For this purpose it is placed, for about half

an hour, in a bath of chloride of lime and soda; a bath of dilute sulphurous acid may then be used to remove the chlorine. A thorough washing in pure water after this should precede the dyeing treatment.

**NEW VARIETIES OF POTATOES IN GERMANY.**—German agriculturists speak quite favorably of some of the new varieties of potatoes recently brought to their notice. Dr. Ranch says of the early rose potato that, among a thousand varieties, none can be found like it. It is the earliest, as well as the most prolific, of all early potatoes, ripening within six weeks, and keeping well until the following spring, and even improving in taste by being thus kept. It is pronounced excellent for table use, very valuable for stock-feeding, and the richest in starch for manufacturing purposes. The bovinia, or stock-feeding potato, is of gigantic size and astonishing in its yield. Its quality is also quite satisfactory to the housekeeper. The new ash-leaved kidney potato—ash-top fluke—is a very fine table variety, quite early, keeps well, and has very few and shallow eyes. It is highly recommended as a garden vegetable.

**REMOVING MOSS FROM TREES.**—The removal of moss from fruit trees, as well as their judicious pruning, is of great importance to their health, this growth being not only detrimental to the vigor of the tree, but also serving as a convenient hiding-place for injurious insects. Its eradication may be accomplished by first scraping off carefully and then covering the places where it grew with a thin paste of equal parts of plaster and potters' clay, in water. The moss will disappear and the bark of the tree become smooth and healthy. Dead and broken limbs, suckers, &c., should also be removed annually, and the head of the tree always kept open to air and light. Pruning is usually done late in the fall or winter; but many horticulturists now recommend the latter part of the summer as the fitting time.

**COPYING THE GRAIN OF LEATHER.**—The Mechanics' Magazine informs us that by a recent process a perfect electrotype copy of the grain of leather can now be produced, which may be used in imparting an exact imitation of the grain of morocco, seal, or other skins, upon ordinary leather, so as to render them almost indistinguishable from the original. The deposit is attached to the mandril of an ordinary machine-roller, and, on passing the skin through this, the finest variation of the grain or modification of the surface, in imitation of the original, is produced. The operator takes any skin that may be desired, and supplies from it the means of preparing a fac-simile of it.

**HARD WATER VERSUS SOFT.**—Dr. Letheby, at a recent meeting of the medical officers of health of Great Britain, took occasion to renew his statement, already referred to in our pages, of the superiority, in a sanitary point of view, of a hard-water supply to towns over that of soft water. Basing his arguments first upon physiological considerations, he maintained that the earthy matters in the hard waters were essential for the construction of the osseous tissues, and that they supplied much of the calcareous salts necessary for the nutrition of the frame, and that, by repudiating their use, we should be throwing away one provision of nature for this purpose. No one could say that a hard water was not far more agreeable to drink than a soft water. He maintained, in the second place, that the finest specimens of the English race were to be found in regions where the waters were hard, from flowing out of, or over, calcareous strata. The same was the case with cattle and horses; witness those reared in such counties as Durham and Leicester, and the

horses of Flanders, while the Shetlands only produced a race of ponies. But his principal argument was that on classifying the towns of England, so far as their water-supply was known, according to the degrees of hardness of the waters; the average of the death-rate was least in those towns supplied with hard water, and increased as the waters became softer and softer, until it was highest in those where the water supplied was most soft. These statements, however, were met with much vigor by several speakers, among the most eminent of whom was Mr. Wanklyn, who endeavored to show that the deductions of Dr. Letheby were based upon incorrect premises, and that the case was very far from being proved.

**COLORING MATTER OF WINE.**—A method of distinguishing genuine red wine from the false, according to Cotteni, consists in mixing fifty parts of the liquor to be tested with six parts of nitric acid of 1.40 specific gravity, and heating the mixture to 190° or 200° F. Under these circumstances natural wine experiences no change after the lapse of an hour, while that which has been artificially colored loses its tint in five minutes.

**USE OF THE SKIN OF THE OPOSSUM FOR GLOVES.**—The Australian papers are congratulating the people of that country upon the demand that has lately sprung up in England for opossum skins, to be manufactured into gloves, as they appear to furnish excellent material for this purpose. As the opossum is considered a great nuisance in Australia, by its destruction of trees and injury to orchards, gardens, &c., it is anticipated that the very great call for them will do much toward keeping these animals in subjection. It is hardly necessary to say that the species in question is very different from the well-known opossum of the United States.

**NEW ARTICLE OF CONCENTRATED FOOD.**—A concentrated preparation of food, somewhat similar in composition and character to the celebrated "peas pudding" used in the late French and German war, is made by Mr. Batty, of England, by first reducing peas to a fine state of division, either by boiling and then rubbing them down, or by grinding into meal. To this meal he adds a quantity of Liebig's extract of beef and a small quantity of the concentrated essence of meat. He then introduces a mixture of fresh vegetables, such as carrots, turnips, onions, &c., reduced to a pulp. Mint may be introduced in the form of dry powder, and celery may be used in the form of an essence. Pepper and other condiments are added to suit the taste, and salt, as may be required.

**DYNAMITE IN ARTESIAN-WELL BORING.**—Dynamite, so extensively used for blasting in mines, tunnels, &c., has lately been applied in Denmark to a new purpose of great utility, viz: as an aid in boring artesian wells. The owner of a large estate wanted water for his dairy, and commenced boring for it. For 80 to 90 feet no difficulty occurred, when a stratum of flint was struck, so unyielding that it appeared advisable to give up the enterprise, but, as a last resort, dynamite was tried with the best possible result. Two pounds of dynamite, in a flask provided with isolated conducting wires, were lowered down the well-cleaned boring to its bottom, upon the impenetrable flint, and then exploded. The percussion was barely perceptible at the surface of the ground, but the water in the bore was thrown up many yards. The bore, however, filled again immediately, and it became evident that not only the flint layer was pierced, but also that strata, rich in water, were opened so as to

render further boring unnecessary. Two more charges were exploded, and the flint at the bottom was found to be broken into fragments, while the tubing was entirely uninjured. The well now yields daily an ample supply of water.

**LEATHER BOARDS.**—Within a few years past refuse leather, in the form of cuttings, scrapings, &c., from shoe and harness factories, has been utilized by being converted into leather boards, which are extensively employed at the present time in the United States and Europe for the manufacture of inner soles of shoes, and for other purposes, where the material is not likely to be exposed to the wet. The process of preparing these boards consists in first cleaning the scraps, so as to free them from all foreign substances, and then softening them for a time in water, to which is added some adhesive substance, such as glue or gelatine. After being sufficiently softened the scraps are laid upon tin plates of the proper size, having a rim all around, and arranged longitudinally and transversely, so as to make the strata nearly even, until the required thickness is obtained. A number of these plates are then placed one upon another and subjected to a hydraulic pressure, until the separate fragments are united into a nearly uniform mass. After these layers have dried sufficiently they are passed under a roller, so as to smooth them off and give to them the external appearance of the original leather.

### MARKET PRICES OF FARM PRODUCTS.

Articles.	July.	Articles.	July.
<b>NEW YORK.</b>		<b>BOSTON—Continued.</b>	
Flour, State..... per bbl..	\$5 40 to \$6 65	Corn, yellow..... per bush..	\$0 81 to \$0 82
western..... do.....	5 40 to 9 00	mixed..... do.....	69 to 71
Wheat, No. 1 spring.. per bush..	1 50 to 1 51	Oats..... do.....	65 to 70
No. 2 spring..... do.....	1 44 to 1 48	Rye..... do.....	1 10 to 1 20
winter and amber west- ern..... per bush..	1 48 to 1 57	Barley..... do.....	—
Corn, new western, mixed. do.....	71½ to 72	Pork, mess..... per bbl..	16 00 to 16 50
old western, mixed. do.....	—	prime..... do.....	13 50 to 14 50
Rye..... do.....	Nominal.	Beef, mess..... do.....	12 00 to 14 00
Barley..... do.....	Nominal.	extra mess..... do.....	15 00 to 17 00
Oats, western..... do.....	65 to 70	Lard..... per lb.....	10 to 13
State..... do.....	—	Butter, New York and Ver- mont..... per lb.....	18 to 27
Hay, shipping qualities. per ton..	21 00 to —	Canada..... do.....	20 to 26
prime..... do.....	24 00 to 29 00	western..... do.....	10 to 23
Pork, mess..... per bbl..	15 00 to 15 75	Cheese, eastern factory..... do..	10 to 12½
prime mess..... do.....	13 00 to 13 25	Ohio..... do.....	8 to 12
Beef, mess..... do.....	8 00 to 12 00	Hay, prime..... per ton..	30 00 to 32 00
extra..... do.....	13 00 to 16 00	Wool, western..... per lb.....	60 to 75
Lard, extra..... per lb.....	9½ to 11	combing and delaine fleeces..... per lb.....	46 to 65
Butter, western..... do.....	11 to 23	tub..... do.....	55 to 72
State..... do.....	15 to 31	pulled..... do.....	42½ to 62
Cheese, dairy..... do.....	5 to 12		
factory..... do.....	8 to 12½	<b>CHICAGO.</b>	
Cotton, ordinary..... do.....	15 to 18½	Flour, winter, extras... per bbl..	6 75 to 8 50
middling..... do.....	19½ to 22½	spring..... do.....	5 50 to 7 00
Tobacco, sound lugs, L. G. do.....	5½ to 6½	Wheat, No. 1 spring.. per bush..	1 28½ to 1 28½
sound lugs, H. G. do.....	6½ to 7½	No. 2 spring..... do.....	1 26½ to 1 27½
common l'f, L. G. do.....	7 to 7½	No. 3 spring..... do.....	1 18 to —
common l'f, H. G. do.....	7½ to 8½	Corn, No. 2..... do.....	54½ to 54½
Wool, combing fleeces..... do..	48½ to —	rejected..... do.....	52 to 52½
extra pulled..... do.....	—	no grade..... do.....	—
Texas, common to medi- um..... per lb.....	30 to —	Oats, No. 2..... do.....	42½ to 49½
California, common. do.....	39 to 40	rejected..... do.....	46 to 47½
		Hay, timothy and clover, (on track)..... per ton..	14 00 to 15 00
<b>BOSTON.</b>		prairie..... do.....	8 00 to 11 00
Flour, west'n superfine. per bbl..	5 06 to 5 25	Pork, mess..... per bbl..	14 50 to —
extra..... do.....	6 00 to 8 00	prime mess..... do.....	12 00 to 13 50
choice..... do.....	7 00 to 10 50		



## Market prices of farm products—Continued.

Articles.	July.	Articles.	July.
CHICAGO—Continued.		St. LOUIS—Continued.	
Beef, mess.....per bbl.	\$11 00 to \$13 00	Corn, mixed.....per bush.	0\$ 50 to \$0 54
extra mess.....do.	14 00 to 14 50	yellow.....do.	50½ to 51
Lard.....per lb.	10½ to —	Hay.....per ton.	15 00 to 23 00
Butter, firkin and tub do.	7½ to 19	Pork, mess.....per bbl.	14 00 to 16 00
extra.....do.	17 to 20	Lard, tierce.....per lb.	11½ to —
Cheese, New York factory do.	10 to 11	keg.....do.	11½ to 11½
western.....do.	9 to 10	Butter, choice.....do.	18 to 20
western reserve do.	—	fair to medium.....do.	12 to 16
Wool, medium fleece.....do.	45 to 55	Cheese, factory.....do.	12 to 13½
unwashed medium do.	33 to 42	Cotton, middling.....do.	17½ to 19
tub.....do.	55 to 64	Tobacco, sound lug.....per cwt.	5 50 to 7 00
CINCINNATI.		common leaf.....do.	6 75 to 7 75
Flour, family.....per bbl.	6 35 to 6 60	medium leaf.....do.	7 75 to 8 50
extra.....do.	6 15 to 6 25	Wool, tub-washed.....per lb.	57 to 64
superfine.....do.	5 25 to 5 50	fleece-washed.....do.	45 to 55
low grades.....do.	4 00 to 4 50	combing.....do.	41 to 43
Wheat, No. 1 white.....per bush.	—	pulled.....do.	43 to 45
No. 2 white.....do.	—	NEW ORLEANS.	
No. 1 red.....do.	1 35 to 1 38	Flour, superfine.....per bbl.	5 00 to 5 25
No. 2 red.....do.	—	Extras, (according to	—
Corn, No. 1.....do.	59 to —	grade).....per bbl.	5 75 to 9 75
new ear.....do.	55 to 56	Corn, mixed.....per bush.	70 to 75
Rye, No. 1.....do.	98 to 1 00	yellow.....do.	71 to 72
No. 2.....do.	93 to 95	white.....do.	74 to 75
rejected.....do.	—	Oats, choice.....do.	63 to 65
Barley, No. 1.....do.	—	Hay, choice.....per ton.	27 00 to 28 00
No. 1 State.....do.	—	prime.....do.	25 00 to 26 00
Oats, No. 1 mixed.....do.	55 to 57	Pork, mess.....per bbl.	16 12½ to 16 75
No. 2 mixed.....do.	—	Lard, tierce.....per lb.	10½ to 11
Hay, tight-pressed.....per ton.	17 00 to 23 00	keg.....do.	11½ to 11½
loose.....do.	19 00 to 30 00	Butter, choice western.....do.	20 to 23
Pork, mess.....per bbl.	15 00 to 15 25	choice northern.....do.	32 to 35
prime mess.....do.	—	common northern.....do.	— to —
Lard, prime steam.....per lb.	11 to —	Cheese, choice factory.....do.	12½ to 13
Butter, choice Ohio.....do.	18 to 20	western reserve.....do.	11 to 12
fair to good.....do.	14 to 15	Cotton, ordinary.....do.	13½ to 18½
Cheese, western reserve.....do.	9 to 10	low middling.....do.	20 to 20½
factory.....do.	10 to 11	middling.....do.	21 to —
Cotton, ordinary.....do.	13½ to 18½	Tobacco, lugs.....do.	6 to 7
middling.....do.	19½ to 21½	low leaf.....do.	7 to 7½
Tobacco, lugs, West Va.....do.	4½ to 6½	medium leaf.....do.	7½ to 8
lugs, Kentucky.....do.	7½ to 8½	SAN FRANCISCO.	
common to medium leaf,	—	Flour, superfine.....per bbl.	6 00 to 6 25
West Va.....per lb.	7½ to 10	extras.....do.	6 50 to 7 25
Kentucky.....per lb.	10 to 16	Wheat, State.....per cental.	2 27½ to 2 40
Wool, tub-washed.....do.	55 to 58	Oregon.....do.	— to —
fleece-washed.....do.	48 to 55	Corn, white.....do.	2 00 to 2 25
unwashed.....do.	34 to 40	yellow.....do.	2 00 to 2 25
pulled.....do.	45 to 47	Hay, State.....per ton.	15 00 to 21 00
St. LOUIS.		Pork, mess.....per bbl.	26 00 to —
Flour, superfine.....per bbl.	4 20 to —	prime.....do.	— to —
extra.....do.	4 75 to 6 25	Beef, mess.....do.	— to —
choice.....do.	7 00 to 7 75	Lard.....per lb.	— to —
Wheat, spring.....per bush.	1 05 to —	Butter, State.....do.	27 to 31
winter No. 1.....do.	1 24 to 1 40	Oregon.....do.	20 to 25
winter No. 2.....do.	1 22 to 1 25	overland.....do.	— to —
winter No. 3.....do.	1 15 to 1 20	Cheese.....do.	— to —
Red.....do.	1 00 to 1 35	Wool, choice.....do.	35 to 42
		inferior & medium.....do.	25 to 30

# METEOROLOGY.

## JUNE, 1871.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY OBSERVERS OF THE SMITHSONIAN INSTITUTION.]

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain-fall, (in inches and tenths,) for June, 1871, as reported by the observers at the stations named. Observations daily at 7 a. m. and 2 and 9 p. m.

State and station.	County.	Observer.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
MAINE.								
Orono.....	Penobscot.....	M. C. Fernald.....	2	Deg. 83	21	Deg. 47	Deg. 62.0	In. 2.58
West Waterville.....	Kennebec.....	B. F. Wilbur.....	3	91	24	52	65.8	1.15
Gardiner.....	do.....	R. H. Gardiner.....	3	84	1, 24	53	63.7	1.58
Lisbon.....	Androscoggin.....	Asa P. Moore.....	3	88	1, 18	52	63.9	2.45
Standish.....	Cumberland.....	John P. Moulton.....	3	92	24	51	64.4	3.02
Norway.....	Oxford.....	Howard D. Smith.....	3	91	24	51	65.2	1.85
Cornish.....	York.....	Silas West.....	3	92	19	51	64.4	2.00
Cornishville.....	do.....	G. W. Guptill.....	3	93	19	52	66.7	3.10
NEW HAMPSHIRE.								
Stratford.....	Coos.....	Branch Brown.....	3	92	16, 30	46	66.5	1.62
Whitefield.....	do.....	L. D. Kidder.....	3	92	17	46	62.2	1.82
Tamworth.....	Carroll.....	Alfred Brewster.....	3	93	24, 30	47	65.5	1.76
Contoocookville.....	Merrimack.....	E. D. Coneh.....	3	92	18	53	67.3	3.20
Amoskeag.....	Hillsboro.....	Alfred Colby.....	3	95	10, 22	45	60.9	3.15
VERMONT.								
Lunenburg.....	Essex.....	H. A. Cutting.....	3	90	10, 18	50	66.0	2.13
Craftsbury.....	Orleans.....	Rev. E. P. Wild.....	3	88	9	43	60.9	1.94
South Troy.....	do.....	James C. Kennedy.....	3	90	22	51	65.9	1.90
East Bethel.....	Orange.....	Charles S. Paine.....	3	93	10, 30	42	63.6	1.60
Woodstock.....	Windsor.....	Doton & Miller.....	3	87	22	46	62.0	1.54
Norwich.....	do.....	Samuel E. Phelps.....	3	92	10, 30	47	66.1	4.10
West Charlotte.....	Chittenden.....	Miss M. E. Wing.....	2	93	22	46	68.4	2.81
Panton.....	Addison.....	D. C. and M. E. Barto.....	2	90	13, 24	54	67.1	1.93
Castleton.....	Rutland.....	Rev. R. G. Williams.....	3	89	17	49	66.1	1.29
MASSACHUSETTS.								
Kingston.....	Plymouth.....	G. S. Newcomb.....	3	92	19	50	65.4	4.74
Lawrence.....	Essex.....	John Fallon.....	3	94	18, 19	52	66.7	5.21
Milton.....	Norfolk.....	Rev. A. K. Teele.....	3	94	10	53	65.2	4.35
North Billerica.....	Middlesex.....	Rev. E. & W. W. Nason.....	3	92	18	50	66.4	.....
Worcester.....	Worcester.....	Merrick Bemis, M. D.....	3	89	17, 19, 24	54	66.2	5.39
Lunenburg.....	do.....	Geo. A. Cunningham.....	3	93	15, 18	52	66.0	6.20
Mendon.....	do.....	John G. Metcalf, M. D.....	3	88	1, 18, 19	53	69.2	3.10
Amherst.....	Hampshire.....	Prof. E. S. Snell.....	3	88	10	52	65.4	6.58
Richmond.....	Berkshire.....	William Bacon.....	4	90	9	44	66.5	6.80
Williams College.....	do.....	Prof. A. Hopkins.....	3	88	22	48	64.3	4.85
Hinsdale.....	do.....	Rev. E. Dewhurst.....	3	88	{ 9, 14, 16, 17, 18, 22, 24, 29, 30 }	50	62.9	3.50
RHODE ISLAND.								
Newport.....	Newport.....	William A. Barber.....	4	89	1	54	66.4	4.26

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum tem- perature.	Date.	Minimum tem- perature.	Mean tempera- ture.	Rain-fall.
CONNECTICUT.				Deg.		Deg.	Deg.	In.
Columbia	Tolland	William H. Yeomans	3	94	19, 22	53	65.8	4.99
Middletown	Middlesex	H. D. A. Ward	3	90	17	52	65.8	4.24
Southington	Hartford	Luman Andrews	3	87	19	53	65.2	5.11
Round Hill	Fairfield	Rev. W. P. Alcott	3	87	30	55	67.1	6.00
NEW YORK.								
Moriches	Suffolk	E. A. Smith & daugh'r.	4	87	1	59	69.8	3.79
South Hartford	Washington	G. M. Ingalsbe	3	87	16	50	69.5	3.25
North Argyle	do	G. M. Hunt	3	87	17, 22	53	66.8	3.47
Garrison's	Putnam	Thomas B. Arden	3	92	15, 30	55	68.0	5.29
Throg's Neck	West Chester	Miss E. Morris	3, 4, 20	89	18	52	71.0	-----
White Plains	do	Prof. O. R. Willis & drs	3	85	17	56	64.5	-----
Cooper Union	New York	Prof. O. W. Morris	4	87	30	59	69.3	8.02
Brooklyn	Kings	Isaac P. Mailler	3	87	16	60	69.6	6.45
Flatbush	do	Rev. Eli T. Mack	3, 20	89	24, 25	55	69.6	5.81
Glasco	Ulster	D. W. Hendricks	3	94	10	46	66.8	6.35
Amsterdam	Montgomery	J. W. Bussing	2	87	24	55	68.6	6.45
Middleburg	Schoharie	Rev. Sanford W. Roe	3	93	10, 17	50	67.3	6.10
Cooperstown	Otsego	G. Pomeroy Keese	3	88	17	43	64.5	5.25
Cooperneur	St. Lawrence	C. H. Russell	6	88	16	42	62.3	1.58
Canton	do	Leslie A. Lee	3	93	16	49	65.9	-----
North Hammond	do	C. A. Wooster	4	98	17	54	67.1	1.88
Lowville	Lewis	A. Judson Barrett	2, 3	88	22	41	60.0	1.94
Cazenovia	Madison	Prof. William Soule	3	90	9	47	64.0	-----
Oneida	do	S. Spooner, M. D.	2, 6	91	16	46	64.0	8.73
Depauville	Jefferson	Henry Haas	4	84	16, 17	48	61.8	2.80
Oswego	Oswego	William S. Malcolm	27	83	16	50	63.4	2.28
Palermo	do	E. B. Bartlett	2, 6	90	9	46	65.7	2.10
North Volney	do	J. M. Patrick	6	93	16	51	66.8	-----
Waterburg	Tompkins	David Trowbridge	6	89	16	42	65.3	-----
Nichols	Tioga	Robert Howell	1, 6	89	17	42	66.2	-----
Newark Valley	do	Rev. Samuel Johnson	2, 6	89	16, 30	46	65.8	3.60
Rochester	Monroe	G. P. Hachenberg, M.D	3, 6	89	16	52	69.5	4.20
Little Genesee	Allegany	Daniel Edwards	2, 6	86	30	36	64.3	3.62
Angelica	do	C. P. Arnold	2	88	17	38	63.0	2.57
Carlton	Oriens	M. P. Godfrey	27	85	17	48	63.8	1.81
Lockport	Niagara	B. Wheaton Clarke	6	90	13	50	64.7	3.07
Buffalo	Erie	William Ives	1	93	29	49	66.5	3.65
Jamestown	Chautauqua	Samuel H. Albro	6	86	16	46	65.5	3.30
NEW JERSEY.								
Jersey City	Hudson	Thomas J. Howard, jr.	3	89	24	59	70.6	7.47
Newark	Essex	W. A. Whitehead	3	86	10, 17, 30	54	68.2	7.11
Trenton	Mercer	E. R. Cook	4	90	15, 17, 30	60	73.6	5.87
Rio Grande	Cape May	Mrs. J. R. Palmer	3	89	25	52	67.7	4.63
Moorestown	Burlington	Thomas J. Beans	4	89	30	58	69.9	6.11
New Germantown	Hunterdon	A. B. Noll	5, 6	85	15	51	68.8	9.31
Readington	do	John Fleming	3, 4	90	16	52	69.5	-----
Greenwich	Cumberland	Miss R. C. Sheppard	7	85	16, 26, 30	59	71.3	3.53
Vineland	do	John Ingram, M. D	3	96	25, 30	57	73.5	5.03
PENNSYLVANIA.								
Nyces	Pike	John Grathwohl	5	90	9	43	60.3	2.15
Hamlington	Wayne	James D. Stocker	5, 28	88	9, 16	48	67.9	2.50
Dyberry	do	Theodore Day	2	87	30	45	64.5	2.51
Fallsington	Bucks	Ebenezer Hance	3, 4	89	15	59	71.0	5.00
Philadelphia	Philadelphia	Prof. J. A. Kirkpatrick	3	90	25	60	73.0	4.51
Germantown	do	Thomas Meehan	3	91	16	55	71.4	-----
do	do	Ernest Turner	3	88	16, 30	59	67.2	-----
Horsham	Montgomery	Miss Anna Spencer	3	86	15	56	68.7	8.33
Plymouth Meeting	do	Marcus H. Corson	3	88	16	57	70.3	8.06
Egypt	Lehigh	Edward Kohler	3, 5	91	30	46	69.6	-----
Factoryville	Luzerne	Rodman Sisson	2, 6	87	30	49	66.3	5.20
Reading	Berks	J. Heyl Raser	3	92	30	57	71.3	6.24
West Chester	Chester	George Martin, M. D.	4	90	29	61	73.5	3.85
Parkersville	do	F. Darlington, M. D	3	90	17	59	71.9	5.00
Ephrata	Lancaster	W. H. Spera	3	90	12	53	71.0	5.49
do	do	W. F. Madlem	3	90	12, 16	53	71.0	4.59
Harrisburg	Dauphin	Samuel A. Black	4	94	12	60	74.4	5.94
Carlisle	Cumberland	William H. Cook, M. D	6	93	30	58	71.9	3.65

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
				Deg.		Deg.	Deg.	In.
PENN.—Cont'd.								
Fountain Dale	Adams	S. C. Walker	20	87	12, 29	59	70.7	2.96
York S. Springs	do	J. H. Marsden, M. D.	7	92	29	55	71.2	3.65
Tioga	Tioga	E. T. Bentley	19	90	17, 30	36	62.1	2.80
Grampian Hills	Clearfield	Elisba Fenton	5	90	29	48	66.2	3.16
Johnstown	Cambria	David Peelor	4	88	30	44	68.6	4.05
Franklin	Venango	Rev. M. A. Tolman	2	94	30	45	67.5	3.53
Greensburg	Westmoreland	J. M. L. Stump	4	87	29	52	71.4	5.25
Pittsburg	Allegheny	George Albrce	6	88	30	50	70.0	4.10
CConnellsville	Fayette	John Taylor	5, 6	94	30	52	72.4	.....
Greenville	Mercer	D. B. Packard	6	87	30	48	66.9	5.72
Newcastle	Lawrence	E. M. McConnell	2	88	30	43	75.5	4.30
Canonsburg	Washington	Rev. Wm. Smith, D. D.	1, 2, 3, 6	86	30	47	72.8	3.59
DELAWARE.								
Dover	Kent	J. H. Bateman	5	92	2, 25	62	74.4	1.20
Milford	do	Robert H. Gilman	4	89	25	55	74.0	1.80
MARYLAND.								
Woodlawn	Cecil	J. O. McCormick	3, 5	88	{ 10, 16, 17, 25, 30 }	60	71.8	4.10
Fallston	Harford	George G. Curtis	3, 5, 7, 23	87	12, 30	60	72.4	3.59
Annapolis	Anne Arundel	William R. Goodman	3	90	12	63	75.6	5.20
Woodstock College	Baltimore	Rev. A. X. Valente	3, 4	86	30	57	70.9	2.25
Sam's Creek	Carroll	F. J. Devilbiss	5	85	12	57	70.1	1.49
Mt. St. Mary's	Frederick	Prof. C. H. Jourdan	3	87	30	58	70.9	2.39
Cumberland	Alleghany	E. T. Shriver	.....	.....	.....	16	57	69.0
DIST. COLUMBIA.								
Washington	Washington	Smithsonian Instit'n.	7	85	30	63	74.3	2.99
VIRGINIA.								
Johnsontown	Northampton	C. R. Moore	4	89	12	62	73.0	4.15
Capeville	do	Emma C. Townsend	24, 28	92	12	66	77.9	.....
Hampton	Elizab'th City	J. M. Sherman	20, 24	94	13	65	75.7	3.99
Comon	King George	E. T. Tayloe	24	89	12, 30	64	75.4	4.57
Mt. Solon	Augusta	Jas. T. Clarke, M. D.	24	88	16	54	71.0	2.24
Vienna	Fairfax	H. C. Williams	28	90	16, 25, 30	62	72.7	3.10
Fairfax C. H.	do	Miss Lillie Thrift	25	89	30	60	69.3	2.51
Acotink	do	C. Gillingham	24	90	30	60	74.7	2.05
Near Waterford	Loudon	Mrs. S. E. Chamberlin	5, 28	92	12	56	74.9	1.40
Piedmont	Fauquier	F. Williams	20, 24	91	12	55	72.2	3.50
Markham Station	do	D. Payne	28	88	12	60	72.0	.....
Piedmont Station	do	William A. Martin	{ 3, 21, 24, 28 }	86	12	55	71.4	3.75
Keswick Station	Albemarle	Capt. D. B. Horn	4	95	16	60	77.0	.....
Lexington	Rockbridge	Prof. J. L. Campbell	24	89	16	56	73.0	2.57
Lynchburg	Bedford	C. I. Meriwether	24, 28	86	16	61	75.2	.....
Near Wytheville	Wythe	Rev. J. A. Brown	23	86	12	59	71.7	3.20
WEST VIRGINIA.								
Weston	Lewis	Benjamin Owens	1	92	30	56	72.9	.....
NORTH CAROLINA.								
Oxford	Granville	W. R. Hicks, M. D.	20, 23, 24	90	12, 13	64	77.0	2.60
Fayetteville	Cumberland	G. W. Lawrence	28	92	13, 17	66	78.7	2.00
Albemarle	Stanley	F. J. Kron	25	94	13	54	76.0	3.10
Statesville	Iredell	T. A. Alison	23, 24, 28	92	12	52	75.0	1.75
Asheville	Buncombe	E. J. Aston	20	85	13	56	71.8	.....
Do	do	J. T. E. Hardy, M. D.	22, 23	80	13	54	70.5	4.10
SOUTH CAROLINA.								
Aiken	Barnwell	John H. Cornish	15, 19, 23	90	{ 1, 2, 4, 12, 14, 16 }	71	80.4	7.09
Gowdeysville	Union	Charles Petty	20, 22	90	12	69	79.6	3.97

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
				Deg.		Deg.	Deg.	In.
GEORGIA.								
Berne.....	Camden.....	H. L. Hillyer.....	29	90	{ 4, 16, 18, 21 }	{ 71	77.8	6.40
St. Mary's.....	do.....	Ebenezer Barker.....	29	92	5	72	80.4	15.85
Quitman.....	Brooks.....	J. Q. Cutler.....	18, 26, 27	93	1	73	80.5	11.72
Macon.....	Bibb.....	S. P. Sanford.....	{ 15, 21, 22, 25, 28, 29, 30 }	94	1	70	81.4	5.77
Atlanta.....	Fulton.....	Charles Deckner.....	30	91	12	64	77.4	3.48
ALABAMA.								
Huntsville.....	Madison.....	E. L. Antony, M. D.....	21, 27, 28	86	1, 13	70	78.4	5.45
Carlowville.....	Dallas.....	H. L. Alison.....	28	96	2	70	80.2	9.39
Selma.....	do.....	Dr. Fahs and Miss R. B. Deans.....	28	95	16	68	81.1	7.35
Moulton.....	Lawrence.....	Thos. M. Peters.....	20, 26, 27	86	13	62	76.6	4.53
Greene Springs.....	Hale.....	H. Tutwiler, L.L. D.....	28	94	14	65	78.0	4.43
Coatopa.....	Sumter.....	S. K. Jennings, M. D.....	21, 28	92	14	66	78.5	6.40
FLORIDA.								
Near Port Orange.....	Volusia.....	S. W. Chamberlin.....	13	93	19	70	78.8	7.22
New Smyrna.....	do.....	E. K. Lowd.....	12, 13	92	18	75	81.4	.....
Jacksonville.....	Duval.....	A. S. Baldwin, M. D.....	29	95	6, 26	72	81.2	16.75
Pilatka.....	Putnam.....	Gen. G. D. Robinson.....	18	98	20	71	81.8	12.79
TEXAS.								
Houston.....	Harris.....	Miss E. H. Baxter.....	18	101	9	74	83.9	.....
Clear Creek.....	Galveston.....	George N. Leoni.....	29	102	10, 11	74	81.9	8.72
Oakland.....	Colorado.....	F. Simpson.....	29	101	12	71	83.4	1.60
Bluff.....	Fayette.....	Joseph Pietsam.....	29	96	8	72	80.9	3.32
Victoria.....	Victoria.....	L. D. Heaton.....	29	106	7, 9	74	85.9	2.40
Clinton.....	DeWitt.....	A. C. White.....	28, 29	98	8	73	82.9	1.00
Austin.....	Travis.....	J. Van Nostrand.....	29	100	8, 18	72	83.1	0.55
San Antonio.....	Bexar.....	Fred. Pettersin.....	29	104	9	71	84.8	0.32
LOUISIANA.								
New Orleans.....	Orleans.....	Robert W. Foster.....	28	94	2, 13	69	80.0	6.40
Ponchatoula.....	Livingston.....	H. C. Collins.....	27, 28	94	13	74	82.7	12.80
MISSISSIPPI.								
Marion Station.....	Lauderdale.....	Thos W. Storer, M. D.....	28	98	{ 3, 5, 12, 13 }	70	80.6	6.20
Philadelphia.....	Neshoba.....	L. A. Bowden.....	29, 30	90	{ 2, 8, 11, 13, 19, 20, 23 }	70	77.6	4.20
Near Brookhaven.....	Lawrence.....	Mrs. W. E. Keenan.....	28	95	2	69	79.0	7.70
Holly Springs.....	Marshall.....	Thomas B. Coleman.....	27	94	30	60	78.0	3.80
ARKANSAS.								
Helena.....	Phillips.....	C. F. Russell.....	28	96	12	63	80.8	.....
Clarksville.....	Johnson.....	E. Greene.....	26, 27	97	8, 12	71	80.6	8.41
Washington.....	Hempstead.....	Charles White.....	23, 23	90	{ 1, 8, 13, 14, 15 }	72	80.2	0.75
Mineral Springs.....	do.....	Harmon Bishop.....	21, 27, 28	98	13	64	80.8	1.23
TENNESSEE.								
Elizabethton.....	Carter.....	C. H. Lewis.....	5, 24	91	13	50	74.3	4.25
Tusculum College.....	Greene.....	S. S. and Rev. W. S. Doak.....	6	92	8	52	77.0	1.30
Knoxville.....	Knox.....	Prof. J. K. Payne.....	23	89	13	58	75.4	4.46
Lookout Mountain.....	Hamilton.....	Rev. C. F. P. Bancroft.....	14, 19, 28	87	1	64	76.5	.....
Clearmont.....	Warren.....	T. P. Parratt.....	25	87	13	60	73.5	5.81
Austin.....	Wilson.....	P. B. Calhoun.....	25, 26, 27	90	13	62	74.3	6.69
Clarksville.....	Montgomery.....	Prof. W. M. Stewart.....	5, 27	85	30	61	74.5	4.01

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
TENN.—Cont'd.								
Trenton	Gibson	W. T. Grigsby	20	Deg. 93	30	Deg. 60	Deg. 78.6	In. 2.80
La Grange	Fayette	W. E. Franklin, M. D.	23	94	30	65	78.7	2.80
KENTUCKY.								
Pine Grove	Clark	Sam'l D. Martin, M. D.	23, 27	88	29, 30	58	73.2	4.64
Danville	Boyle	O. Beatty	4, 27	92	12, 29	62	76.6	3.51
Shelby City	do	Howard Shriver	5	90	12, 13	64	75.5	2.71
Near Louisville	Jefferson	Mrs. Laurence Young	27	94	29, 30	54	75.2	3.86
OHIO.								
Salem	Columbiana	J. E. Pollock	2	97	29	48	69.2	4.69
Stuebenville	Jefferson	Joseph B. Doyle	20	88	30	53	74.0	2.93
Painesville	Lake	E. J. Ferris	6	85	30	48	66.5	6.00
Milnersville	Guernsey	Rev. D. Thompson	1	87	{ 12, 13, 14, 30 }	50		3.85
Cleveland	Cuyahoga	Mr. & Mrs. G. A. Hyde	2, 6	89	16, 29	48	67.1	3.58
Adams' Mills	Muskingum	Charles A. Stilwell	1	88	14, 21	60	68.3	
Pennsville	Morgan	J. P. King	1, 5	92	30	56	73.3	2.62
Gallipolis	Gallia	A. P. Rogers	23	90	30	50	74.3	3.69
Sandusky	Erie	Thomas Neill	2	89	29	56	69.7	3.77
Carson	Huron	Mrs. M. M. Marsh	2	90	29	54	67.7	5.75
North Fairfield	do	O. Btrass	1	88	29, 30	54	69.0	6.25
Westerville	Franklin	Prof. John Haywood	1	89	29	53	70.1	4.47
North Bass Island	Ottawa	Geo. R. Morton, M. D.	6	90	29	54	69.9	3.15
Marion	Marion	H. A. Truc, M. D.	1	89	29	51	69.5	3.26
Hillsboro	Highland	J. McD. Mathews	23	85	30	55	70.5	2.67
Bowling Green	Wood	John Clarke	19	96	29	52	72.9	4.28
Kenton	Hardin	C. H. Smith, M. D.	6	95	30	59	78.7	4.20
Bellefontaine	Logan	William Barringer	1	91	29	50	70.5	3.03
Urbana University	Champaign	M. G. Williams	23	90	29	52	71.4	3.65
Bethel	Clermont	G. W. Crane	23	91	29	55	73.2	1.75
Carthagena	Mercer	Prof. W. R. Mueller	23	91	29	51	71.4	3.00
Jacksonburg	Butler	J. B. Owsley, M. D.	1, 5, 6	88	30	52	72.1	5.10
Oxford	do	R. W. McFarland	23	95	29	56	74.4	6.08
Mount Auburn Ins.	Hamilton	Prof. I. H. White	1, 23	89	29	60	76.0	1.81
Cumminsville	do	J. H. Shields	5	92	30	55	72.5	2.30
Cincinnati	do	G. W. Harper	1	96	29, 30	56	74.4	2.02
Do	do	R. C. Phillips	24	92	29, 30	60	78.2	2.15
College Hill	do	J. W. Hammitt	6, 23	92	9, 12, 16	62	81.2	3.63
MICHIGAN.								
Detroit	Wayne	F. W. Higgins	1, 27	92	29	51	68.8	6.26
Monroe City	Monroe	Miss H. I. Whelpley	6, 19	92	29	55	72.3	1.00
Ann Arbor	Washtenaw	Mrs. N. H. Winchell	1	88	29	48	67.9	3.37
Macon	Lenawee	David Howell	27	94	29	49	69.4	6.10
Alpena	Alpena	J. W. Paxton	3, 4	72	9	46	59.2	1.16
State Agr. College	Ingham	Prof. R. C. Kedzie	2	98	13, 15	44	68.2	2.93
Olivet College	Eaton	Prof. A. F. Kemp	1, 2	91	29	50	63.7	4.40
Litchfield	Hillsdale	R. Bullard	1, 4, 19	87	29	48	68.0	3.53
Cold Water	Branch	N. L. Southworth	1	94	29	42	66.5	2.75
Grand Rapids	Kent	E. S. Holmes, D. D. S.	1	98	28, 29	49	69.8	3.36
Northport	Leelenaw	Rev. Geo. N. Smith	1	86	8	44	61.5	1.69
Benzonla	Benzie	William Wilson	1, 5	87	8	44	63.5	0.80
Copper Falls	Keweenaw	S. H. Whittlesey, M. D.	1	87	8, 9	39	58.0	1.40
Ontonagon	Ontonagon	Edwin Ellis, M. D.	9	78	8	44	57.0	1.20
INDIANA.								
Fort Wayne	Allen	R. S. Robertson	1	92	29	50	71.8	2.60
Rising Sun	Ohio	Thomas E. Alden	27	93	30	59	72.6	
Yevay	Switzerland	Chas. G. Boerner	23	92	29	59	74.9	2.30
Mt. Carmel	Franklin	J. A. Applegate and daughter.	1, 23	94	29	57	78.2	5.55
Spiceland	Henry	William Dawson	23	95	29	55	74.1	3.25
Laconia	Harrison	Adam Crozier	27	90	29	58	74.8	1.43
Beech Grove	Rush	William S. Clark	26	88	30	48	71.0	3.80
Knightsstown	do	D. Deem	23	94	29	58	74.0	4.49
Bloomington	Monroe	Mallow & Kilpatrick	23	91	29	56	74.0	1.29
Near La Porte	La Porte	F. J. Andrew	23	86	29	50	70.4	6.05
Merom	Sullivan	Thomas Holmes	23	94	29	57	77.8	0.70
New Harmony	Posey	John Chappellsmith	23	94	29	59	79.0	0.82

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
ILLINOIS.								
Chicago	Cook	J. G. Langguth, jr	23	Deg. 88	11	Deg. 54	Deg. 72.0	5.87
Near Chicago	do	Samuel Brookes	23	90	24	42	69.7	.....
Evanston	do	Prof. Oliver Marcy	1	81	30	55	67.1	4.06
Marengo	McHenry	J. W. James	1	90	29	46	66.3	5.17
Mattoon	Coles	A. W. Puffer	23	99	30	55	76.3	9.37
Aurora	Kane	A. Spaulding, M. D.	1	90	29	48	69.5	5.25
Louisville	Clay	D. H. Chase, M. D.	23	96	29	56	77.7	2.60
Decatur	Macon	Timothy Dudley	22, 23	94	29	48	73.1	1.90
Pana	Christian	Thos. Finley, M.D.	23	93	29	60	75.8	1.70
Rochelle	Ogle	Daniel Carey	1	94	8, 28	54	68.0	.....
Wyanet	Bureau	E. S. & Miss Phelps	1, 2	93	29, 30	47	72.2	5.90
Tiskilwa	do	Verry Aldrich	5	96	30	54	72.7	.....
Hennepin	Putnam	Smiley Shepherd	1	96	29, 30	45	70.0	.....
Do.	do	Ethan Osborn	1	96	30	52	73.4	4.70
Peoria	Peoria	Fred. Brendel	4, 5, 22	92	12, 29	57	75.2	3.47
Havana	Mason	Joseph Cochrane	1, 22, 23	98	29	56	74.8	3.00
Waterloo	Monroe	Chas. Joche	23	98	29	54	75.5	2.30
Dubois	Washington	Wm. C. Spencer	27	95	13, 29	62	77.4	2.14
Galesburg	Knox	Prof. W. Livingston	1, 5	90	29, 30	58	73.0	3.41
Manchester	Scott	Dr. J. & C. W. Grant	5	93	8	57	75.0	2.00
Mt. Sterling	Brown	Rev. A. Duncan	1	92	30	57	78.8	3.95
Andalusia	Rock Island	M. B. Bowman	4, 5	90	29	42	71.8	1.65
Oquawka	Henderson	R. N. Patterson	1	97	30	59	77.5	2.26
Augusta	Hancock	S. B. Mead, M. D.	4	92	29	61	75.5	4.70
Warsaw	do	B. Whitaker	1	92	30	57	74.4	6.91
WISCONSIN.								
Sturgeon Bay	Door	Rufus M. Wright	1	87	8, 15	44	63.5	1.55
Hingham	Sheboygan	John de Lyser	1, 4	87	29	50	68.1	4.00
Milwaukee	Milwaukee	I. A. Lapham, LL. D.	1	85	29	45	65.1	3.03
Geneva	Walworth	W. H. Whiting	1	96	15	49	67.8	6.98
Embarrass	Waupaca	E. Everett Breed	1	93	29	45	67.1	3.77
Rocky Run	Columbia	W. W. Curtis	1	92	30	53	68.0	6.38
Edgerton	Rock	H. J. Shiuts	1	98	28	54	70.6	4.40
Baraboo	Sauk	M. C. Waite	1	94	8	52	70.1	5.38
New Lisbon	Juneau	J. L. Dungan	1	99	29	50	69.0	.....
Bayfield	Bayfield	Andrew Tato	27	86	23	44	64.0	.....
MINNESOTA.								
St. Paul	Ramsey	Rev. A. B. Paterson	4	92	15	55	68.0	4.30
Minneapolis	Hennepin	William Cheney	4	91	15	50	67.9	3.11
Sibley	Sibley	C. W. & C. E. Woodbury	4	90	15	51	68.3	1.87
Litchfield	Meeker	H. L. Wadsworth	4	90	7	50	66.3	3.00
New Ulm	Brown	Charles Roos	4	92	8	52	70.1	1.35
IOWA.								
Dubuque	Dubuque	Asa Horr, M. D.	1	95	29	55	72.2	4.47
Monticello	Jones	Rufus P. Smith	4	98	10, 12, 21	57	72.5	4.57
Durant	Cedar	F. A. Ross	1	98	7, 28	56	69.5	4.50
Bowen's Prairie	Muscatine	Samuel Woodworth	1, 4	98	8, 9	54	70.6	2.75
Fort Madison	Lee	Daniel McCready	5	97	28	52	75.7	3.44
Guttenberg	Clayton	J. P. Dickerson	4	98	{ 14, 15, 21, 28 }	52	68.1	.....
Independence	Buchanan	George Warne, M. D.	4	98	28	55	73.2	2.35
Near Independence	do	Mrs. D. B. Wheaton	18	94	28	53	70.5	5.00
Rockford	Floyd	H. Wade	5	93	8, 15	54	69.3	.....
Iowa Falls	Hardin	Nathan Townsend	5	90	10	60	73.3	3.75
Ames	Story	Ernest Adams	22	96	28	56	73.7	2.50
Algona	Kossuth	James H. Warren	5	96	19	56	71.0	.....
Boonesboro	Boone	E. Babcock	18	92	29	50	69.7	.....
Afton	Union	M. V. Ashby	26	92	28	52	70.2	3.60
Fontanelle	Adair	A. F. Bryant	26	99	11	59	73.5	1.50
Grant City	Sac	Mr. and Mrs. E. Miller	18	102	14, 29	56	75.4	1.00
Sac City	do	D. B. Nelson	3, 4, 18	92	7	52	55.6	3.80
Logan	Harrison	Jacob T. Stern	22, 26	94	12, 15	55	72.2	1.00
Council Bluffs	Pottawatomie	Benjamin Talbot	22	94	28	58	74.7	2.36
MISSOURI.								
St. Louis University	St. Louis	Rev. F. H. Stuntebeck	23	95	29, 30	61	79.1	3.09
Allenton	do	A. Fendler, M. D.	22, 23	100	30	51	76.7	1.19

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum tem- perature.	Date.	Minimum tem- perature.	Mean tempera- ture.	Rain-fall.
MISSOURI—Cont'd.								
				Deg.		Deg.	Deg.	In.
Hematite .....	Jefferson .....	John M. Smith .....	22	99	30	50	79.3	1.67
Hannibal .....	Marion .....	F. J. Hearne .....	18, 26	91	15, 30	60	76.0	4.00
Rolla .....	Phelps .....	Homer Ruggles .....	22, 23	97	30	47	75.0	2.24
Jefferson City .....	Cole .....	Nicolas de Wyl .....	10, 25	92	14	63	77.0	.....
North Springfield .....	Greene .....	R. H. McCord .....	21, 22, 26	90	29	60	75.8	4.83
Cave Spring .....	do .....	Dr. T. W. Coltrane .....	26	93	29	60	77.3	.....
Kansas City .....	Jackson .....	S. W. Salisbury .....	26	95	15	62	77.0	8.93
Corning .....	Holt .....	Horace Martin .....	26	98	14	58	76.2	2.79
KANSAS.								
Athlison .....	Athlison .....	Dr. H. B. & Miss Horn .....	26	97	29	62	77.8	3.60
Williamstown .....	Jefferson .....	John M. Cotton .....	26	103	29	60	79.8	5.97
Leavenworth .....	Leavenworth .....	Dr. J. Stayman .....	26	97	29	57	76.6	6.45
Williamsburg .....	Franklin .....	D. Fogle .....	26	95	28	61	77.2	3.45
Paola .....	Miami .....	L. D. Walrad .....	22	93	29	63	76.9	8.76
Holton .....	Jackson .....	James Watters, M. D. .....	26	102	28	60	80.0	4.75
Le Roy .....	Coffey .....	J. G. Shoemaker .....	20	100	28, 30	67	80.9	3.66
State Agr'l College .....	Riley .....	Prof. B. F. Mudge .....	26	100	15, 20	63	77.5	2.60
Council Grove .....	Morris .....	A. Woodworth, M. D. .....	26	100	28	58	78.8	5.20
Douglass .....	Butler .....	W. M. Lamb, M. D. .....	26	98	29	62	78.4	2.75
NEBRASKA.								
Omaha Agency .....	Blackbird .....	Rev. Wm. Hamilton .....	11	98	21	63	77.5	0.50
De Soto .....	Washington .....	Charles Seltz .....	22	98	28	59	75.8	3.30
Bellevue .....	Sarpy .....	Mrs. E. E. Caldwell .....	22, 26	99	28	57	76.6	2.80
Nebraska City .....	Otoe .....	Prof. P. Zahner .....	22, 26	96	14	61	76.2	2.50
Emerson .....	do .....	William Dunn .....	22, 26	98	28, 29	58	77.7	2.87
Newcastle .....	Dixon .....	Louis H. Smith .....	17	102	2	48	74.4	.....
Santee Agency .....	L'Eau qui Court .....	George T. Truman .....	3, 4	95	28	58	74.7	4.05
CALIFORNIA.								
Monterey .....	Monterey .....	C. A. Canfield, M. D. .....	6	89	3, 4	41	60.1	0.62
Mendocino .....	Mendocino .....	A. W. Thornton, M. D. .....	25	79	25, 26	51	59.0	.....
Taylorsville .....	Plumas .....	Mary E P. Ames .....	16	99	6	48	72.0	.....
MONTANA TER.								
Deer Lodge City .....	Deer Lodge .....	Granville Stuart .....	28	90	3	31	63.8	1.07
Missoula .....	Missoula .....	Jas. M. Minnesinger .....	12	94	3	42	68.7	0.51
COLORADO TER.								
Denver .....	Arapahoe .....	Byers & Sopris .....	11	97	6	56	72.0	0.05
Golden City .....	Jefferson .....	G. W. Davies & J. Hall .....	18	94	22	57	76.0	0.70
WYOMING TER.								
Laramie City .....	Albany .....	D. J. Pierce .....	19	92	4	46	66.0	.....



## NOTES OF THE WEATHER.

JUNE, 1871.

*Mt. Desert, Me.*—Fires in forests 1st to 13th; frost 22d; dry spring and June.

*West Waterville, Me.*—No entire cloudy, one entire clear day; month dry.

*Gardiner, Me.*—Cool, dry June. Mean heat  $0.74^{\circ}$  below average of thirty-five years, ( $63.81^{\circ}$ .) Moisture of past six months 17.93 inches; in 1870, 23.89 inches.

*Cornish, Me.*—Average June heat for forty years  $61.75^{\circ}$ ; this year  $66.72^{\circ}$ .

*Tamworth, N. H.*—Frosts 22d, 30th; month cool and very dry.

*Contoocookville, N. H.*—First good rain in six weeks 19th; clover blossoms 20th.

*Amoskeag, N. H.*—June calm; little thunder and lightning; frosts 10th, 22d.

*Craftsbury, Vt.*—Thunder-showers 3d, 13th; light frost 22d, sharp 30th.

*Woodstock, Vt.*—Slight frosts 10th, 17th, 23d, 30th; month dry; springs low.

*West Charlotte, Vt.*—Auroras 7th, 9th, 17th, 30th; very bright 4th, 8th, 23d, 24th; haying began 30th; getting very dry; crops suffering.

*Kingston, Mass.*—Distressing drought till 12th; hail 16th; aurora 17th.

*Lunenburg, Mass.*—Thunder-shower 11th, (was a tornado in neighboring towns.) June mean temperature for 1870,  $71.01^{\circ}$ ; average for thirty-one years  $66.24^{\circ}$ .

*Southington, Conn.*—Rain on ten days; all day on 15th and 18th.

*Moriches, N. Y.*—Save a few days in May, cool weather to 30th.

*Garrison's, N. Y.*—A cool and rather wet month.

*Brooklyn, N. Y.*—Earthquake at 10 p. m. 19th; heavy rain; fine June.

*New York City.*—Earthquake felt on Staten and Long Islands at 10 p. m. of 19th, preceded by a rumbling sound, followed by tremulous motion.

*North Hammond, N. Y.*—Light frosts 17th, 22d, 30th; a cool, rainy month.

*Cazenovia, N. Y.*—Thunder-showers 10th, 11th, 15th, with hail 28th.

*Depauville, N. Y.*—Coolest June in seven years, except in 1869, and dry in places.

*Angelica, N. Y.*—Frosts 10th, 16th, 30th; sharp 17th; rain on ten days.

*Little Genesee, N. Y.*—Dry till latter part, and cool all month; ice 17th.

*Buffalo, N. Y.*—First strawberries 8th; Isabella grape blossoms 14th.

*Newark, N. J.*—A delightful month in temperature, and abundant rains.

*New Germantown, N. J.*—Auroras 21st, 26th; small hail 24th.

*Greenwich, N. J.*—Wheat harvest 16th; two weeks early; no hot weather.

*Hamlington, Pa.*—Frost 30th; killed some vines; season very dry.

*Dyberry, Pa.*—First strawberries 4th.

*Plymouth Meeting, Pa.*—Terrific thunder 24th. Rainiest month since September, 1868.

*Factoryville, Pa.*—Cool month; rains too late to benefit hay crop.

*Parkerville, Pa.*—Dry till 12th; haying commenced 21st.

*Carlisle, Pa.*—Cutting clover 5th to 12th, barley 12th, wheat 19th.

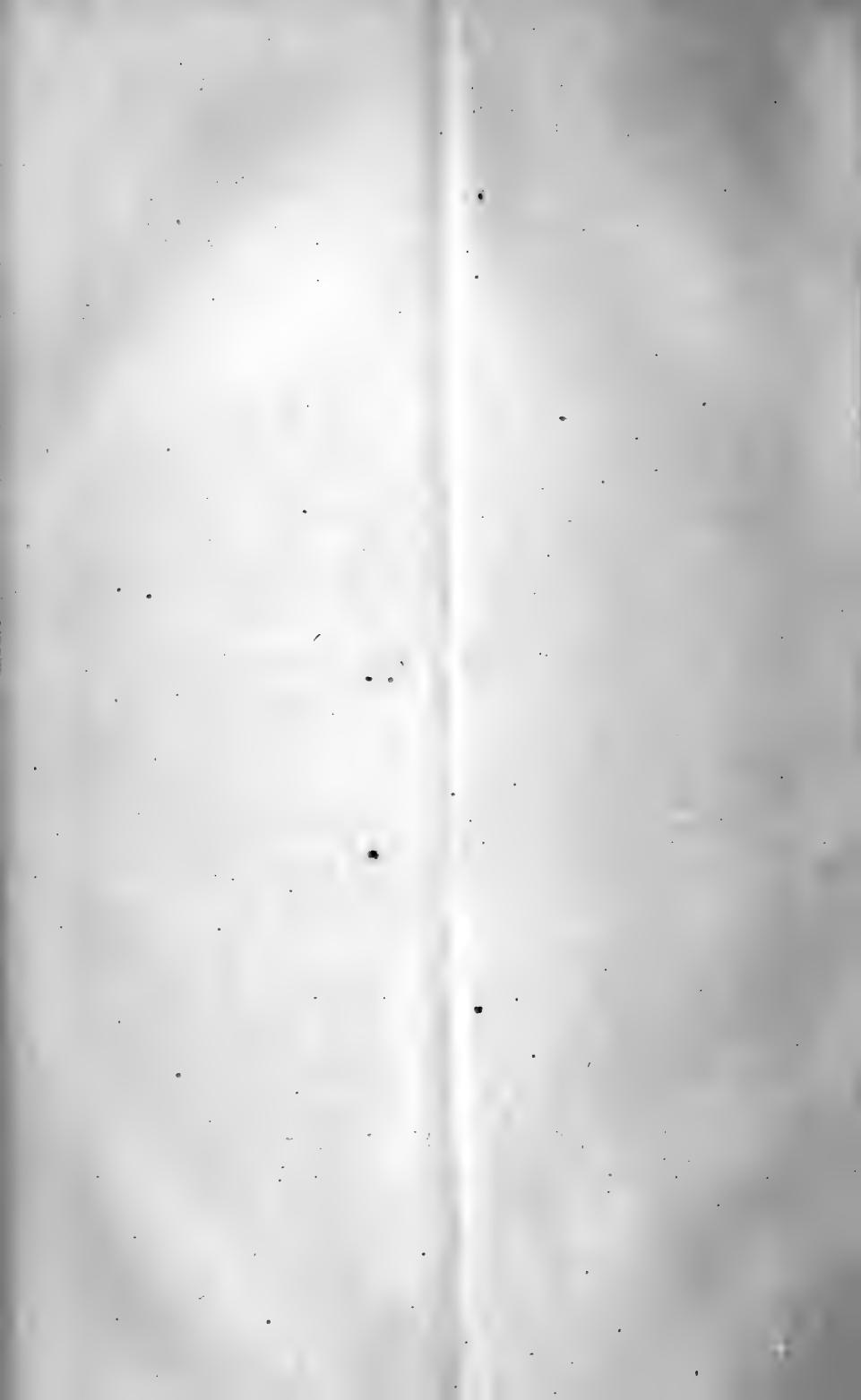
*Fountain Dale, Pa.*—May dry, and June till 18th. Harvest early.

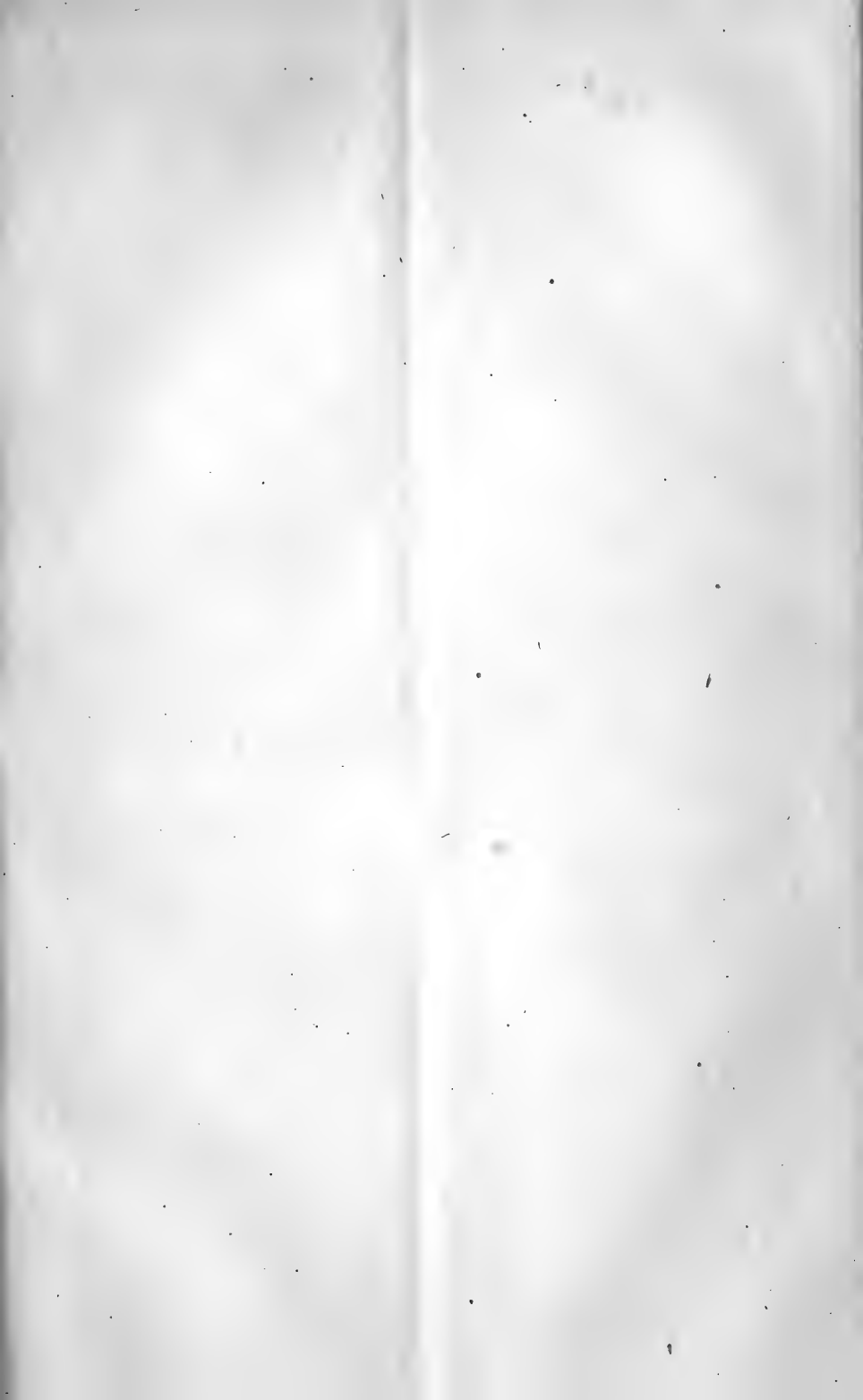
*York Springs, Pa.*—Aurora 10th; wheat harvested by 30th.

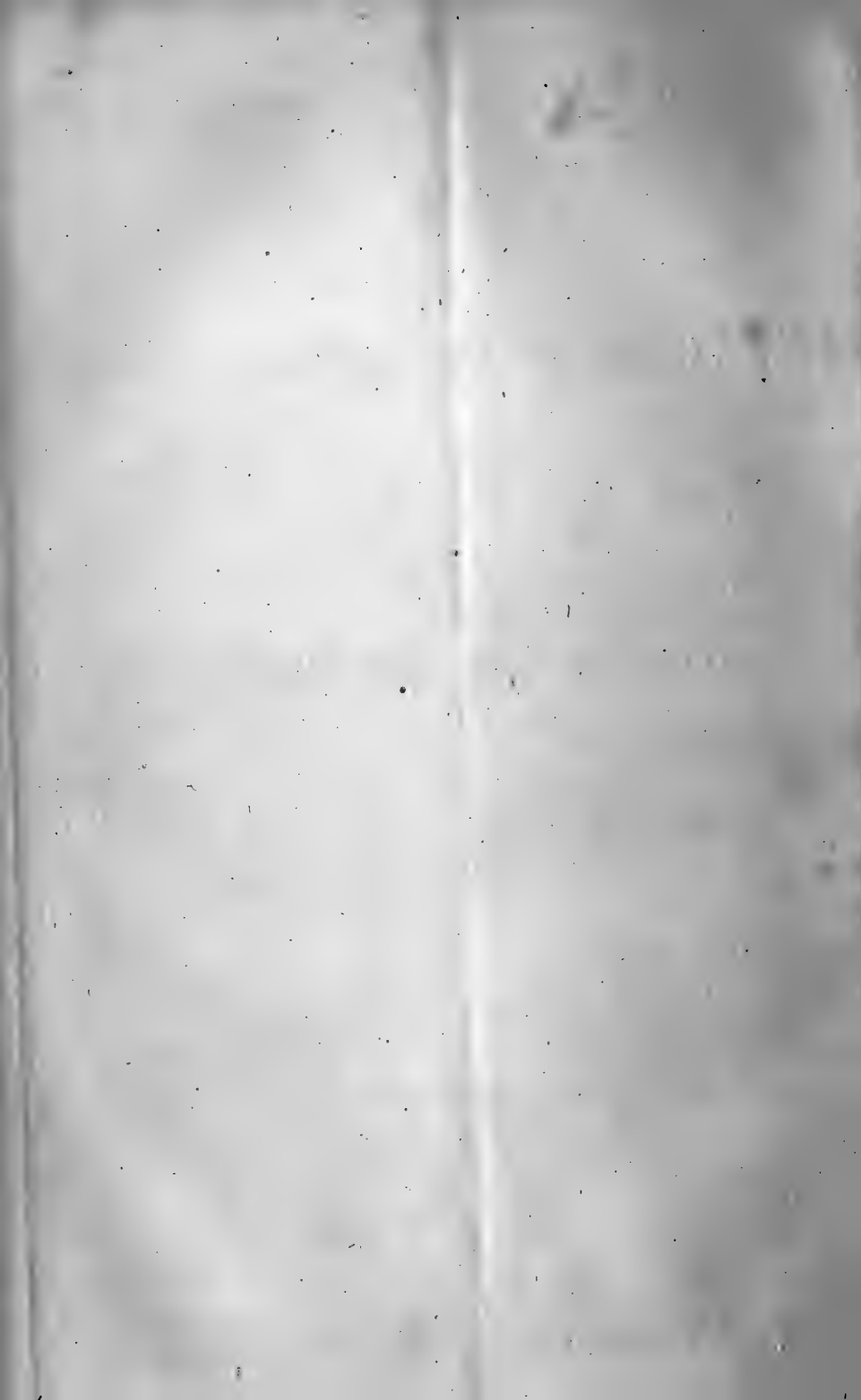
*Tioga, Pa.*—Light frost 17th, hard 30th. Month cold and very dry.

- Grampian Hills, Pa.*—Month variable, last part quite dry.
- Greenville, Pa.*—Frost 30th, injured corn in some places.
- Newcastle, Pa.*—Heavy northwest winds 10th to 15th; ice 30th.
- Milford, Del.*—Showers too light to aid early crops of fruit and grass.
- Woodlawn, Md.*—Auroras 10th, 11th, 12th, 14th; harvest ended 30th.
- Sam's Creek, Md.*—Hail 1.5 inches diameter, little damage here, 27th.
- Johnsontown, Va.*—Raspberries two weeks earlier than usual, 1st.
- Hampton, Va.*—Only one entirely clear day in June.
- Comorn, Va.*—Rain-fall of first six months of 1871, 21.56 inches; average of the six months for twenty-two years, 16.04 inches; June average of twenty-two years, 3.27 inches.
- Vienna, Va.*—Aurora 18th; June rather dry; crops backward.
- Caperville, Va.*—First heavy rain since May 17th—11th, 12th.
- Wytheville, Va.*—Rains partial; earliest harvest known here.
- Statesville, N. C.*—Harvest early; rust in oats—first in fifteen years.
- Gowdeysville, S. C.*—Heavy general thunder-storms 23d.
- Berne, Ga.*—Much thunder and lightning, with heavy rains, this month.
- Atlanta, Ga.*—Lightning and thunder nearly every day in June.
- Coatopa, Ala.*—Thunder-showers on sixteen days in June.
- Huntsville, Ala.*—Aurora 18th; many showers 11th to close.
- Moulton, Ala.*—Warm June; heavy rains; roasting ears on 25th.
- Jacksonville, Fla.*—Greatest rain-fall known in June; much thunder and lightning.
- Pilatka, Fla.*—Rainiest June known, and all thunder-storms.
- Oakland, Tex.*—Cotton opening 29th; very dry; corn suffering.
- Ponchatoula, La.*—Thunder-showers in this section every day.
- Marion, Miss.*—Excessive rains, moist air, high temperature.
- Brookhaven, Miss.*—Very wet to 11th; high winds 10th, 11th; peaches 11th; katydids 15th. Not one entirely clear day in June.
- Clarksville, Ark.*—Auroras, faint 12th; rosy streamers 17th.
- Elizabethton, Tenn.*—Much cloudy weather; hail and gale 25th.
- Trenton, Tenn.*—A dry month, but not injurious to crops.
- Salem, Ohio.*—Aurora 18th; destructive thunder and hail storm 23d; light frost 30th.
- Kenton, Ohio.*—Grass stiff and white with frost 30th.
- Urbana, Ohio.*—Beautiful aurora 17th. Harvest two weeks early.
- Carthagenia, Ohio.*—Aurora 17th, 18th, 19th; cool 28th to 30th.
- Jacksonbury, Ohio.*—Harvest—barley 5th to 10th, wheat 15th to 22d.
- Cincinnati, Ohio.*—Auroras 9th, 17th.
- Litchfield, Mich.*—Frosts—heavy 14th, light 29th, 30th. Seven auroras in June. Crops generally two weeks earlier than usual.
- Grand Rapids, Mich.*—Frosts 9th, 29th; aurora 10th. Month of extremes.
- Benzonia, Mich.*—Killing frost 9th. Drought severe.
- Veray, Ind.*—Faint aurora 17th; dewberries 24th; haying 27th.
- Laconia, Ind.*—Month warm and dry; crops suffering.
- Knightstown, Ind.*—Wheat harvest ended by 28th.
- Laporte, Ind.*—Thunder-storms 2d, 6th, 17th, 23d, 24th; aurora 10th.
- Rising Sun, Ind.*—Wheat cut 12th, (last year 21st;) aurora 18th.
- Marengo, Ill.*—Auroras 10th, 11th, 17th. Seventeen-year locusts appeared May 27th, very numerous and destructive to tender twigs from June 8th to 23d, when they began dying off rapidly.
- Wyanet, Ill.*—Hail-storm 9th; cut grain and other crops badly.
- Hennepin, Ill.*—Month pleasant; rain well distributed for crops.
- Dubois, Ill.*—Wheat harvest began 8th; aurora 17th.
- Gatesburg, Ill.*—Month warm; frequent thunder-showers.

- Mt. Sterling, Ill.*—Bright aurora 10th; wheat harvested 30th.
- Augusta, Ill.*—Violent gale, thunder-storm 18th; red currants 26th.
- Sturgeon Bay, Wis.*—Frosts 16th, 21st; sharp 29th.
- Geneva, Wis.*—Locusts (seventeen-year) 1st; aurora 10th.
- Rocky Run, Wis.*—Bright aurora 17th; cherries ripe 20th.
- Mosinee, Wis.*—Frosts 7th, 16th, 29th, slightly injuring corn; tornado, thunder-storm, hail, doing some damage to trees and buildings, 18th.
- Baraboo, Wis.*—Drought to 21st, then rains and floods to 29th never before equaled here in June. Month cooler than May.
- Minneapolis, Minn.*—Strawberries 6th. Month cooler than usual.
- Litchfield, Minn.*—First shower to wet the ground 25th; violent gale, thunder, hail, doing much damage to crops, 30th.
- Durant, Iowa.*—Auroras 10th, 17th. Barley harvest began 27th.
- Guttenberg, Iowa.*—Seventeen-year locusts innumerable this month.
- Independence, Iowa.*—Many wells dry; streams very low.
- Rockford, Iowa.*—Heavy rain 22d, 23d; first in a long time.
- Boonesboro, Iowa.*—Hurricane 18th, doing great injury in its course; in Carroll County several persons killed and others severely injured.
- Sac City, Iowa.*—Severe gales 18th, 30th. For fifteen months fine weather.
- Logan, Iowa.*—Hottest June in twelve years—cucumbers cooked on the vines.
- St. Louis, Mo.*—Thunder-shower, hail, 2d; blood-red aurora 18th.
- Rolla, Mo.*—Frequent thunder. Month 5° warmer than last year.
- Jefferson City, Mo.*—Heavy thunder-storms 16th, 18th; rain all day 24th, 25th; splendid aurora, lighted up the whole horizon, 18th.
- Corning, Mo.*—Very hot, in the sun, 134° at five p. m. 26th.
- Cave Spring, Mo.*—Wheat harvest began two weeks earlier than ever here 3d; ended 22d; oats harvest began 29th.
- Paola, Kans.*—Ground very wet, hindering farm work, 30th.
- Holton, Kans.*—Very fine season for farmers, but heavy rains lately.
- Burlingame, Kans.*—Grand aurora 26th; thunder-storm, wind, rain, hail, doing much injury to the crops, 28th.
- Council Grove, Kans.*—Five days excessively damp air to 3d; again about the 19th.
- Douglass, Kans.*—Thunder-storm with tornado 16th; destroyed nearly all crops in its path, and about one hundred houses in El Dorado.
- Santee Agency, Nebr.*—Rain and hail 5th, 30th; auroras 10th, 17th.
- Belleveue, Nebr.*—Hail-storm 8th; auroras 10th, 17th; warm month.
- Newcastle, Nebr.*—A dry and windy June, with but little rain.
- Denver, Col.*—Very heavy thunder and hail storm 20th.
- Laramie, Wyo.*—Auroras 10th, 22d; hail 26th; hottest month known here; lightning and thunder frequent; much snow and rain fell on the hills. We never have smoky days here.
- Deer Lodge City, Mont.*—Snowed hard, but melted as it fell, 3d; heavy thunder-storm 13th; very dry month with high winds.
- Missoula Mills, Mont.*—Frosts, light 1st, heavy 25th; thunder-showers 2d, 3d, 13th.







# MONTHLY REPORT

OF THE

## DEPARTMENT OF AGRICULTURE

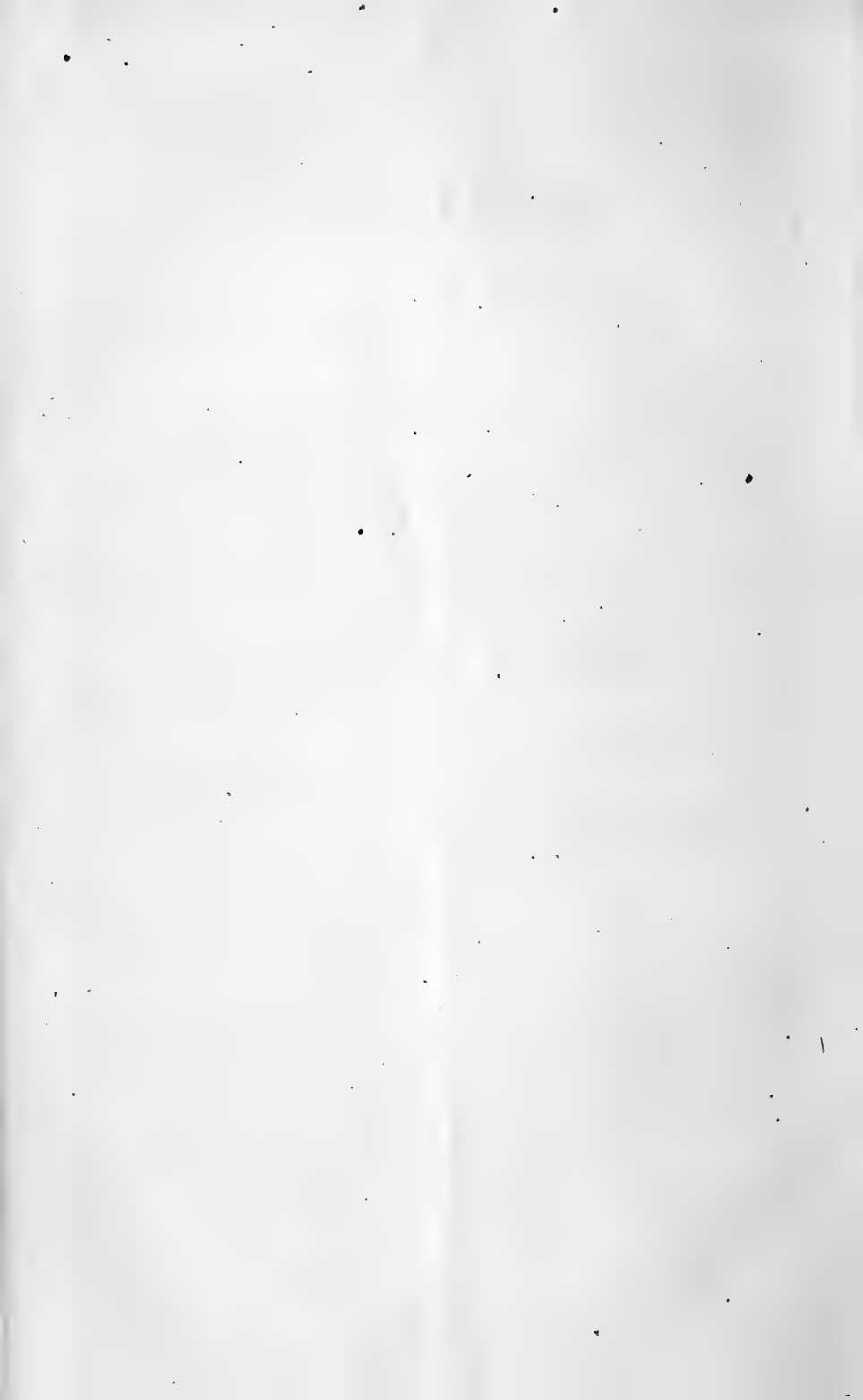


AUGUST AND SEPTEMBER,

1871.



WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1871.





# MONTHLY REPORT.

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DEPARTMENT OF AGRICULTURE, STATISTICAL DIVISION,  
*Washington, D. C., September 15, 1871.*

SIR: I present herewith for publication a digest of the reports of August and September upon the condition of the harvested and the growing crops of the country, with brief notes from statistical reporters in relation thereto; also a variety of extracts from the communications of regular correspondents; articles on the British imports of wheat and cotton; sugar and molasses crops of Cuba for 1870-71; the "Fultz" wheat; notice of meeting of the American Pomological Society; a list of sales of short-horn stock; a mention of personal observations in Colorado and Wyoming; statistics of live stock, and of flax production in Ireland; together with an entomological record, scientific notes, and a variety of industrial data; a list of fairs for 1870; market prices of farm products in August and September; meteorological tables and notes, &c., &c.

Very respectfully,

J. R. DODGE,  
*Statistician.*

Hon. FREDERICK WATTS,  
*Commissioner.*

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## CONDITION OF CROPS.

Great unevenness, meteorological and statistical, appears in the present returns. The most encouraging and very unpromising indications are presented from the same State, and often from the same district. Changes in the tenor of returns of the same county from month to month have sometimes been necessary.

The New England States have had generally a good supply of rain, with storms of hail, high winds, and at several points a hint of earthquakes. July was unusually cold; August generally warmer than an average temperature for that month. At Cooperstown, N. Y., there was frost on the 24th of July, and at several points in the same State the month was recorded as the coolest for several years; while the August temperature was exceptionally high. The rain-fall was large during both months, particularly in August on the sea-coast. Abundant moisture, somewhat unevenly distributed in point of space and time, was enjoyed in New Jersey and Pennsylvania. In portions of the Atlantic coast, from Delaware to Georgia, drought was suffered, broken at last by heavy rains; and the season in that district has been marked by extremes of temperature, the occurrence of cyclones, and other dis-

turbances of a meteorological equilibrium. Tennessee has enjoyed very seasonable weather; the Gulf States have in places suffered somewhat from absence of rain, and parts of Texas have endured a severe drought and high temperature. Portions of Michigan and of Illinois have been parched with drought. Iowa and Missouri have reported a sufficient rain-fall in most localities; and "droughty" Kansas has been moister than ever—the meteorologist of Council Grove reporting for the season "over eighty days of clouds obscuring sun's rays, and more rain than in any July in ten years, except 1867." Eight of the thirteen Kansas stations reported from six to eight inches of rain in July. Nebraska had less moisture.

#### CORN.

The condition of corn, as reported in the August returns, was high, except in the Southern States; and the reports of September are equally favorable in the Eastern and Middle States, still more encouraging in the States beyond the Mississippi and Missouri, and somewhat less so in the States of the Ohio Valley. Those below an average in the great corn-producing district are: Kentucky, 85 per cent.; Ohio, 98; Michigan, 93; Indiana, 97; Illinois, 95. Those above an average: Wisconsin, 109; Minnesota, 108; Iowa, 113; Missouri, 108; Kansas, 115; Nebraska, 112.

The noticeable local facts affecting this crop will be given in brief detail. In several counties in Maine, grasshoppers have wrought some injury. The crop is somewhat later than usual in some parts of Vermont. In New Hampshire, Massachusetts, Rhode Island, and Connecticut the crop will be large.

In Niagara County, New York, some fields have been nearly ruined by a season of dry weather, said to be unexampled in thirty years. Depreciation from a similar cause exists in Steuben, where much has been cut up for fodder; and also in Erie. In Hunterdon County, New Jersey, a loss of one-half by "the white grub" is reported, and worms have been injurious in Warren. Reports are quite favorable from Pennsylvania; with few exceptions, as in the cases of early planting on heavy, wet soils, and late planting on lighter lands subject to drought.

*Cumberland County, Pa.*—The crop is very flourishing in the eastern part of the county, but not so heavy in the western.

*Warren County, Pa.*—July and August much too dry for this crop.

*Chester County, Pa.*—Those fields not seriously injured by the cold, wet spring, and by birds and worms, will give a heavy yield. Many fields have only half a set.

*Mifflin County, Pa.*—Will be a very large crop if not injured by frost.

The prospect has brightened in Maryland during the past month, and an average crop will be gathered. On the Chesapeake it is ripening earlier than usual. In Virginia, a very fine prospect is reported from Princess Anne, Nansemond, Henrico, and Surry, while drought is materially shortening the crop in Nelson, Buckingham, Madison, Amelia, Pulaski, Bath, Highland, Louisa, Rappahannock, and Augusta.

*Montgomery County, Va.*—The crop was terribly injured by drought, but has improved beyond expectation.

*King George County, Va.*—Unusually abundant in the upper section of the county, but suffered for want of rain in the eastern section. In favored portions the yield is 50 per cent. above that of last year.

The crop of North Carolina will be diminished somewhat by drought, though several counties claim a prospect for more than an average yield.

*Mecklenburg County, N. C.*—About half a crop on upland. No rain for ten weeks sufficient to wet the ground for plowing.

*Hertford County, N. C.*—The late rains have greatly improved the corn crop, and the yield will probably be better than at any time since 1865.

*Franklin County, N. C.*—Though the yield per acre will be short, the increased acreage will insure enough for home consumption.

*Gaston County, N. C.*—Promised well until August; after which, on account of the dry weather, it fell off rapidly. Droughts in July and August always prove fatal to crops on the high lands of this county.

*Caswell County, N. C.*—Fully equal to the crop of last year, notwithstanding the drought from the 15th of June to the latter part of July.

In Ashe County the crop has been seriously injured by a violent storm. Similar accounts of drought come from South Carolina, with statements indicating considerable amelioration from recent rains.

*Fairfield County, S. C.*—The early planting matured prior to the drought. The last planting is almost entirely destroyed.

*Union County, S. C.*—Late crop injured one-half by drought. Early corn, well cultivated, is good.

*Horry County, S. C.*—Reduced by drought, but the crop will be somewhat above that of last year.

Losses in several counties in Georgia have resulted from severe storms, yet a greater injury has been caused by drought.

*Hancock County, Ga.*—Late and lowland corn cut short by drought, following the excessive rains of spring and early summer.

*Clay County, Ga.*—Sufficient corn has been made to supply the wants of this section. There is a growing disposition to gather hay, raise hogs, cattle, and sheep, and to make the farm self-sustaining.

*Butts County, Ga.*—On bottom land, inferior—too much rain; that on upland is sufficiently good to compensate for loss on the bottoms, making together an average crop.

In the bottom lands which were not too wet in spring a good crop is assured; on uplands not retentive of moisture corn will be light. In Marshall County, "nearly one-fourth of the crop will be lost by being blown down during the rains of the last month." In Mississippi the crop has improved since last month, though local depreciation is reported at several points, the injury being caused by rain in one place and drought in another. The principal injury of the crop of Florida was wrought by the cyclone of August 17 and 18.

*Lery County, Fla.*—Crop harvested, but badly injured by the storm.

*Nassau County, Fla.*—Whole valley of the St. Mary inundated by the successive gales, with heavy rains, and crops are utterly ruined in most places.

The reports of injury from drought in Texas are more numerous than elsewhere. Some counties will still have a surplus, while others will scarcely be able to supply the home consumption.

*Uvalde County, Texas.*—Fully matured. Average on irrigated lands, 35 bushels per acre; fields not irrigated, 10 bushels; quality inferior.

*Kendall County, Texas.*—Yield hardly 8 bushels per acre. Cause, the unprecedented dry season.

*Coryell County, Texas.*—Cut short one-half by drought. Not a drop of rain for thirteen weeks.

*Williamson County, Texas.*—Injured by drought. No rain from 12th of May to 16th of August.

*Colorado County, Texas.*—A full average, though the drought cut off late planted corn. The increased acreage makes up the average.

A full average will be realized in Arkansas, notwithstanding the dry weather of August. In the vicinity of Independence, "the large yield, with the increase of acreage, promises an abundance which has had no equal since North Arkansas has been settled." It is stated that very little corn will be needed for fattening hogs, as "the forest trees are breaking with their load of mast." The middle and eastern counties of Tennessee have had a very dry season, which has reduced the yield of corn. That which was planted early in deep soil is heavy, while fields planted after the middle of May are, in many places, of little value. In

Fayette County, while the drought has pinched the ears and reduced the size of the grains, the best crop gathered since the war is expected.

Complaint of injury from dry weather comes from the southern portion of West Virginia. In many fields the stalks were dry before the ears were half filled. Injury from the same cause has resulted throughout a large portion of Kentucky. The lighter uplands in Ohio have been too dry, and the crop in some places will be much reduced.

*Morrow County, Ohio.*—Drought severely affected the corn; many fields cut to save the fodder.

*Franklin County, Ohio.*—Drought, in the south half of the county, cut short the corn 50 per cent.; in the north half, the low, black lands return an excellent crop; the uplands 25 per cent. short.

*Scioto County, Ohio.*—Drought caught our splendid corn crop just as it was shooting, and cut it down 25 per cent. below last report.

*Mercer County, Ohio.*—Chinch-bug injuring corn in some localities.

Notwithstanding the depreciation in certain soils and districts, the crop of Ohio will not be much below an average. In Michigan the loss is greater. Some fields have been cut up for fodder. Yet there are counties which report a larger yield than ever before. Portions of Indiana have been very dry, but recent rains have greatly improved the crop. In Putnam it is said that "corn has matured beyond expectation in spite of the drought, and will yield a full average;" in Dubois it was "never better;" in La Grange, though the large expectation at first entertained has been reduced 25 per cent., an average quantity is still expected. An immense yield was anticipated in Illinois prior to numerous local drawbacks, from drought, hail-storms, and chinch-bugs. The report from Lake—"the promise of a prodigious yield has subsided into an average crop"—is not far from a fair summary of the entire returns. The crop will be large in Missouri.

*Audrain County, Mo.*—Ten days ago there was promise of the heaviest corn crop ever produced in the county; chinch-bugs have since cut it down to an average.

*Monroe County, Mo.*—Corn injured by the chinch-bug, yet the crop is larger than for six years.

*Bates County, Mo.*—Corn crop has not been so good for ten years as now. The average for the county will be 60 bushels.

*Linn County, Mo.*—Chinch-bugs, a new swarm, have for twenty-five days been wasting the corn crop; otherwise it would have been 40 or 50 per cent. larger than usual.

*Harrison County, Mo.*—Corn maturing well, though somewhat injured by chinch and grub worm.

*Mercer County, Mo.*—Corn crop better than we ever had before.

*Schuyler County, Mo.*—In spite of drought, corn will be above an average.

Wisconsin and Minnesota have large crops. There has been some injury from drought in the former State, but no reports of depreciation from this cause have come from the latter.

*Blue Earth County, Minn.*—Corn splendid; out of the way of frost; a hail-storm destroyed 767 acres of corn.

*Winona County, Minn.*—Corn mostly cut up and out of the way of frost.

In Iowa, Kansas, and Nebraska a considerable increase in quantity is assured. The following items are specimens of the returns:

*Washington County, Iowa.*—Corn magnificent; one field, by actual count, averaged four ears to the hill.

*Clinton County, Iowa.*—Corn crop made; the best for ten years.

*Appanoose County, Iowa.*—Corn, though materially injured by chinch, will exceed last year's crop.

*Boone County, Iowa.*—Farmers lamenting the low price of corn, caused by its superabundance.

*Carroll County, Iowa.*—Corn not filling out well; heavy wind-storms have loosened the roots.

*Hardin County, Iowa.*—Corn heavy and far advanced; nearly out of danger from frost.

*Jasper County, Iowa.*—Corn crop the best in sixteen years, and out of danger from frost; saw a load of new corn in market to-day.

*Douglas County, Kansas.*—Corn two weeks earlier than usual. It is already being cut.

*Shawnee County, Kansas.*—Corn will be a heavy crop.

*Republic County, Kansas.*—Chinch-bugs thick on corn; also a great deal of smut, which old farmers here say is a sign of a good crop.

*Jackson County, Kansas.*—Corn may make heavy yield in spite of the chinch.

*Atchison County, Kansas.*—Corn crop will be a third less than was anticipated.

*Neosho County, Kansas.*—Corn remarkably forward and good; will probably average 50 bushels per acre.

*Butler County, Kansas.*—Corn crop better than ever known.

*Howard County, Kansas.*—Corn could not be better.

## WHEAT.

The wheat report is far less favorable than the returns of spring and early summer, except as far as relates to the Eastern and Middle States. The condition of wheat at the time of harvesting is thus stated: Above an average—New Hampshire, 104; Massachusetts, 101; New York, 102; New Jersey, 110; Pennsylvania, 107; Maryland, 102; Michigan, 106. Below an average—Maine, 95; Vermont, 99; Delaware, 97; Virginia, 79; North Carolina, 59; South Carolina, 53; Georgia, 52; Alabama, 65; Mississippi, 94; Texas, 84; Arkansas, 70; Tennessee, 70; West Virginia, 94; Kentucky, 65; Missouri, 97; Illinois, 92; Indiana, 91; Ohio, 99; Wisconsin, 94; Minnesota, 80; Iowa, 90; Kansas, 98; Nebraska, 80; California, 75; Oregon, 95.

The amount grown in the South is small, and low condition there will affect the supply but little. The depreciation is about 10 per cent. in the West, which will be partially offset by increase of area.

The proportion of counties, in this section, in which the condition of the crop is above an average, may be understood from an analysis of 160 returns, as follows:

	Over 100.	At 100.	Under 100.
Ohio.....	14	22	10
Indiana.....	7	14	19
Illinois.....	13	13	23
Iowa.....	7	19	18

The following items from crop reports indicate some of the local aspects of these returns:

*Penobscot County, Me.*—Dry weather has injured the crop.

*Somerset County, Me.*—Average not more than 15 bushels per acre.

*Androscoggin County, Me.*—In good condition as to quality, but little sown, and injured by grasshoppers.

*Orford County, Me.*—Generally of good quality, sometimes pinched by drought.

*Sagadahoc County, Me.*—Considerably injured by drought and grasshoppers.

*Orange County, Vt.*—A good crop.

*Caledonia County, Vt.*—Light growth, but well filled.

*Otsego County, N. Y.*—Very fine crop, but injured in harvesting by rains.

*Washington County, N. Y.*—Quality of spring wheat injured by heavy rains.

*Livingston County, N. Y.*—The crop turns out better than was expected. Have not seen a poor piece in the county this season.

*Seneca County, N. Y.*—Never had such a yield, and the quality is fine.

*Burlington County, N. J.*—A good yield. On a field of thirteen acres 412 bushels were raised, and several farmers report over 30 bushels to the acre.

*Union County, N. J.*—The crop was never better.

*Cumberland County, N. J.*—The quality is better than last year, when it was below the average.

*Lancaster County, Pa.*—The harvest was earlier than ever known, and the yield is large.

*Westmoreland County, Pa.*—Quality uniformly superior.

*Luzerne County, Pa.*—A larger yield per acre than for many years.

*Berks County, Pa.*—A larger yield per acre than last year, and of the very best quality.

*Armstrong County, Pa.*—Plump and heavy, and good bulk of straw, which will be used as fodder.

*Northumberland County, Pa.*—Yield better than that of 1870. Berry plump and of superior quality.

*Mifflin County, Pa.*—Better than ever before. A new variety, called Fultz, has been yielding from 30 to 45 bushels per acre.

*Clearfield County, Pa.*—Much superior to the yield of past seasons, and quality good.

*Prince George's County, Md.*—A poor crop—not well filled.

*Worcester County, Md.*—On white clay soil the best crop in twenty years, but on the seaside almost wholly destroyed by rust.

*Washington County, Md.*—Much over an average crop.

*Nansemond County, Va.*—More than an average yield was expected, but on being thrashed it fell short surprisingly.

*Nelson County, Va.*—Quality very fair; but yield light, falling below the estimates made before harvest, in most cases.

*Mecklenburgh County, Va.*—Almost an entire failure. Many pieces scarcely returned seed.

*King William County, Va.*—A lamentable failure.

*Orange County, Va.*—Quality fine, but yield much less than was expected.

*Middlesex County, Va.*—Not over half a crop, on account of rust.

*Amelia County, Va.*—Very nearly a failure; the best yield is five bushels for one of seed. Drought has greatly injured crops generally.

*Pulaski County, Va.*—Thin, and does not yield well in proportion to straw.

*Louisa County, Va.*—Not more than half an average crop.

*Surry County, Va.*—Small area planted; crop good.

*Augusta County, Va.*—Injured by the fly. The stand at harvest was very thin, but the berry is plump and heavy.

*Mecklenburgh County, N. C.*—Average yield not over 3 bushels to the acre. Quality poor. Weight about 50 pounds.

*Person County, N. C.*—Crop much injured by rust. Average yield, 3 bushels to the acre.

*Hertford County, N. C.*—Greatly injured by rust. Yield will not average more than 5 bushels to the acre.

*Tyrell County, N. C.*—Wheat culture abandoned in this county on account of the rust.

*Currituck County, N. C.*—Badly damaged by rust. But little grown in the county.

*Gaston County, N. C.*—The crop is an utter failure.

*Davie County, N. C.*—About half a crop in a portion of the county, and three-fourths in the other portion.

*Lenoir County, N. C.*—Damaged seriously by rust.

*Caswell County, N. C.*—The most inferior crop for twenty years. Rust. Not over 3 bushels per acre.

*Stokes County, N. C.*—Three bushels per acre. Rust.

*Perquimons County, N. C.*—Almost a dead failure.  $3\frac{1}{2}$  to 4 bushels to the acre.

*Camden County, N. C.*—The crop in this and adjoining counties has been almost abandoned, owing to the red rust. The best yield, 8 bushels per acre, from Pennsylvania red wheat. Average, from ordinary seed, 2 to 3 bushels.

*Yadkin County, N. C.*—Yield, 4 to 5 bushels. Badly injured by rust.

*Randolph County, N. C.*—Lightest crop since 1850. Average, 4 bushels per acre.

*Burke County, N. C.*—Not more than half a crop. On our rich bottom-lands wheat was almost an entire failure.

*Stanly County, N. C.*—Average does not exceed 3 bushels per acre. Late wheat suffered most. We have a red-wheat here, called spring-wheat, but which has to be sown in the fall, that generally succeeds when other varieties fail, on account, it is thought, of its having bloomed when the rainy season has fairly set in. The great desideratum among wheat-growers in this section is a very early wheat that will meet the alterations of the seasons.

*Alleghany County, N. C.*—Wheat was thin on the ground, but good in the head. Average yield, 5 to 8 bushels.

*Wake County, N. C.*—Hardly half an average crop, and very inferior in quality.

*Orangeburgh County, S. C.*—Rust prevailed generally. Average yield not more than  $3\frac{1}{2}$  bushels.

*York County, S. C.*—Very poor crop in quality and quantity.

*Chester County, S. C.*—Complete failure. Rust. Yield about equal to the seed planted.

*Spartanburgh County, S. C.*—Quality inferior. Many farmers made less than they sowed.

*Clayton County, Ga.*—Rust reduced the crop to an average of 3 bushels per acre.

*Melton County, Ga.*—Almost a total failure.  $1\frac{1}{2}$  bushels to the acre, and that inferior.

*Jackson County, Ga.*—Almost an entire failure. What was made is so small and withered that the yield of flour is small.

*Gwinnett County, Ga.*—A failure. Average yield will not exceed  $2\frac{1}{2}$  bushels.

*Forsyth County, Ga.*—Average yield this year about 2 bushels. Usual product about 7 bushels.

*Murray County, Ga.*—Yield about three pecks to the acre, and that almost worthless. The heads did not average more than three to five grains, and these were injured by rust.

*Chattooga County, Ga.*—So much injured by rust that a great deal that was sown was not harvested. Yield not over 2 bushels per acre, on an average.

*Madison County, Ga.*—Average yield about 3 bushels; quality very inferior.

*Lawrence County, Ala.*—Almost a failure. Bad culture and rust.

*Etowah County, Ala.*—Nearly a complete failure. Average not over 3 bushels per acre.

*Rankin County, Miss.*—Little wheat sown last fall, which was so badly rusted that none was gathered.

*Red River County, Texas.*—Previous to 1865 the average yield of wheat was 16 bushels. Since that time about 10 bushels, owing to the increase of rain and cold weather in March and April.

*Bandera County, Texas.*—Spring-wheat a failure, owing to the drought during the summer months. Winter-wheat averaged about 10 bushels to the acre; about one-half the yield in a favorable season with good cultivation.

*Columbia County, Ark.*—Crop unusually poor; average per acre not over 5 bushels. Many fields were not cut at all.

*Montgomery County, Ark.*—Yield will not average more than 5 bushels per acre. Worse than ever before.

*Independence County, Ark.*—Average less than 5 bushels, and the quality very inferior. Rust attacked every field in the county.

*Newton County, Ark.*—A failure throughout the county.

*Stewart County, Tenn.*—About one-third of an average crop. Some crops barely returned the seed.

*Montgomery County, Tenn.*—Scarcely 2½ bushels to the acre. It scarcely looks like wheat. We are importing our seed-wheat and flour also to some extent.

*Campbell County, Tenn.*—Crop damaged by late frost, rust, and the fly.

*Greene County, Tenn.*—Some fields not cut at all; very few crops of average yield; not more than 4 bushels harvested to the acre, on an average.

*Humphreys County, Tenn.*—Many fields ruined by rust. Late sowing and the imperfect manner in which it is put in are considered causes of the poor crops.

*Lauderdale County, Tenn.*—Will not average more than 3 bushels per acre, owing to rust, which is almost sure to damage late-sown wheat.

*Nichols County, W. Va.*—Wheat, half a crop; injured by fly and rust. The new variety of German wheat sent by the Department was damaged by rust and weevil. Tappahannock does best, maturing before the time for rust or insects.

*Tyler County, W. Va.*—Wheat, average yield greatly reduced by frost, fly, and rust; many fields, however, above the usual average.

*Hart County, Ky.*—Wheat crop light; many large farmers did not cut any. Rye yielded better in straw than grain.

*Henry County, Ky.*—Wheat yield has fallen short of expectations; crops estimated at 12 and 15 bushels yield but half that amount.

*Carroll County, Ky.*—The frost of April greatly injured wheat on the low lands on the Ohio and Kentucky Rivers. Crops on the high lands not injured, but the falling off on the river crops makes the average low, perhaps 12 bushels to the acre.

*St. Joseph County, Mo.*—Wheat averages 20 bushels, ranging from 8 to 43.

*Monroe County, Mo.*—Wheat more or less injured by chinch, yet more wheat has been raised than during any former year of the last six.

*Worth County, Mo.*—Wheat averages, per acre, not over 8 bushels. Spring-wheat will not return the seed, while winter-wheat averages 12 bushels. The failure of spring-wheat directed general attention to buckwheat.

*Holt County, Mo.*—Spring-wheat will average 15 bushels, and winter wheat 17 bushels per acre.

*Clinton County, Mo.*—Winter-wheat averages 15 bushels per acre; spring-wheat nearly all destroyed by chinch-bugs; will not average over 2 bushels.

*Miller County, Mo.*—Tappahannock wheat will average 20 bushels, and other varieties 12 bushels per acre.

*Cole County, Mo.*—Wheat average less than 15 bushels per acre. Tappahannock, (received from the Department,) 20 bushels, in good ground. Quality of the crops 30 per cent. above average.

*Schuyler County, Mo.*—Winter-wheat averages 15 bushels; spring-wheat completely destroyed by chinch.

*Grundy County, Ill.*—Spring-wheat almost totally destroyed; not one-twentieth of the area planted was harvested. Winter-wheat but little raised; average 25 bushels per acre.

*Boone County, Ill.*—Wheat averages 11 bushels; crops cut down by chinch-bugs, in the northern part of the county, to 5 bushels.

*Schuyler County, Ill.*—Spring-wheat destroyed by chinch; winter-wheat averages 19 bushels; some crops average 41 bushels.

*Tazewell County, Ill.*—Winter-wheat averages 20 bushels per acre.

*Sangamon County, Ill.*—Spring-wheat a failure; winter-wheat, 23 bushels per acre.

*Marshall County, Ill.*—Spring-wheat almost a failure; but one-third of the area planted was harvested; winter-wheat averages 22 bushels.

*Pulaski County, Ill.*—Though some fields reach an average of 20 and 30 bushels, the imperfect modes of culture bring down the general average to 10.

*Fulton County, Ill.*—Winter-wheat, the first I have seen in thirty-six years' farming in Illinois, averaged 30 bushels, ranging from 25 to 40. Spring-wheat will not return the seed. Winter will hereafter be sown more extensively.

*Pike County, Ill.*—Wheat averages 14 bushels, with very heavy straw; best varieties Walker, Genesee, Gold Drop, and Mediterranean. The White and Red May, Blue Stem, and Tappahannock did not do so well. More smut than I ever saw before.

*Peoria County, Ill.*—Spring-wheat eaten by chinch. Winter-wheat but little-sown, but of excellent yield; averages of 22 bushels reported.

*Hancock County, Ill.*—Wheat averages 22 bushels, single fields being reported as high as 38, and very few below 20 bushels. Spring-wheat eaten by chinch. Rye averages considerably less than winter-wheat.

*Stauben County, Ind.*—Yield in timber-land, 30 bushels per acre; partial prairie, 20 bushels per acre: harvested in fine condition, and more has been raised in the county than ever before, the acreage having been largely increased.

*Madison County, Ind.*—Wheat averages 9 bushels; injured by rust and fly.

*Ripley County, Ind.*—Wheat turning out badly; injured by rust.

*Cass County, Ind.*—I have just thrashed out of Tappahannock, 21 bushels per acre, weighing 61 pounds per bushel.

*Carroll County, Ind.*—Rust, fly, and bad weather have cut down the wheat average to 10 bushels.

*Harrison County, Ind.*—Wheat averages not over 5 bushels; quality inferior.

*Morrow County, Ohio.*—Wheat averages 12 bushels; 50 per cent. below anticipations; some fields injured by frost; quality inferior.

*Finton County Ohio.*—Wheat averages this year 7 bushels; general average, 10; injured by rust and fly.

*Hardin County, Ohio.*—Wheat averages 12 bushels; grain shrunk and lighter than last year.

*Ashland County, Ohio.*—Wheat crop averages 18 bushels; very good quality.

*Calhoun County, Mich.*—Wheat yield per acre varies. One field of Tappahannock yielded 40 bushels per acre, and a neighboring field of Diehl, 34. General average about 20 bushels, as sound as was ever made into flour. Chief varieties, Diehl, Treadwell, and Tappahannock.

*Shiawassee County, Mich.*—Yield of wheat greater than usual, averaging 25 bushels; some fields 40 bushels.

*Newaygo County, Mich.*—Wheat, in spite of frost, more than an average crop; averaging 17 bushels per acre; quality unusually good; weighs 64½ pounds per bushel.

*Mecosta County, Mich.*—Winter-wheat better than usual; some fields not affected by frost; average 40 bushels.

*Washington County, Wis.*—Club-wheat a failure, ranging from 7 to 12 bushels per acre. It is the main crop of the county. Rio Grande and Mammoth are plump and of good color, ranging from 14 to 21 bushels per acre; winter-wheat yields from 18 to 30 bushels, but there is but little sown.

*Jackson County, Wis.*—Spring-wheat will average 8 bushels; winter, 15; average reduced by extreme drought in May and June.

*Sherburne County, Minn.*—Wheat crop suffered from drought, but late rains have benefited it; quality good; housed in good condition.

*Washington County, Iowa.*—Wheat averages 20 bushels; quality fine; housed in good order with favorable weather.

*Tama County, Iowa.*—Wheat averages 11 bushels; quality good; price at the station, 85 to 90 cents.

*Dubuque County, Iowa.*—Wheat averages 15 bushels; my crop of white Michigan, 25 bushels.

*Allamakee County, Iowa.*—Spring-wheat averages 13 bushels; winter-wheat 17; quality better than for many years, weighing 60 pounds per bushel.

*Appanoose County, Iowa.*—Wheat crop a failure; 95 per cent. of it spring-wheat, of which I cannot hear of a single bushel saved from the chinch-bugs.

*Shelby County, Iowa.*—About a quarter of the wheat crop has been thrashed, showing an average of 11½ bushels.

*Hancock County, Iowa.*—Wheat never better in quality, but below average in quan-



tity; average yield not over 10 bushels per acre. This is our second light crop and worse than last year; crop injured by drought.

*Labette County, Kans.*—Wheat averages 15 bushels; rye 16; chinch nearly destroyed the late wheat, greatly reducing our usual average. They swept many fields of everything green.

*Wilson County, Kans.*—Average yield of wheat 18 bushels. A field of "Red Sea" yielded 28½ per acre. An unknown variety is reported as yielding an average of 40.

*Anderson County, Kans.*—May-wheat averages 8 bushels; nearly run out from long use; Lancaster 20; white-wheat 22. All new varieties have done well.

*Cloud County, Kans.*—Fall-wheat very fine; average yield 27½ bushels, in some cases reaching 54 bushels. Spring-wheat below average.

*Linn County, Kans.*—Wheat will average 12 bushels in spite of chinch.

*Jefferson County, Kans.*—Average yield of wheat less than was expected from the growth of straw; average about 18 bushels, some crops reaching 42 bushels; weight per bushel unusually heavy.

*Washington County, Kans.*—Spring-wheat falls far short of the average, but winter-wheat is good, and, on the whole, the crop is about an average one. The chinch-bug damaged the spring-wheat.

*Dakota County, Nebr.*—Wheat averages 18 bushels; quality superior.

*Nemaha County, Nebr.*—Winter-wheat will average 24 bushels; spring-wheat nearly destroyed by chinch; will not average over three bushels.

*Cuming County, Nebr.*—Wheat averages 8 bushels; the lightest crop ever raised here; injured by rust.

*Dixon County, Nebr.*—Wheat crop very bad; many fields not cut; others mowed for fodder; cause of this failure, drought. Arnautka spring-wheat did well.

*Johnson County, Nebr.*—Spring-wheat amounts to almost nothing, in consequence of the depredations of the chinch. Some fields entirely destroyed; others yield 2 bushels, and the best fields but 12 bushels per acre. What little winter-wheat was sown did well. Hereafter but little spring-wheat will be sown, most of our farmers intending to sow the fall-wheat.

*Del Norte County, Cal.*—Wheat averages 20 bushels.

*Lake County, Cal.*—Wheat-thrashing two weeks later than last year; quantity and quality better than was expected.

*San Joaquin County, Cal.*—Not one acre in twenty cultivated in wheat produced 5 bushels. River bottoms that had been flooded produced from 15 to 16 bushels, thus demonstrating the necessity of irrigation.

*Colusa County, Cal.*—Wheat almost a total failure, except in a small area in the upper end of the county.

*Stanislaus County, Cal.*—I have heard from every thrashing-machine in the county, and find the amount of wheat threshed to be 210,565 bushels—about one bushel to each acre planted. Of barley, 90,251 bushels. Our thrashing-machine has just finished thrashing 24,000 bushels of wheat in Tuolumne County, where none has heretofore been raised.

*Lane County, Oreg.*—Wheat averages about 22 bushels; county capable of much better yield with high cultivation.

*Marion County, Oreg.*—Winter-wheat will average 25 bushels; spring-wheat, sowed before the long rain of April, about the same; that sowed afterwards is scarcely worth harvesting. Straw short, but heads long and beautiful.

*Conjcos County, Colo.*—Wheat not harvested; grasshoppers have done great mischief to the crops.

*Beaver County, Utah.*—Yield of wheat decreased, as also that of barley, by ravages of grasshoppers.

*Kane County, Utah.*—Wheat destroyed to a great extent by birds, especially by a striped-headed sparrow.

*Salt Lake County, Utah.*—Average yield of wheat 28½ bushels; no grasshoppers yet.

*Tooele County, Utah.*—Wheat averages 30 bushels.

*Ada County, Idaho.*—Wheat averages, probably, 15 bushels. Season the most unfavorable since the settlement of the Territory; sudden and annoying extremes of temperature, and great dryness.

*Gallatin County, Mont.*—Wheat averages 25 bushels; unusually large.

*Choctaw Nation, Indian Ter.*—Wheat averages 15 bushels; very little sown.

#### OATS.

The oats crop is not a full one, though the deficiency will be small. The States reporting an average crop are New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, Mississippi, Wisconsin, Iowa. The depreciation, as represented by the last reports, amounts to 18 per cent. in New Jersey, 8 in Pennsylvania, 8 in West Virginia, 4 in

Kentucky, 10 in Missouri, 5 in Illinois, 4 in Indiana, 5 in Minnesota, 3 in Kansas, 14 in Nebraska, 20 in California, and 10 in Oregon. A small yield on a small area is generally reported in the South.

*Chesterfield County, S. C.*—A failure; not yielding the amount of seed planted.

*Jackson County, Ga.*—Spring-sown crop entirely destroyed by rust. Fall-sown, good, when not killed out by hard weather in the winter.

*Kendall County, Texas.*—What little oats were planted did well.

*Marshall County, W. Va.*—Oats will probably average 45 bushels; the largest crop ever raised.

*Shelby County, Ky.*—Oats average 38 bushels.

*Hardin County, Tenn.*—Below average; damaged by rust before harvesting.

*Fernon County, Mo.*—Chinch-bugs have nearly ruined the oats crop; average yield 10.6 bushels.

*St. Francois County, Mo.*—Oats deficient in quantity, but of good quality.

*New Madrid County, Mo.*—Short crop, owing to cold, wet weather at seeding time.

*Livingston County, Ill.*—Oats have thrashed out from 35 to 40 bushels per acre.

*Lake County, Ill.*—Oats yield good; crops will average 45 bushels.

*Cass County, Ind.*—Swedish oats the favorite variety; it yields 30 bushels of 40 pounds each per acre. Black Norway yields 40 bushels of 30 pounds each.

*Richland County, Ohio.*—Oats will average 40 bushels; one field, perhaps, 75 bushels per acre.

*Van Buren County, Mich.*—Oats turned out better than was expected during the drought. Later rains have made the heads fill out well on short straw.

*Clinton County, Mich.*—Oats, in spite of drought, reach their usual average of 40 bushels.

*Mecosta County, Mich.*—Oats thrash out better than was expected.

*Green County, Wis.*—The oats crop of this year was never excelled; average yield, 50 bushels per acre.

*Fillmore County, Minn.*—Oats heavier than last year.

*Greene County, Iowa.*—Common white oats a full crop; Norway and Surprise, rather failures.

*Franklin County, Iowa.*—Oats will average from 50 to 60 bushels. My oats thrashed out 70. Varieties, Black and Surprise.

*Osage County, Kans.*—Oats light, on account of chinch.

*Curry County, Oreg.*—Late-sown oats badly rusted; early sown, bright and sound.

*Marion County, Oreg.*—Oats sown after the April rain scarcely worth harvesting.

*Beaver County, Utah.*—Grasshoppers and hares have cut down the oats crop.

#### OTHER GRAINS.

Barley is generally reported in condition below an average, except in a few of the States. Among the most favored are New York, Ohio, Indiana, and Wisconsin.

Buckwheat will also be less in quantity than usual. The Western States promising full supplies are Wisconsin, Iowa, Nebraska, and Kansas. An average depreciation of 10 per cent. may be expected.

Rye is in nearly average condition, the heaviest depreciation being in the South.

*Penobscot County, Me.*—Barley injured by dry weather.

*Androscoggin County, Me.*—Barley ruined by grasshoppers.

*Orford County, Me.*—But little rye sown; condition good. Barley good.

*Caledonia County, Vt.*—Barley good.

*Columbia County, N. Y.*—Barley is shorter in head than usual. A large quantity of rye was sown in August.

*Washington County, N. Y.*—Rye was much of it sprouted before being housed.

*Seneca County, N. Y.*—Many pieces are yielding 50 bushels per acre of barley.

*Sussex County, N. J.*—Rye excellent.

*King George County, Va.*—Rye is a light crop.

*Androscoggin County, Me.*—Buckwheat did not fill.

*Columbia County, N. Y.*—A large quantity of buckwheat was sown in the eastern portion of the county, and promises a large yield.

*Northumberland County, Pa.*—Early sown buckwheat is not so good as that sown late in July.

*Highland County, Va.*—Not over one-fourth of an average crop of buckwheat expected. Crop blasted.

## COTTON.

No cotton crop reports purporting to have come from the Department of Agriculture during the past month have been genuine. The items in circulation, often contradictory in tenor, assumed to be official, have had no origin in the statistical data of this office.\* The returns of August and September include reports from about four hundred cotton-growing counties, representing a very large proportion of the cotton area. Those for August point to an average condition of the crop, almost identical with that of the preceding report, the averages for Alabama and Mississippi being the same; those of Louisiana, Arkansas, and Tennessee being higher, and those of the other cotton States being lower. The State averages of the September report are somewhat lower than those of August, though the principal depreciation occurs in States which yield a small proportion of the crop, while the reduction is slight in the district represented by the States of Georgia, Alabama, Mississippi, and Louisiana. The percentage of full condition, as averaged from all attainable data, is thus stated: North Carolina, 82; South Carolina, 80; Georgia, 78; Florida, 75; Alabama, 80; Mississippi, 80; Louisiana, 77; Texas, 80; Arkansas, 95; Tennessee, 96.

There are reports of injuries by the boll-worm and caterpillar, mainly in Mississippi and Louisiana, but no evidence that a general or very serious loss from insects is probable. Rust is common in the Atlantic States, and to some extent on the Gulf coast. Drought has been injurious in the Carolinas and in Texas, though the reports of rain-fall through the South indicate a fair supply of moisture, the distribution of which has been somewhat more unequal than usual. At one point in Georgia the fall in August was nearly fourteen inches, and in parts of Florida it amounted to twenty-three inches. These variable atmospheric conditions have increased the prevalence of rust, and caused the destruction both of leaves and fruit. These drawbacks, though greater than those reported in September of last year, are not sufficiently serious to excite apprehensions of a greatly depreciated yield. They are reported each year in some portions of the cotton area. In the record of last year there was "considerable complaint of damage to the cotton crop from rust, worms, and unfavorable August weather."

These facts do not point to an enlargement of the expectation hitherto indulged. If they are reliable, the most favorable season could scarcely bring a crop exceeding three and one-third millions of bales; if the growing season should be short or unfavorable, three millions would be a good result. With the combination of unfavorable circumstances, the product might be still further reduced.

The local history of the crop makes a wonderfully variable record.

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\* The Statistician has no occasion for explanation or apology on account of official crop statements. Their intended meaning is sufficiently plain for honest investigators of facts. Persons engaged in reckless speculation may be expected to garble quotations, pervert language, and force conclusions that are plainly illogical and false. It may not be possible to protect conscientious inquiry against the influence of these perversions. The public should discriminate carefully between statements that are official and those which are deliberately fabricated, as well as those, by mistake, assumed to be official, or credited to this office. While the statistical reports need no vindication, the burden of fabrications, misrepresentations, and false assumptions, which increase with the furor of speculation, should not be augmented by a thoughtless lack of public discrimination. As to occasional newspaper charges of collusion among our correspondents, in aid of speculation, or of interested motives of the Commissioner or Statistician, it is creditable to the good sense and honesty of the fraternity that they are few, and gratifying to know that those few are from irresponsible or prejudiced sources.

Storms have wrought injury at one point, and drought has been noticeably severe in a neighboring county; an average healthfulness and growth are reported at one point, near to which comparative desolation appears to reign. One field or district may have a deep and well-prepared soil, with clean after-culture, and be able to defy ordinary drought; another is thin and poor, imperfectly cultivated, and overgrown with neglected grass or weeds, promising comparative failure. Fully five-sixths of the returns represent "condition below 100."

The following extracts from correspondence—representing a very small proportion of the returns used in the tabular statement, and including those most unfavorable—illustrate these differences:

*Mecklenburgh County, N. C.*—In some sections of the county no rain since the 12th of May. One farmer, who raised 20 bales last year, planted more acres this year and will not pick over two bales. Several others in the neighborhood will do no better. The plants are 10 to 24 inches high. The bolls and forms fall off from extreme dry weather. One of our best farmers last year averaged 800 pounds of seed-cotton per acre on one of his fields. He used 200 pounds of Mapes' superphosphate to the acre. This year he used the same amount, and the same field will average 175 to 200 pounds with favorable fall. Up to July 1 we never had a better prospect. I think we cannot possibly raise half a crop in the county. Farmers all discouraged.

*Bladen County, N. C.*—The average condition has deteriorated 40 per cent. since July 1, and the crop promises a worse showing two or three weeks hence. The drought, extending from the last of June to the middle of August, stopped the growth; the cold snap of July 17 started the rust, and the cold spell of August 16 to 25, and the steady showers with no sunshine, increased it, and it has now run over nearly all the cotton; the leaves are off, the stalks are dead or dying, and the immature bolls are rapidly opening. The prospect now is for about half the crop expected July 1.

*Greene County, N. C.*—Rust since last report, and in some portions of the county the crop is almost a total failure. Two-thirds of a crop is all that can be expected, with the prospect of not doing as well as that. Since the unusually cool weather of July the plant has done next to nothing; all the forms and many of the bolls that have come since August 1 have dropped. The picking season will end thirty days earlier than last year.

*Duplin County, N. C.*—Rust appeared the first week in August, and rapidly spread over the entire crop, stopping growth, and causing the squares to fall off. Very little cotton has been made since August 15, and but for the unusually favorable spring and early summer, not one-half an average crop would have been made.

*Franklin County, N. C.*—The yield will probably be not much over half as large as last year. Severe drought.

*Gaston County, N. C.*—Cut short at a critical age, and will not recover. Estimate, seven-tenths.

*Sampson County, N. C.*—The crop did not suffer much until three weeks ago, when rust set in and has very much injured the crop. The estimate is four-fifths of an average product, and some think this too high.

*Bertie County, N. C.*—Rust has damaged cotton, and the dry weather of last month has caused it to shed its forms and small bolls.

*Moore County, N. C.*—Small growth and not well balled.

*Anson County, N. C.*—Not over two-fifths of a crop. Drought.

*Chowan County, N. C.*—Badly injured by rust in some localities, and its general spread is apprehended, in which event the crop will be very short.

*Beaufort County, N. C.*—Rust more general than for many years; many fields ruined. All the middle and top forms and most of the leaves have dropped off. With 20 per cent. reduction of acreage and the condition hardly up to average, the crop will be reduced to 80 per cent. of that of last year.

*Edgecombe County, N. C.*—Sad change in the prospect since the last report. The plant did not seem to be very injuriously affected by the cold of July; it remained green and shed no more than usual. The stalks and limbs, not the roots, turned a deep red, however, and the plant ceased to grow. A blight, similar to black rust, has appeared all over the county, and the crop is very seriously damaged. Fall picking will be at least ten days earlier than usual.

*Gates County, N. C.*—Good growth, but the cold and wet have caused rust.

*Perquimans County, N. C.*—About two-thirds of last year's crop.

*Martin County, N. C.*—At least 33 per cent. below an average, and 50 per cent. short of the prospect six weeks ago.

*Stanly County, N. C.*—Hardly half a crop.

*Craven County, N. C.*—Injured by rust to the extent of 15 per cent.

*Wake County, N. C.*—Cotton has a very small weed; was very full, but has thrown off the forms to the extent of one-fifth or one-sixth.

*Orangeburgh County, S. C.*—The drought, ending with heavy rains and wind, has materially injured the cotton prospect in this county.

*Chesterfield County, S. C.*—Too much rain early, followed by drought. With the most favorable season the crop cannot exceed three-fifths of a crop.

*Williamsburgh County, S. C.*—Very little cotton made during the past month, most of the forms having fallen, and the plant is now so far advanced that there is no possibility of recovery. Allowing for reduced acreage, the crop of this county is estimated at 60 per cent. of that of 1870.

*Fairfield County, S. C.*—Drought has sadly injured the prospect since last report. Many farmers estimate half a crop; highest estimate, two-thirds. The crop will be harvested by the middle of November.

*Lexington County, S. C.*—Injured by drought, and cannot now produce an average crop.

*Marion County, S. C.*—Rust succeeded the dry weather. The yield will be less than two-thirds of an average, and the staple of low grade.

*Sumter County, S. C.*—In an experience of twenty years I have never seen a brighter prospect for a full crop than we had July 1, nor a prospect so completely blighted in so short a time. The harvest will close by October 15.

*Clarendon County, S. C.*—Decrease in acreage 30 per cent.; decrease in product 40 per cent. Up to the 10th of July the crop was promising, but, owing to the extreme heat and long drought with high winds, it showed signs of falling off. On 4th of August light rains commenced, and continued almost daily up to the present time. This dripping weather served to increase the rust, which had previously appeared, to an extent never before witnessed in the county.

*Richland County, S. C.*—Three-fifths of a crop is rather too high than too low for an estimate. Many farmers are not making one-third of a crop; very few are making full crops; and in rare instances more than a full crop.

*Abbeville County, S. C.*—Suffered from drought. In places the rust has made its appearance. If the fall should be favorable, the crop may recover all that it has lost. If we should not have early frost and the season should suit the plant, the blooms that may come for the next two weeks may make good cotton.

*Union County, S. C.*—The drought has reduced the late crop one-half. Most of it will be open by October 10, with favorable weather. The lint is short, and not first quality.

*Spartanburgh County, S. C.*—Seldom a better prospect for cotton than before the drought. Recent rains too late for the new growth to mature, unless the fall be unusually late and dry.

*Newberry County, S. C.*—Crop injured by drought. Average condition about 70 per cent.

*York County, S. C.*—Cut heavily by drought. Matured fields most injured.

*Sumter County, Ga.*—Suffered from drought; rust has appeared in some places.

*Lincoln County, Ga.*—The excessive rain of the past twelve days has materially reduced the prospects, to perhaps one-third below the average crop of last year; the season is so far advanced that an average product is impossible.

*McDuffie County, Ga.*—The dry weather and the excessive rains have caused the cotton to shed all its squares, and it has the rust on gray or sandy lands. I have not seen any field that will yield one-half a crop.

*Richmond County, Ga.*—Materially injured by the protracted rains; yield will be short.

*Greene County, Ga.*—Drought and intense heat caused the squares to burn to a black crisp; the rains have caused an improvement.

*Stewart County, Ga.*—Seriously injured by rust, nearly all of the upland and much of the bottom.

*Jones County, Ga.*—Crop cannot exceed 70 per cent. of an average yield.

*Newton County, Ga.*—Depreciated since last report, drought and high winds having thrown off the top crop.

*Lee County, Ga.*—Not more than two-thirds of a crop expected; injured by rains, and worms threaten further damage.

*Spalding County, Ga.*—Reports from different sections of this county vary; some claiming a crop equal to that of last year, others only half a crop; I think the product of the county will be an average one, but yet about one-fourth less than last year.

*Milton County, Ga.*—Very inferior, owing to drought in July and first half of August, and the rust causing it to shed forms. With favorable seasons henceforth, the crop may be 60 per cent. of an average.

*Fayette County, Ga.*—The showers have slightly improved the crop; prospect, 62 per cent.

*Brooks County, Ga.*—Boll-worm; rust and storm have seriously injured the crop, and with unfavorable seasons for gathering, not exceeding half a crop can be made.

*Crawford County, Ga.*—Drought, rust, and the boll-worm have caused a falling off in cotton.

*Jackson County, Ga.*—Prospect gloomy; the crop looked well up to the middle of July, when the drought began, continuing up to the 20th of August, with scarcely any rain; all the bolls have dropped; scarcely a bloom can be seen, and upon many fields the dry weather rust has done its work; one-third of a crop is a high estimate; rain is now falling, but it is too late for cotton or corn.

*Wilcox County, Ga.*—One-third less planted than last year; less manure used, and the crop is now taking the rust, rapidly dying and rotting in the field. The crop will be short of that of last year one-third, some farmers say one-half.

*Murray County, Ga.*—Injured by drought; short crop.

*Marion County, Ga.*—Suffered much from drought, and recently from storm.

*Dooley County, Ga.*—The drought and rust bid fair to cut the crop very short.

*Schley County, Ga.*—Prospect gloomy; just out of a four-weeks drought; from appearances, cannot make above half a crop.

*Macon County, Ga.*—The quantity of the crop cannot be much affected by future circumstances; about half a crop estimated.

*Madison County, Ga.*—Crop 40 per cent. below that of last year.

*Wilkinson County, Ga.*—Not more than half a stand, and rust taking it badly; not more than half a crop can be made.

*Wilkes County, Ga.*—The drought and the subsequent rainy weather have injured cotton; large proportion of bolls now matured and will soon open with dry weather; late planting now most promising, but necessarily a short crop.

*Liberty County, Ga.*—Not more than half the crop of 1870 in this county; all crops have suffered from a series of disastrous storms; fields deluged, crops blown down and partially destroyed, to the extent of at least 33 per cent. of the whole.

*Carroll County, Ga.*—Since last report the drought has almost ruined the cotton crop. The best fields in the county will not average more than 500 pounds to the acre—160 pounds of lint; the plant has shed the late bolls and forms.

*Glynn County, Ga.*—Much injured by late heavy rains; the bottom crop almost a failure.

*Hancock County, Ga.*—Drought and rust have greatly reduced the prospect.

*Clay County, Ga.*—Rust has appeared and stopped the growth of the plant and the maturing of the fruit; the few bolls opening on such stalks are light and defective in quality.

*Columbia County, Ga.*—Short crop; the heavy rains following the long drought have caused the plant to cast off the greater part of the young fruit; the crop is estimated to be the shortest that has been made for years—one-third to one-half less than last year.

*Calhoun County, Ga.*—The plants have shed most of the squares and bolls of August; rust very bad.

*Lawrens County, Ga.*—Rust is general; storms have injured the crop, and the prospect diminishes daily.

*Jackson County, Fla.*—Rust severe, and will probably reduce the yield 25 per cent. from the crop anticipated about the 1st of July.

*Hillsboro County, Fla.*—Crop suffered severely from heavy storm which extended over the whole county, doing great damage.

*Liberty County, Fla.*—The wet weather of June and July has caused cotton to shed both its forms and leaves. No insects thus far.

*Madison County, Fla.*—The boll-worm has appeared, and is doing much damage. A heavy storm of rain and wind has blown down both trees and cotton, the latter being much damaged. Rust has also appeared in some places, and boll-rot, it is feared, will extensively prevail.

*Leon County, Fla.*—Suffering severely from rust and recent storms. There will not be much late cotton.

*Clay County, Fla.*—The storms of the 17th and 25th August injured the crop one-fourth it is thought.

*Suwanee County, Fla.*—Much damaged recently by boll-worms.

*Putnam County, Fla.*—Not more than one-fourth of a crop. Destroyed by storm of 17th and 18th August. The plants were entirely stripped of foliage and of the greater portion of the bolls and bloom.

*Levy County, Fla.*—Much injured by August storms, but with favorable season henceforth, there may yet be a good crop, as it is starting anew and is filling fast.

*Dallas County, Ala.*—The crop, which was well cultivated, has been cut short by a drought of nine weeks' duration. Rust is more general than ever before known. With weather favorable for picking the crop will be gathered by the 15th of October in this county. The crop cannot exceed two-thirds an average yield.

*Pike County, Ala.*—Much injured by drought—rust general. A late season cannot benefit the crop much, if any.

*Randolph County, Ala.*—Reduced acreage and crop injured by drought. This county made 5,015 bales last year; 2,000 bales will cover the crop this year.

*Concub County, Ala.*—Caterpillar appeared 10th August, and is increasing rapidly; moving slowly in a northeast course. One-fourth less planted than last year, and the dry weather will cause present planting to fall short at least one-fourth.

*Marengo County, Ala.*—Drought, rust, and worms. The general estimate is about half the yield of last year.

*Autauga County, Ala.*—Very short; not over three-fourths of a crop. Some put it at half the crop of last year.

*Crenshaw County, Ala.*—Injured by severe drought.

*Montgomery County, Ala.*—Some complaint of the boll-worm.

*Etowah County, Ala.*—Injured by drought.

*Clarke County, Ala.*—Cut off by drought of August. Allowing for decreased acreage, the crop will fall 50 per cent. short of that of last year.

*Macon County, Ala.*—The late drought has caused the ridge lands to shed the squares and the grown bolls to open prematurely. Some complaint of rust and worms. With favorable season, without insects, the county may make half a crop, and it may fall to one-third.

*Chambers County, Ala.*—Owing to the drought and heat the plants have thrown off their fruit, and some think there will be not more than half a crop; but if no disaster befalls the crop, I think it will reach two-thirds.

*Hale County, Ala.*—The army-worm is at work; crop backward. Two-thirds of an average crop is a liberal estimate.

*Limestone County, Ala.*—Half a crop. Long-continued drought.

*Marshall County, Ala.*—Injured by wet spring, and was insufficiently tended, or tended while the ground was too wet; hence it could not stand the drought from the middle of July to August 20. Rust has destroyed many acres. Many fields laid by in good condition are now foul, caused by the excessive rains of the last ten days.

*Greene County, Ala.*—Comparatively dried up in many places, and long since done growing and making. In bottom black lands, however, it is still growing and making slowly. Sixty-five per cent. of last year's crop is estimating hardly low enough to correspond with the prospect.

*Clay County, Ala.*—With our early frosts we cannot expect a half crop.

*Atala County, Miss.*—Crop at least one-third short. If injured by worms and early frost not more than half a crop will be realized. Where crops have been well worked they are as good as usual, but there is not more than one out of twenty of this sort.

*Clark County, Miss.*—The drought following the wet season preceding the middle of July has caused the middle and top crops to shed badly, at least one-half. Many of the half-grown bolls are now opening. Caterpillars and boll-worms have also injured the crop.

*Claiborne County, Miss.*—Army-worm in the adjoining county. There is little bottom crop, and the middle and top crops will not mature until the middle of the month. Prospect not encouraging, unless we have a late fall.

*Grenada County, Miss.*—Doing well at present, where there has been good culture. Most of the negro crops have been badly cultivated, and are very much spotted. There cannot be more than half to two-thirds of a crop.

*Coahoma County, Miss.*—The caterpillar has appeared. Extent of their depredations uncertain.

*Kemper County, Miss.*—Badly damaged by rust since last report. The uplands, which promised the best, have very much deteriorated. Will not make half a crop.

*Lauderdale County, Miss.*—Wet weather and the drought have caused the plant to shed the top crop. Caterpillars in some sections.

*Issaquena County, Miss.*—The worm has appeared in many parts of the county. No appreciable injury as yet.

*Bolivar County, Miss.*—Excessive rains have caused the plants to shed their forms to a great extent. Worms have appeared. Some call them the army or cotton worm, but I think them only grass-worms, which resemble the cotton-worm, and occasionally eat the cotton leaves.

*Yalabusha County, Miss.*—Cotton-worm has appeared, and it is feared they will eat every leaf in two weeks. If so the crop will be shortened very materially.

*Newton County, Miss.*—The boll-worm and caterpillar have made their appearance, but under the scorching rays of the sun they have not made much headway. The crop in Newton is better than those of adjoining counties.

*Madison County, Miss.*—The army and the boll worm have appeared on many plantations, and have already been very destructive. Their early appearance, while the crop is late, indicates that the already short crop will be reduced fully one-half.

*Wilkinson County, Miss.*—In estimation 60 per cent. of a crop. No allowance is made for the possible depredations of the cotton-caterpillar, which has appeared on many farms, and on some have done considerable damage already.

*De Soto County, Miss.*—Crop being shortened from want of rain.

*Jefferson County, Miss.*—The army or cotton worm appeared about August 10th, and has done considerable damage. The crop being a month late, will suffer more than usual from their ravages. Picking commencing slowly; most of the crops were laid by badly in the grass, which retards opening.

*Hinds County, Miss.*—The army-worm has appeared in some localities, but is not general.

*Winston County, Miss.*—Injured by drought. May yet improve.

*Rapides Parish, La.*—Three weeks ago the caterpillar was doing a small amount of injury in nearly every field. To-day there is scarcely a leaf left, and it is now believed that the yield cannot exceed one-fourth of a crop, and may fall as low as one-sixth.

*St. Landry Parish, La.*—The late dry weather has improved the crop, and it is now nearly an average. The army-worm has made its appearance, however, all over the parish, and there is every probability that the crop will be destroyed by the 5th to the 10th September, in which event but very little cotton will be made.

*Washington Parish, La.*—The late heavy rain during the past month has materially injured cotton, causing the plant to shed very much. There is also considerable complaint of worms, and fears are entertained that they will do much damage the coming month.

*East Feliciana Parish, La.*—Crop small, late, and full of worms, and now suffering from drought.

*Tangipahoa Parish, La.*—The caterpillar has appeared in almost every field, and, though late, will injure the crop materially. Bets are freely offered that the product will not exceed half of that made last year.

*Avoyelles Parish, La.*—The second crop of caterpillars are eating the cotton, and it is probable that in fifteen days all the leaves will be eaten.

*Madison Parish, La.*—No worms; weather fine and prospects flattering. If nothing occurs to change the prospect, I shall increase my present estimate (90 per cent.) next month.

*Richland Parish, La.*—The cotton worm has made its appearance in all parts of the parish, but no serious damage has yet been done. It is almost certain, however, that all the leaves will be eaten by the 20th or 25th, in which event not more than one-third of a crop can be expected.

*West Feliciana Parish, La.*—The unfavorable weather of the first part of August caused the plants to shed their forms, and stimulated the growth of the weed at the expense of the fruit and bolls. The crop has been laid by very grassy, and where the attempt to free it from grass was made, the cotton is yellow and has some rust. The caterpillar has appeared in every section of the parish and has increased rapidly. Though the weather is now dry, cotton is very green and full of sap, and the best judges think the crop will be destroyed, so far as leaves and young bolls are concerned, by the 20th September, if not sooner.

*Morehouse Parish, La.*—Crop three weeks behind the usual season, and will be cut short fully one-third. Damage by worms is apprehended, though they have done little as yet. Should their depredations continue, it is estimated that the foliage will be stripped by the 15th September, in which event not a half crop will be made.

*Claiborne Parish, La.*—Cotton-worm or caterpillar is in damaging numbers. Yet the crop is promising.

*Tensas Parish, La.*—Good weather and hard work have brought out the crop so that I have raised my estimate from 50 to 70 per cent. of a crop. The worms are abroad, however, the cotton is backward, and should the worms strip off the leaves in the first half of September, which is probable, the crop may be cut off one-half.

*Williamson County, Texas.*—The best crops will not average over half a bale to the acre. Injured by drought. Quality above average. A heavy rain would cause the forms to shed, and the new growth of stock would be too late to mature cotton.

*Hardin County, Texas.*—Acreage one-sixth less than last year, but the crop has been well cultivated, and the prospect is better. The worm has appeared and may do much damage.

*Titus County, Texas.*—The crop of Northeast Texas will fall 50 per cent. below that of last year. The prairie counties have suffered more than the timbered counties from the drought.

*Marion County, Texas.*—Short crop this year. Drought.

*Ellis County, Texas.*—Not more than half crop. Drought.

*McLennan County, Texas.*—Our farmers generally handle their cotton badly and allow a great deal to waste.

*Upshur County, Texas.*—Continued drought has reduced the crop to little more than one-half.

*Red River County, Texas.*—On the 1st of August a heavy yield was promised; fifteen days later the worms appeared, and already there are many ragged spots in the fields. Ten days will show to what extent they are to injure the crop.

*Grayson County, Texas.*—The drought has seriously injured the crop. No rain for nine weeks.



*Milam County, Texas.*—Yield small; staple inferior. Summer very dry.

*Austin County, Texas.*—Not more than half a crop. Badly injured by drought. The plant is not more than half its usual size. The recent showers have started the growth of the top crop, but the season is far advanced, the worm has made its appearance, and the crop can hardly mature.

*Henderson County, Texas.*—About 35 per cent. of a crop. The top crop cannot mature. The bolls are small and inferior. The lint is fine and strong, but very short.

*Rusk County, Texas.*—Suffered from dry, hot weather. The plants shed many of the squares left by the drought.

*Smith County, Texas.*—Drought and heat have materially reduced the crop.

*Blanco County, Texas.*—Not more than one-tenth of a crop. No rain for about three months.

*Colorado County, Texas.*—Crop has not been better for several years, according to acreage. The quality is also superior.

*Dallas County, Texas.*—Crop about one-third as large as that of last year.

*Woodruff County, Ark.*—Very wet in northern portion of the county; in southern part dry, causing material damage to the crop by rust.

*Cross County, Ark.*—Crop failing. Drought and heat.

*Jackson County, Ark.*—Some complaint of rust.

*Union County, Ark.*—Improved within thirty days, and as much per acre will be gathered as last year, but the acreage is much less.

*Columbia County, Ark.*—Better than usual. Many reports of the caterpillar in circulation; none in this neighborhood, but they have no doubt appeared in some crops.

*Sebastian County, Ark.*—The hot, dry weather has injured the crop to the extent of one-half.

*Pulaski County, Ark.*—Fewer bolls than last year; forms shedding; injured by hot, dry weather succeeding the wet. Too much growth in stalk.

*Prairie County, Ark.*—Weather throughout the year unfavorable to cotton. Not more than two-thirds the usual acreage planted, and that will average little over two-thirds of a crop.

*Johnson County, Ark.*—The hot-dry weather has reduced the condition to about 90 per cent., affecting most seriously the poor and dry uplands and the sandy bottoms, causing squares to fall, and a premature opening of the bolls.

*La Fayette County, Ark.*—The cotton-worm—leaf and boll—appeared on the 24th August, and is now in almost every field of cotton in the county.

*Independence County, Ark.*—The wet warm summer promises to be followed by a dry fall. Very little rain during the last fifteen days, and cotton is maturing finely. Picking has already commenced—nearly twenty days earlier than usual.

*Crawford County, Ark.*—The crop, which promised to be an average, has been reduced 25 per cent. by shedding the bolls.

*Drew County, Ark.*—Crop being damaged by drought.

*Henry County, Tenn.*—Good prospect.

*Hardeman County, Tenn.*—From the dry weather and the haste with which the crop was "laid by," cotton has very materially fallen off. The product cannot be larger than last year.

*Gibson County, Tenn.*—Decreased acreage and rust; crop about 60 per cent.

*Giles County, Tenn.*—Owing to the wet spring, cotton was grassy; hence the dry weather has been favorable.

*Fayette County, Tenn.*—Dry weather has materially injured cotton. Rust and shedding have caused considerable loss. An assistant, in another part of the county, writes that the crop has wonderfully improved since the last report, but some apprehension is felt for highland cotton, on account of the dry weather. If slight rains fall within the next ten days, the yield will exceed the average for the past five or six years.

*Lauderdale County, Tenn.*—Not more than half a crop. Rust and drought. Half the crop is now open.

*New Madrid County, Mo.*—A yield of one bale to the acre promised. Staple good.

## HAY.

The hay crop is greatly reduced in quantity, but excellent in quality, in a majority of the States. The States producing a greater supply than usual are Georgia, Arkansas, Wisconsin, Iowa, Kansas, and Nebraska. The Missouri Valley, so long assumed to be a dry region, has secured an abundance, while the Ohio Valley has cut 10 per cent. less than usual. The crop of the States bordering upon the Atlantic, between South Carolina and Maine, has been reduced one-sixth, the reduction in those east of New York being one-fourth. The quality of hay gathered

is generally superior. In some sections injury resulted from sudden and frequent showers and storms in haying-time.

In Oxford County, Maine, it is deemed the smallest crop ever grown there. In Norfolk, Maine, the deficiency has been supplied by corn-fodder and millet. A second crop of much value, grown since the close of the dry season, has been secured in Montgomery, Pennsylvania, and the quantity of clover-hay has been increased 20 per cent. from a second cutting in Berks. In Carroll, Ohio, heavy rains are making a large autumn crop. A large portion of the Kansas and Nebraska hay is made from prairie-grass, and in the Northwestern States generally the wild grasses are greatly depended upon for supplies, which can be increased in many places very largely by utilizing a wider area of grasses, which would otherwise decay upon the ground. In the sparsely settled districts a dearth of hay may almost invariably be avoided by extra effort and industry in enlarging the area cut. In the Ohio Valley, also, the utilization of corn-fodder can make up almost any deficiency of the hay crop. Famine in the stock-yards of the West is, therefore, only possible through the negligence of stock-growers.

#### POTATOES.

The potato crop promises to be nearly an average one. The percentages below 100, or a full crop, are—Maine, 94; Vermont, 90; Massachusetts, 97; West Virginia, 89; Kentucky, 81; Illinois, 63; Indiana, 81; Ohio, 98; Michigan, 68; Wisconsin, 96; California, 88; Oregon, 90; and several of the Southern States, in which few are grown. Among the States above an average are New Hampshire, 105; Rhode Island, 102; Connecticut, 105; New York, 103; New Jersey, 105; Pennsylvania, 104; Missouri, 101; Minnesota, 111; Iowa, 105; Kansas, 105; Nebraska, 104.

The sweet-potato crop is a full one between New York and Virginia, and in Mississippi and Louisiana, and elsewhere in the Southern States somewhat below an average. The Eastern market supplies must be abundant. The following comprise a very few of the many notes which come with the estimates sent from each county for tabulation:

*Oxford County, Me.*—Good, but showing indications of rot.

*Norfolk County, Mass.*—Better than for some years, and no signs of rot.

*Orange County, Vt.*—Injured by rust and potato-bug in some localities, but promise an average crop.

*Rensselaer County, N. Y.*—Many raised. Early ones poor, and beginning to rot.

*Allamakee County, Iowa.*—Potato bug not very injurious.

*Woodson County, Kansas.*—Potatoes above average, and dull sale at 25 and 30 cents per bushel.

*Seward County, Nebr.*—Potato-bugs have not troubled us. Grasshoppers have not visited us.

*Plumas County, Cal.*—Frost has injured potatoes.

*Erie County, Ohio.*—Potatoes injured by drought and Colorado bugs, but by fighting the latter a very large crop has been secured. I harvested 650 bushels from 3 acres, and sold 500 bushels at 50 cents per bushel.

*Mercer County, Ohio.*—The potato-bugs have almost entirely disappeared.

*Scioto County, Ohio.*—Drought cutting short Irish potatoes. Sweet-potatoes stand the drought much better.

*Van Buren County, Michigan.*—Potatoes, a fair yield in spite of bugs. Enough for home consumption, but will rule high in price.

*Newaygo County, Mich.*—Potatoes retailing at \$1 40 per bushel.

*Mason County, Mich.*—Potatoes will be scarcely worth digging.

*St. Clair County, Mich.*—Late potatoes seriously affected by drought.

*Richland County, Wis.*—Potato-bugs have not done much. Another bug has been killing them and destroying their eggs.

*Walworth County, Wis.*—Potatoes 60 per cent. of an average, and six-fold last year's crop.

*Madison County, Ill.*—Potatoes in good condition. Yield reduced by several sorts of bugs.

*Sangamon County, Ill.*—Potatoes a very poor crop; injured by drought and bugs.

*La Grange County, Ind.*—Potato bugs numerous and appeared early, but not near so destructive as last year.

*Martin County, Ind.*—Potato-bugs more destructive than ever. The striped and the black are very bad, but the Colorado has nearly disappeared.

*Pike County, Ind.*—Potato-bugs, especially Colorado beetles, very destructive.

*Steuben County, Ind.*—Crop greatly reduced by the ravages of the bug. The Early Rose was hardly molested by the bug, and fine crops of this variety have been grown.

*Switzerland County, Ind.*—Early potatoes did better than was expected in the presence of the potato-bugs. The crop of the county will be 90,000 bushels—10 per cent. above average.

*Washington County, Ohio.*—Potatoes on deep moist soils will be a good crop; on thin light soils poor.

*Henrico County, Va.*—Not very good, except sweet-potatoes, which are exceedingly fine.

*Fairfax County, Va.*—Early planted, a full average crop; late, not more than half a crop.

*Surry County, Va.*—A large yield of sweet-potatoes expected.

*Monroe County, Tenn.*—The crop greatly damaged by late frosts, bugs, and dry weather.

*Colorado County, Texas.*—Sweet-potatoes almost a failure. Without early and abundant rain seed will not be made.

*Tyler County, W. Va.*—Potatoes above average in size and quantity.

*Harding County, Ky.*—Potatoes ruined by bugs.

*Texas County, Mo.*—The Colorado potato-bug has killed nearly all the potatoes.

*New Madrid County, Mo.*—Crop unusually fine, both Irish and sweet. I am cultivating a variety recently imported from Brazil, that yields 12 to 18 pounds to the plant, single potatoes often weighing 8 to 10 pounds.

*Washington County, N. Y.*—Symptoms of rot.

*Erie County, N. Y.*—Crop good. Early Rose splendid in size and yield.

*Alleghany County, N. Y.*—The Early Rose has done well despite the drought; never saw better.

*Lancaster County, Pa.*—Late planted will yield a large crop. The early will not be so productive, on account of spring drought.

*Huntingdon County, Pa.*—The late crop is being damaged considerably in some parts by the potato-bug.

*Butler County, Pa.*—A dry season, but some of the early varieties, as the Early Rose, have done remarkably well.

*Elk County, Pa.*—Late planted generally are better than the early, though the Early Rose seem to be taking the lead here for earliness and quality.

*Bucks County, Pa.*—The crop is very large and the early varieties are gathered in fine condition. Indications of rot in the late varieties have appeared in some localities.

*Northumberland County, Pa.*—Brown, striped, and black potato-bugs have made their appearance, and we fear they will injure our crop next year. The crop now harvesting is uncommonly abundant and of large size.

*Nansemond County, Va.*—There is no doubt of an average yield of potatoes.

## TOBACCO.

*Franklin County, Mass.*—Looks finely, and the river towns are now cutting.

*Hampden County, Mass.*—Would have been above an average but from injury from hail and wind on the 7th of August, in parts of the southeast and northeast portions of the county.

*Lancaster County, Pa.*—That planted in the drought, just before the late rains, will be a better crop than last year, but in the northern, southern, and eastern parts of the county the crop will be poor, on account of rust.

*Nelson County, Va.*—Much below an average crop, and being kept back by dry weather, is late, and will be liable to injury from frost.

*Mecklenburg County, Va.*—Late planted still has a chance if rain comes soon.

*Amelia County, Va.*—A late crop, owing to severe dry weather.

*Louisa County, Va.*—The crop looks well.

*Amherst County, Va.*—The crop is improving rapidly.

*Person County, N. C.*—Tobacco, our special crop, much injured by dry weather. Crop will be short.

*Wayne County, W. Va.*—Tobacco promising up to the last week in July, when the extreme drought, lasting till August 25, materially injured the crop.

*Trimble County, Ky.*—The tobacco crop will be short.

*Webster County, Mo.*—The early promise of tobacco will not be realized.

## SUGAR-CANE.

From the data received relative to the sugar crop, an increase of 30 per cent. in the aggregate manufacture may be expected. Last year's crop was, in round numbers, 145,000 hogsheads. It is possible that the sprouting of the cane, reported in several places, may result in greater injury than at present appears probable.

The persistent effort of sugar-planters, from year to year, to increase the area of plantations, merits and secures a fair degree of success; yet further time and effort will be necessary to place the business on its former footing. There is suitable land, capital, and labor enough in the country to furnish our full supply of sugar at a fair profit, and there appears to be a disposition on the part of sugar-growers to attain that result at as early a day as possible.

*Plaquemines Parish, La.*—The cane crop of this entire parish is in advance of last season about four weeks, and is of such superior character that the yield of the parish will exceed that of 1870-'71 by 50 per cent. The rains have been at no time excessive, nor have we suffered from drought. Mr. W. E. Lawrence's steam-plowed and steam-cultivated corn fields are the best evidence of the great and universal necessity for the steam-plow and cultivator.

*Lery County, Fla.*—Blown down by the storms of August, the cane is taking root and sprouting at every joint, and it is feared the crop is ruined for either seed or sugar.

*Nassau, Fla.*—Though sugar-cane is under water, it does not appear to be much injured.

*Jackson, Fla.*—Sugar-cane promises a fine yield.

*Leon County, Fla.*—Cane crop doing well.

*Putnam County, Fla.*—Cane crop either submerged or flattened to the earth by the cyclone of 17th and 18th August. There will be about three-fourths of a crop.

*Conceh County, Ala.*—Sorghum and sugar-cane badly injured by dry weather. Yield at least one-fourth short.

*Crenshaw County, Ala.*—Sugar-cane injured by severe drought.

## SORGHUM.

This crop is reported in fine condition in Wisconsin, Iowa, Missouri, Kansas, and Nebraska, and below an average in the other Western States, where the principal portion of the crop is grown. It is highly promising in Mississippi, and in Pennsylvania and Maryland, as far as it is grown in those States. In Braxton, West Virginia, it was attacked in places with a sort of rust at the time of heading out, causing the blades to dry up, and giving a disagreeable flavor to the sirup. Rust upon sorghum is reported also from Adair, Kentucky. In Harrison, Indiana, rust was noticed last year on the Chinese sorghum. The African Imphee has been grown in the same region this year, and is entirely free from blight.

## RICE.

Promising accounts of the crop of 1871 have thus far been received. On the Atlantic coast a crop as large as that of last year is expected. Some increase in the area has doubtless been made in Louisiana, and the weather has been favorable to curing and stacking. A crop of 50,000 barrels is expected there, and sanguine estimates of 60,000 barrels are indulged in. The first consignment of 21 barrels from the Parish of Plaquemines and 3 from St. Charles was received in New Orleans August 5th, and 19 barrels, classed at low prime, brought 9½ cents. It is reported that at least 8,000 barrels of rough rice were lost by the overflow of the Bonnet Carre crevasse.

*McIntosh County, Ga.*—Rice is largely grown in this county. On the Altamaha River, one side being McIntosh County and the other Glynn, I think there are 5,000

acres of land planted in rice this year. The harvest is just commencing. The crop is good, fully an average. The risk to the planter is yet great from high winds, high tides, and bad weather.

*Manatee County, Fla.*—Rice promises a good yield.

*Plaquemines Parish, La.*—The rice crop of our parish will greatly exceed that of last year. Cutting commenced August 12 with those whose crops had sufficiently ripened. Much of it has been thrashed and cleaned and gone to market.

James Wood, in his recent circular, makes the following statement of the quantity and value of the Louisiana rice crop, so far as indicated by the yearly commercial record of sales:

Year.	Barrels.	Average price per barrel.	Total value.
1860 .....	7,300	\$12	\$94,900
1861 .....	8,921	18	100,578
1862 .....	8,636	20	172,720
1863 .....	6,873	30	206,190
1864 .....	9,866	25	246,650
1865 .....	11,943	23	274,689
1866 .....	20,464	20	409,280
1867 .....	21,663	18	389,934
1868 .....	41,317	17	702,389
1869 .....	57,956	15	869,340
1870 .....	37,585	16	601,360

The receipts of rice at the several ports, as commercially reported for the year just closed, are as follows:

	Tierces.
Receipts at Charleston and Georgetown, South Carolina.....	44,073
Receipts at Savannah, Georgia .....	21,725
Receipts at Wilmington, North Carolina .....	600
Receipts at New Orleans, Louisiana .....	16,700
<b>Total receipts, 1870-'71 .....</b>	<b>83,098</b>
<b>Total receipts, 1869-'70 .....</b>	<b>97,735</b>
<b>Decrease .....</b>	<b>14,637</b>

At the commencement of the season the price at Charleston was 9 cents per pound for good; in November  $5\frac{1}{2}$  to  $5\frac{3}{8}$ ; in May,  $8\frac{3}{4}$  @ 9, and in August closing at 8 to  $8\frac{1}{2}$  cents.

The returns of sales of the rice of last year's crop indicate a large deficiency in the product of 1870. The amount of clean rice reported at New Orleans up to August 1 of the present year is 37,585 barrels, against 57,956 last year. The rough rice amounted to 25,899 sacks. The deficiency was in a large measure due, in Louisiana, to a late spring, a bad stand, and a deficiency of water to flood the fields.

#### FRUIT.

In New England the apple prospect is reported less than half a crop in New Hampshire and Massachusetts, 56 per cent. of an average in Vermont and Connecticut, and about two-thirds of a crop in Maine and Rhode Island. In some counties the crop is almost a total failure, while in others the fruit is small, though fair. In New York six-tenths

of a crop is reported, the product being much reduced by the dry season, causing the fruit to fall. In New Jersey the crop is less than half an average yield. Injury from hail-storms and from drought is reported from Pennsylvania, and in some sections the fruit is knotty and wormy; the crop is estimated at about three-tenths below average. Delaware reports three-fifths of a crop, and the hill country of the south, half to two-thirds of a crop. In Maryland the fruit is two weeks earlier than usual; the quality is inferior in the neighborhood of Baltimore. The dry weather affected the crop seriously in the South, but our Northumberland, Virginia, correspondent writes that apples have paid better than any other farm product this season. The Woodruff, Arkansas, reporter complains that, for several years past, midsummer apples have rotted and fallen. In the Western States the crop is generally better than in the east or south, Missouri, Wisconsin, Minnesota, Iowa, and Kansas each reporting more than an average. Kentucky falls the lowest—to 56 per cent. of an average. Ohio, West Virginia, Nebraska, California, and Oregon range from seven to nine-tenths of an average. Illinois and Indiana fall five to eight per cent. below an average. In localities, the fruit is dropping from the trees. In Warren and Butler Counties, Ohio, the crop is reported to be the best grown in twelve to fifteen years; and in Peoria, Illinois, it is "enormous." In Muscatine, Iowa, apples are "a drug in the market, selling at 25 to 35 cents per bushel," while in Woodson, Kansas, they "are not so fair or plenty as usual, and are selling at 85 cents to \$1 per bushel." In Osage, Kansas, the crop was nearly destroyed by spring frosts.

Peaches have yielded above an average crop in most of the peach-growing regions of the Middle and Southern States, falling short only in Pennsylvania, Virginia, in the Carolinas, and in Tennessee. Our Morris, New Jersey, correspondent writes that the fruit has rotted considerably; that the late varieties have black spots on the skin and crack open; and that white moldy spots also appear on the under side of the leaves, causing them to die. In Cecil, Maryland, "there has never been a larger peach crop—many will go to waste." In Williamson, Texas, "peaches are plenty, but small, owing to the drought. Probably, ten times as many have been canned in this State this year as ever before in one season." In the Western States the crop ranges from about two-thirds of an average in Kentucky, Nebraska, and Oregon, to three-fourths in West Virginia, Indiana, Ohio, and California, over nine-tenths in Illinois, Missouri, Iowa, and above average in Kansas and Michigan. In Nicholas, West Virginia, the crop was reduced one-half by the curculio, and in Raleigh County there was much falling off. In Woodson, Kansas, where apples are scarce and high, peaches have been abundant at 30 cents per bushel. In Osage County they were wilting and rotting on the trees.

Grapes promise well from Maine to North Carolina. In the States south the crop is below an average, except in Alabama and Mississippi, and falling to about two-thirds of a crop in Georgia. In the West the crop is above an average, except in Kentucky, where it is only three-fifths, in Indiana, where it is reported five per cent. below an average, and in California, where it is rated 16 per cent. below. In Addison, Vermont, grapes have mildewed badly. In Essex, New Jersey, they have been seriously damaged by drought, Isabellas and Catawbas especially suffering. The Concord and Delaware remain comparatively free from rot. In Westmoreland, Pennsylvania, the "spot" on grapes is almost universal, and the slug, so prevalent on the rose in the early summer, has attacked the foliage of the grape. In Northumberland,

Pennsylvania, grapes are abundant and fine, but disposed to rot. In King George, Virginia, the "Monroe" grape bears abundantly, and of fine quality; other varieties badly affected by rot, except Concord and Maxatawny, which partially escaped. The black rot has cut off the crop in Marion, Georgia, and in Nicholas, Western Virginia, the curculio is said to have reduced the crop one-half. In Cass County, Missouri, early ripening stopped the rot, but the crop was injured by a heavy hail-storm. "The largest yield ever known" is reported from Franklin, Missouri. In Cole County there has been considerable rot, especially in the Delaware, Catawba, and Clinton; also in Rogers's Hybrids, except the Goethe, which is healthy. In Lawrence, Missouri, cultivated grapes are reported half a crop, wild grapes a failure. In Madison, Illinois, "grapes harvested in good condition before September 1; Concords have made a gallon of wine per plant." St. Clair County reports "grapes finer and more abundant than ever before, a drug in the market, selling at 2 cents per pound;" and in Knox County "grapes rival California grapes in abundance and cheapness, the finest Concords selling at 2 and 3 cents per pound." In Calhoun, Michigan, of eighteen varieties in fruit, only the Catawbas have suffered from rot to any extent. Rogers's Hybrid No. 15 rotted slightly. In Macomb County the crop was suffering for rain. In Muscatine, Iowa, grapes were selling at 2 to 3 cents per pound. The crop in Douglas, Kansas, was blighted to the extent of one-tenth, but the product is still large.

#### WEIGHT OF FLEECES.

The returns relative to condition of wool and comparative weight of fleeces of sheep do not indicate any very material changes. It is shown that a reaction has been commenced, as faith in the future of wool as a profitable product has increased; and in the wool-producing States, California, Ohio, and Illinois, fleeces are averaging somewhat heavier, as a result of greater care of flocks on the part of the best wool-growers:

*Boone County, Ill.*—Wool a better clip than usual. Our smaller number of sheep are better cared for.

*Ripley County, Ind.*—Sheep becoming scarce; good wethers bringing \$3 per head. If sheep could be protected from dogs, they would be extensively kept on account of their wool, lambs, and manure.

*Alameda County, Cal.*—The spring clip of wool has been sold or gone to eastern markets; average price here, 30 or 31 cents per pound. Fall-shearing in progress; some clips arriving into market; prices 28 to 31 cents per pound. Full-blooded Merinos and their grades much sought after. English coarse-wool sheep are in less demand, being less suited to our long, dry seasons. Several manufacturers and agents have left for Australia to purchase fine wools.

*Lake County, Cal.*—This county noted for good wool, having 15,000 sheep. New England agents are buying up the clip. The mountain wool of California superior to the valley wool.

*Los Angeles County, Cal.*—Wool of better quality and price than ever before, though the fleeces average a little smaller than last year; more wool exported than in any former year.

*Conejos County, Colo.*—Wool improving in weight and quality.

*Colfax County, N. Mex.*—Wool in course of improvement by importation of sheep from Canada.

*Fillmore County, Minn.*—Manufacturers estimate the wool-clip ten per cent. less than last year.

*Jackson County, Fla.*—Sheep are increasing in numbers, and are receiving more attention; the wool will be of better quality.







## EXTRACTS FROM REGULAR CORRESPONDENCE.

## THE EGYPTIAN COTTON-SEED.

*Stewart County, Ga.*—The Tumul Maki cotton-seed from your Department has given different results. Some plantings have done very little in fruiting, though the plant is all fine, while other plantings have a heavy yield of bolls and are now doing well, never having been disturbed by insects or other cotton accidents.

*Macon County, Ga.*—The Tumul Maki cotton-seed sent to me by the Department seems to have proved itself worthless. I planted some of the seed on ground that would produce, with ordinary cotton, 600 or 700 pounds lint cotton to the acre. This will not produce 50.

*Randolph County, Ala.*—My Egyptian cotton, Tumul Maki, is doing very well, considering the lateness of sowing and drought. I think it will average twenty bolls to the stalk, five or six feet high; common cotton, two and three feet.

*Duplin County, N. C.*—A package of Tumul Maki cotton-seed received from the Department has grown to an extraordinary height, but from present appearances will not yield one-fourth the amount of our ordinary cotton.

*Chowan County, N. C.*—The Egyptian cotton-seed was planted in due time. The growth is very pretty. Its leaf is much larger than the common variety, and the bloom yellow, while ours is white. It is at least fifteen days later than ours, and I fear it will be too late for this climate.

## SCHONEN OATS.

*Clark County, Miss.*—I sowed four pounds of white Schonen oats on one-ninth of an acre of flat pine-woods land, fertilized with ten bushels of cotton-seed. Yield, four bushels; weighing a little over forty pounds to the bushel. I think the yield would have been one-third more but for the frequent heavy rains at the time the oats were in bloom. Some rust appeared on the blades. Straw, bright and clean. I believe that it will prove a good variety for this part of the State.

*Macon County, Ga.*—The white Schonen oats did tolerably well, but they are subject to rust, and, therefore, not so suitable to this section as oats that are known as "rust-proof oats."

## ONIONS IN MISSISSIPPI.

*Yalabusha County, Miss.*—I planted the onion-seed in May, hoping to get sets by fall, and, to my surprise, gathered a fine crop of onions, some measuring thirteen inches in circumference.

## CORN FROM PERU.

*Lincoln County, N. C.*—I planted the corn from Peru very carefully and in rich soil; it came up well but did not flourish. It was planted sufficiently early not to be affected by the drought, yet there has not been a single shoot and but few tassels. From this I judge it will not suit our climate.

## CALIFORNIA CLOVER.

*Victoria County, Texas.*—The California clover is being tried as a forage crop with eminent success.

## ORANGES.

*Hillsborough County, Fla.*—The orange crop has been cut short at least one-fourth by the severe storm. Bananas suffered severely. Great damage done to young fruit trees all over the country. Many trees blown down.

*Plaquemines Parish, La.*—The orange crop of the east side of the Mississippi is an entire failure, the trees having either been killed or so damaged by the cold of last winter that they will not bear fruit for several seasons. On the west side the trees are laden with fruit, all of which has been purchased by speculators, as is the custom, when the trees are in bloom or when the fruit is about the size of the hazel-nut.

*Manatee County, Fla.*—Sweet oranges do not look so well as early in August, owing to having been beaten and switched about by a heavy gale on the 17th. Guavas have recovered from last year's freeze and are in bloom again. Never a more abundant yield of wild grapes.

## PEANUTS.

*Hickman County, Tenn.*—Owing to the drought our staple crop, the peanut, will be cut short 50,000 bushels.

*Cheatham County, Tenn.*—About 60 per cent. of a crop as compared with last year.

*Humphreys County, Tenn.*—Crop large and very fine.

## PECAN NUTS.

*Victoria County, Texas.*—The prospect of the pecan crop at present is worth five times as much as the cotton crop.

## CHEESE AND TOBACCO IN BUNCOMBE COUNTY, NORTH CAROLINA.

*Buncombe County, N. C.*—This part of the country is rapidly increasing in the growth of the various grasses, both for mowing and pasturage. Several cheese factories are now in full operation, with flattering prospects of success. Our people are now growing considerable tobacco, with a fair prospect of its being a profitable crop. A manufactory to put it up is now in full blast in our county.

## COTTON-SEED AS A FERTILIZER.

*De Soto County, Miss.*—On the 15th of last December I sowed 40 bushels of cotton-seed per acre on four acres of ordinary upland; plowed thoroughly with two horses; sowed wheat and dragged it in with a two-horse harrow. February 10, sowed one gallon clover-seed per acre. June 10, cut the wheat, full 20 bushels per acre. July 20, mowed the clover, fully 1½ ton per acre, and shall get another mowing of same quantity in about twenty days.

## GUM FROM THE MESQUITE.

*Bexar County, Texas.*—Our children are making from two to three dollars per day gathering gum from the mesquite tree, (*Algarobia glandulosa*.) It is found oozing from the tree in quantities of one-half an ounce to pounds in weight. If the crop could have been gathered and sold at 15 cents per pound, it would have brought millions of dollars to Western Texas. About 40,000 pounds have been bought by our druggists.

## COTTON-SEED MEAL FOR MILCH COWS.

*Ashby, Mass.*—Up to September 7, of last year, I had been feeding, in addition to poor pasturage, to each cow one quart each of shorts and corn-meal mixed. On that day I commenced to feed to each cow a handful of clean cotton-seed meal mixed with an equal quantity of corn-meal, doubling the quantity each day until it reached two quarts to each cow, or four quarts of the mixture. The measure of milk was as follows: September 7, 12 quarts; 8th, 13 quarts; 9th, 14 quarts; 10th, 14½ quarts; 11th, 16 quarts; 12th, 17 quarts; 13th, 17½ quarts—making an increase of nearly 50 per cent. in one week. Never saw that it caused garget. When I notice any tendency that way I mix one pint of bran-meal with the feed.

## DROUGHT, ETC., IN FRANKLIN COUNTY, MISSOURI.

*Franklin County, Mo.*—This year, up to August 30, will long be remembered as the dry season. There has not been rain enough for the water to run in the furrow since the 15th of April. The springs and cisterns have failed to afford water, and four-fifths of the farmers get their supply from some distant brook or fountain. While the yield of small grains and grass is light, Indian corn is what might be called a medium crop. Of hogs there are now one-third more in this county than ever before, and with an abundance of apples, peaches, wild fruit, and nuts, there will be a good surplus of pork. The potato crop has suffered from the ravages of the bug. This county claims to be the banner tobacco county of the State, having taken more premiums at the State fairs during the last ten years than all the rest of the State combined. Much attention is now being paid to fruit culture, which is likely to supplant tobacco culture.

## EFFECT OF IMPROVED DRAINAGE.

*Wood County, Ohio.*—Here, when the soil is first brought under the plow it is too rich for wheat; and, owing to this fact, corn has hitherto been the staple crop of the county. But the relative acreage of these crops is changing, and last fall a much greater breadth was sown to wheat than ever before, and the yield is excellent both in quantity and quality. This liberal harvest is owing, in a great measure, to improved drainage. The lands of the county incline very gradually toward Lake Erie, having few natural drains, and these of limited effectiveness. To supply this want, the people have applied themselves energetically to the construction of artificial water-channels, until now the ditches in this county amount to thousands of miles in length.

## FLAX IN OHIO.

*Delaware County, Ohio.*—It is estimated that in this county quite 4,000 acres are devoted to flax, yielding 30,000 bushels of seed. The straw is sold at Delaware, the county seat, where there is a large manufactory, at from \$4 to \$10 per ton.

## EXCESSIVE DEVOTION TO SPECIAL PRODUCTS.

*Medina County, Ohio.*—Dairy products are low in price, while wool has advanced quite 25 per cent. In 1866 this county had 17,130 head of

cattle, and 161,616 sheep; now it has 28,373 cattle, and only 51,757 sheep, showing a decrease, in five years, of 109,859 sheep, and an increase of 11,243 cattle, chiefly cows. The change has been too sudden and violent, and reaction is taking place. Medina is not an exceptional county. A similar state of things prevails over the whole of Northern Ohio, the number of cows having increased, and that of sheep diminished, until now we average one cow to every man, woman, and child, and have scarcely sheep enough to supply our own woolens.

#### HEAVY WOOL-CLIPS.

*Boone County, Ill.*—My father has 22 ewes, grades, which in June sheared 130 pounds of clean wool, or an average of  $5\frac{10}{11}$  pounds per head. They had had good pasture and good care, and each has raised a thrifty lamb.

#### CATTLE IN SOUTHERN MOUNTAIN REGIONS.

*Cherokee County, N. C.*—At this season of the year fat beeves are being driven from the mountains, which were poor when sent hither in the spring. Every spring, Tennessee dealers drive into our mountains hundreds of cattle, which they sell the ensuing fall for beef.

#### DISEASE AMONG HORSES.

*Stanislaus County, Cal., August 1.*—In my July report I mentioned the appearance of a new disease among horses and mules in the east section of this county. Since then it has spread and increased, and there is probably now near two hundred head of old and young animals affected. Not more than six or seven have died; still, none are getting better. All that I have seen are affected very similar to the account of the "nervous phenomena," in the splenic fever, on page 99 of the "Report on the Diseases of Cattle," recently forwarded me from the Department. A neighbor, two and a half miles south of our farm, has forty or fifty horses and mules affected. Other farms have from one to ten horses or mules in different stages of the disease. We have twenty odd head, none being affected, as we can see. We attribute our exemption to the fact that our stock has free access to salt at all times.

*September 1.*—The new disease among horses, in the east part of this county, has not increased since my last report. About two hundred have been affected, while only ten have died. The others are slowly recovering, but none will be fit for work for some length of time.

*Marion County, Ky.*—There is some distemper among the horses and mules; also, there has been a greater amount of lockjaw among the horses this summer than ever before known. A specific for lockjaw is to immerse, if possible, the animal in cold water, except the head; and if no pond or stream is near that is deep enough for immersion, pour the water on as continuously as possible. A horse in the very worst stage of lockjaw, if immersed in a pond, creek, or river, will be relieved in thirty minutes.

A Queens County (New York) correspondent states that the disease which threatened to become epidemic among horses in New York City, has almost entirely disappeared among those taken from the city to pasture in that county.

## PLEURO-PNEUMONIA.

A correspondent writes from Middlesex County, Virginia, that there have been fifteen cases of pleuro-pneumonia, or lung plague, in that county, recently, and all were fatal.

## HOG-CHOLERA.

*Moore County, N. C.*—There has been great mortality among hogs, in some portions of this county, from what is popularly known as hog-cholera.

*Lincoln County, N. C.*—Hog-cholera has prevailed to an alarming extent; at least 50 per cent. have died. For the past three or four weeks have heard of no new cases, and hope it has abated.

*Glynn County, Ga.*—Cholera has prevailed to a very great extent among the hogs. In some parts of the county more than half have died. I have not had an opportunity to observe any case closely, but find that nearly all the dead hogs were in good condition.

*Dooly County, Ga.*—The cholera has prevailed to a considerable extent among hogs in this county, and no remedy for a cure has yet been discovered. We believe that it is contagious; and the best preventive I have found is the free use of spirits of turpentine, mixed with tar and a small quantity of camphor. It can be used either externally or internally. I prefer the latter, by soaking corn in it for ten or twelve hours. I have never failed in arresting the disease.

*Richland Parish, La.*—Hog-cholera in some localities.

*Stewart County, Tenn.*—There has not been much hog-cholera, but a few farmers have lost nearly all their pork-hogs.

*Monroe County, Tenn.*—Hogs are greatly reduced in number by cholera and other diseases. We have as many, however, as we can fatten well.

*Lawrence County, Tenn.*—Cholera is commencing among the hogs.

*Marion County, Ky.*—Some hog-cholera in different parts of the county.

*Southampton, Va.*—Cholera and other diseases have been prevalent, and the stock has suffered greatly.

## BRITISH IMPORTATIONS OF WHEAT AND COTTON.

The following is the official record of imports of cotton into Great Britain during six months of 1870, ending June 30, and a similar period in 1871:

## RAW COTTON.

	Quantities.		Value.	
	1870.	1871.	1870.	1871.
From United States ..... (cwt.)	3,914,270	7,099,428	£20,831,175	£24,566,770
Brazil.....do.	309,120	395,840	1,675,368	1,447,949
Turkey.....do.	62,414	7,913	294,288	27,769
Egypt.....do.	709,124	829,173	3,979,288	3,341,627
British India.....do.	802,947	1,244,686	3,309,401	3,623,911
Other countries.....do.	97,241	131,205	507,252	498,850
Total.....	5,895,116	9,708,245	30,596,772	33,506,876

The proportion of cotton imported from the United States in this period of six months is 66 per cent. in 1870, (January 1 to July 1,) and 73 per cent. in 1871; the proportionate importation from India decreased in the same period from 13.2 per cent. to 12.8. The total increase in quantity is 64 per cent., and the increase in the United States shipments 80 per cent., over those of the previous period. The reduction in price of our cotton is 35 per cent., or from 23.7 cents (gold) to 15.4 cents per pound. The reduction in the case of India cotton has been from 18.3 to 12.9 cents, or 29 per cent.

Later official returns show the receipts from the United States for eight months, to August 1, 1871, to be 7,670,577. The average price for this period is 22.8 cents in 1870, and 15.5 cents in 1871, while the average prices of India receipts were respectively, for the periods named, 16.6 cents, and 13.2 cents.

## WHEAT.

	Quantities.		Value.	
	1870.	1871.	1870.	1871.
From Russia .....(cwt.)	4,563,334	5,906,640	£2,033,840	£3,377,868
Denmark .....do..	221,187	14,340	105,013	9,370
Germany .....do..	1,691,927	1,327,310	919,385	878,761
France .....do..	17,377	38,246	8,581	21,248
Austrian Territories...do..	42,327	191,546	19,304	119,229
Turkey, Wallachia, and Moldavia.....(cwt.)	272,605	573,538	116,200	308,230
Egypt .....do..	95,550	35,611	40,702	19,598
United States.....do..	6,081,277	5,619,861	3,083,597	3,365,300
Chili .....do..	187,020	136,457	107,668	92,132
British North America.do..	580,655	734,826	301,535	417,729
Other countries.....do..	89,865	175,183	41,871	108,271
Total .....	13,843,124	14,753,558	6,777,696	8,717,736

## WHEAT, MEAL, AND FLOUR.

	Quantities.		Value.	
	1870.	1871.	1870.	1871.
From Germany .....(cwt.)	548,281	446,788	£362,744	£415,644
France.....do..	555,968	1,224	392,809	828
United States.....do..	1,105,782	1,156,672	702,765	879,395
British North America.do..	62,357	94,416	42,451	69,358
Other countries.....do..	203,828	415,065	135,921	409,440
Total .....	2,476,216	2,114,165	1,636,690	1,774,665

The wheat received from the United States, 5,619,861 cwt., was 38 per cent. of the total of 14,753,558 during six months of the present year; while the proportion for this country during a like period of 1870 was 44 per cent. The proportion received from Russia was 33 per cent. in 1870, and 40 in 1871. In wheat flour the advantage is with the

United States, the receipts being 1,105,782 cwt. in six months of 1870, and 1,156,672 cwt. in 1871, of the respective aggregates of 2,476,216 and 2,114,165 cwt. The increase in prices is marked, the average price of flour from the United States being but a fraction less than \$3 per cwt.

Although the cash receipts of our shipments of wheat and flour amount to a larger sum than those of the first half of 1870, they represent an insignificant proportion of the value of our wheat crop. Their value for the first half of the present year is \$21,223,475. Even the proportion exported from the great wheat mart of the West, upon which foreign purchasers depend largely for supplies, is quite small—a well-known fact, which is thus stated in the Chicago Tribune of August 18: "Of the vast quantities of grain that leave Chicago yearly, scarcely 20 per cent. of the wheat, and not 5 per cent. of the corn, finds its way across the Atlantic. The rest all goes to supply the wants of the American people who live to the east of us, and is scattered, in big lots or little dribbles, all along the route to the sea-shore. The demand for American consumption is what has built up the grain trade of this city."

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#### SUGAR AND MOLASSES CROPS OF CUBA, 1870-'71.

We gather some facts in regard to the above interests from the Havana Weekly Report. As is generally known, the production this year has been comparatively small, owing to the two hurricanes that swept over the principal sugar districts of the island in October, 1870, and to the drought which preceded and followed them. Cuba produces nearly one-third of the quantity of sugar consumed in Europe and America; hence it is quite natural that, in view of the decrease of production, speculators have been operating on a large scale, causing an almost continuous advance of prices, much to the profit of the planters, who have thus been partly compensated for the decrease in their crops. The prices for clayed sugars No. 12, of current classes, average  $10\frac{3}{4}$  reals per arrobe, for the period from January 7 to July 15, against  $8\frac{1}{2}$  reals per arrobe for the corresponding period of 1870, and was selling at  $11\frac{1}{4}$  to  $11\frac{1}{2}$  reals per arrobe at the latest date named. Special sorts have sold at  $\frac{1}{4}$  to  $\frac{3}{4}$  real higher, and whites have exceeded last year's range by  $1\frac{1}{2}$  to  $2\frac{1}{2}$  reals per arrobe.

The total exports this year from the ten principal ports of the island are equal to 1,868,300 boxes, (reducing hogsheads to boxes,) against 2,665,184 boxes last year. Estimating the stock remaining at 638,750 boxes, and the local consumption (for the whole year) at 350,000 boxes, the total production of the island for the season of 1870-'71 is 2,857,050 boxes, against 3,818,447 boxes for the preceding year.

The exports of molasses from the several ports of the island, to June 30, were 215,090 hogsheads, against 292,926 hogsheads in same period of 1870. The remaining stock is not more than half the amount at same date last year, when it amounted to 35,000 hogsheads. The prices for clayed have advanced from  $4\frac{1}{2}$  to  $5\frac{1}{2}$  reals in January to 8 to  $8\frac{1}{2}$  reals in June, and for muscovado from 5 to 6 reals in January to  $8\frac{1}{2}$  to  $9\frac{1}{2}$  reals in June—the average being for clayed  $6\frac{1}{2}$  reals, and for muscovado  $6\frac{7}{8}$  reals, against an average in 1870 of  $5\frac{1}{2}$  reals for clayed and  $6\frac{1}{4}$  reals for muscovado.



The probable total exports in 1871, and the totals of previous years, are shown in the following statement:

		Hhds.			Hhds.
Exported to 30th June, 1871.....	215,090		Exports in 1866.....		321,000
Stocks at date.....	17,500		1865.....		285,500
			1864.....		263,000
Exports in 1871.....	232,500		1863.....		262,200
1870.....	323,292		1862.....		265,000
1869.....	350,078		1861.....		262,000
1868.....	399,249		1860.....		275,000
1867.....	293,000				

The yield of the cane on the island for the past ten years is given as follows in tons:

	Sugar.	Molasses.	Total.		Sugar.	Molasses.	Total.
1871.....	542,840	151,183	694,023	1866.....	612,180	208,650	820,830
1870.....	725,505	213,389	938,894	1865.....	619,780	185,575	805,355
1869.....	726,237	247,050	973,287	1864.....	515,090	170,950	686,040
1868.....	749,359	259,011	1,008,400	1863.....	511,860	170,430	682,290
1867.....	597,146	193,700	790,846	1862.....	511,100	172,250	683,350

The exports of sugar and molasses to the 30th of June were distributed as follows: United States, 78 per cent.; Great Britain, 12; south of Europe, 5; France 2; north of Europe, 1; other ports, 2 per cent. In 1870 they were to the United States, 61 per cent.; Great Britain, 26; south of Europe, 5; France, 4; north of Europe, 1; and other ports, 3 per cent. The imports of the United States up to the 30th of June were 348,303 tons, against 308,151 tons in 1870. The consumption amounted to 272,378 tons, against 242,954 tons in 1870, and the stock left was 132,422 tons, against 146,153 tons in 1870.

### THE "FULTZ" WHEAT.

A new and very promising variety of wheat, called the "Fultz" wheat, is attracting considerable attention in Mifflin, Juniata, Lancaster, and neighboring counties in Pennsylvania. It is nearly smooth, with beards occasionally; is very evenly six-rowed; the straw stands well, the chaff very close and adherent; and it is claimed that it has never been affected by weevil; the grains are short and plump, and in color a light dull red or dark white. The Department of Agriculture has distributed a quantity of this wheat, and as the variety will be likely to receive an extended trial the coming year, its alleged history will prove interesting. It is stated that in the summer of 1862 Mr. Abm. Fultz, of Mifflin County, Pennsylvania, while harvesting some old Lancaster Red wheat, noticed three beautiful heads of smooth wheat. He took these heads home, and in the fall sowed the wheat on a spot where a brush-heap had been burned. The following summer he harvested half a pint. In 1864 his crop filled a basket, and in 1865 he had nineteen sheaves. Mr. Fultz then parted with a bushel of the wheat to Christian Detweiler, who sowed it along the northwestern side of an old orchard, where it was partly smothered by snow-drifts and shaded by apple trees. In the harvest of 1866 it was pronounced "scarcely worth sowing," but when thrashed it was found to yield better than the favorite Lancaster Red. Mr. Detweiler again tried it, and the next year, from about three acres of sandy land, he harvested 94 bushels of prime clean wheat; and the following year, from 13 bushels sown on nine acres, he harvested 300 bushels. The yield with other parties has been

30 to 35 bushels to the acre. The highest yield reported is by Mr. Emanuel Kauffman—180 bushels on four acres. This wheat makes an indifferent show above ground in the fall and early spring, but it makes up when harvest comes by its splendid straw, fine heads, and plump grains. The Department has already distributed all that it had at disposal.

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### AMERICAN POMOLOGICAL SOCIETY.

The thirteenth session of this society was held at Richmond, Virginia, on the 6th, 7th, and 8th of September. As it is eminently national in its character, its transactions are justly regarded with deep interest by pomologists and fruit-growers throughout the country. All of the prominent State pomological and horticultural societies are represented at its biennial meetings, and as the delegates participate in the discussions on fruits and other topics that are introduced, the proceedings are very important, and have a decided influence upon the extension of fruit-culture, as well as upon the value of the products of this source of national industry and wealth. One of the most valuable works that has occupied the attention of this society is that of preparing a list of fruits best adapted to each State. So marked is the influence of climate on certain kinds, that it has been found expedient to divide several of the States into sections or districts, to each of which several varieties are allotted.

Various circumstances, having hitherto prevented the thorough completion of this catalogue, as representing the Southern States, the session just closed was mainly devoted to this purpose, and the list is now as complete as the nature of the subjects will admit. Yearly revisions of the catalogue will be necessary, as experience with older fruits over broader localities, and the introduction of new varieties, may suggest.

The organization of the American Pomological Society consists of a president, with a vice-president from each State and Territory; treasurer and secretary; a general fruit committee, composed of one member from each State; an executive committee; also committees on foreign fruits; synonymous and rejected fruits; new fruits; and revision of catalogue. The president is Marshall P. Wilder, of Boston; treasurer, Thos. P. James, Cambridge, Massachusetts; secretary, F. R. Elliott, Cleveland, Ohio. The next session of the society will be held at Boston, in 1873.

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### SALES OF SHORT-HORNS.

James N. Brown's sons, Grove Park farm, near Berlin, Illinois, sold August 9, 31 cows and heifers, and 11 bulls, Short-horns. The cows and heifers brought a total of \$13,430; the bulls a total of \$3,330. One of the cows, a barren animal, sold at \$65; one bull, young, and not a sure getter, sold at \$50. Setting these two aside, the cows averaged \$445 50 each, and the bulls \$333 each. The cows bringing highest prices were—Illustrious 3d, red roan, calved March 24, 1868, sold for \$1,135; Maud Muller, roan, calved July 28, 1869, \$1,025. The two bulls bringing highest prices were—Tycoon, roan, calved March 27, 1867, \$865; Sir Frederick, red and white, calved December 6, 1870, \$420.

The following is a statement of recent sales in Kentucky: J. M. Van

Meter, near Midway, June 27, 25 cows and heifers for \$7,675, averaging \$307 each; and 8 bulls for \$1,535, averaging \$191 88 each. The highest prices obtained for cows were—\$1,025 for Mazurka 26th, three years ten months and a half old; and \$455 for Lou Logan, eight years one month old; the bulls ranging from \$100 to \$450. Edwin G. Bedford, near Houston Station, June 29, 28 cows and heifers for \$6,413, averaging \$229 04 each, the highest price paid being \$400; also, 10 bulls for \$2,815, averaging \$218 50 each, prices ranging from \$130 to \$435. The choicest animals of the herd were reserved. B. F. and A. Van Meter, near Winchester, June 30, 23 cows and heifers for \$5,975, averaging \$259 78 each, the highest price paid being \$710; also, 14 bulls for \$5,610, averaging \$400 71 each, three of the animals bringing, respectively, \$1,090, \$1,060, and \$1,000. Harvey W. Rice, near North Middletown, July 4, 20 cows and heifers for \$7,012, averaging \$350 60 each, the prices paid ranging from \$115 to \$755; also, 4 bulls for \$1,282, averaging \$320 50 each, prices ranging from \$150 to \$500.

The following is a statement of sales made at Winchester, Kentucky, August 26, of imported Short-horns, belonging to the Clark County Importing Company: Cows—Lady Pawlett, \$900; Miranda, \$975; Cow-slip 2d, \$1,300; Rose of Wicken, \$850; Fatiko, \$975; Gerty, \$895; Dulcimer, \$570; Lady Penrhyn, \$710; Sweet Rose, \$910; Pride of the West, \$1,250; Patchouli 4th, \$870; Rarity, \$1,080; Rosette 5th, \$900; Hartford Strawberry, \$900; Red Princess, \$800; Welcome, \$700; Tiny, \$600; Lady Spencer 2d, \$1,220; Clochette, \$855; Princess Maud, \$330; average, \$879 50. Bulls—Duke of Babraham, \$790; Peabody, \$900; Pioneer, \$400; average, \$696 67. There were also sold 28 head of pure-bred Short-horns, belonging to Lewis Hampton, and 10 head belonging to other members of the company. Names and prices of the animals are as follows:

Cows: Adelia, \$430; Red Bell, \$315; Beck Taylor, \$600; Juniata, \$280; Pearly, \$210; Alida, \$190; Red Rose, \$300; Moss Rose, \$300; Anna, \$90; Bostona 2d, \$105; Dora Dean, \$230; Fragrance Filligree, \$330; Snowflake, \$140; Queen of Hearts, \$550; Autumn Leaf, \$165; Flora Temple, \$150; Fannie Abram, \$105; average, \$264 12. Bulls: Duke of Greenwood 9,855, \$350; Ben Thorndale, \$80; Captain Gunter, \$240; Crook-tail Lad, \$260; Wellington, 9,292, \$124; Christmas Eve, \$135; Frank, \$120; Rone Duke, \$80; Butterfly Lad, \$120; May Duke, \$200; Pilot, \$150; Dandy Duke 9,720, \$165; Duke of Walberg, \$185; Bismarck, \$165; Sam Thorne, \$190; Neptune, \$80; Hamlet, \$120; Ivanhoe, \$225; Warwick, \$100; Grand Duke, \$150; Hero, \$100; average, \$159 05. The whole number of cows disposed of at these sales was 37; of bulls, 24. Total amount of sales, \$27,510.

## AGRICULTURAL CONDITION OF WESTERN AMERICA.

Perhaps the most important special work engaging the present attention of the statistical division is the collection of facts illustrating the industrial status of Western America, showing the progress of settlement and colonization, the yield and quality of agricultural products, the profit of the several branches of agricultural industry, the effects of the various industries of climate and soil, and the economic aspects of agriculture, such as planting, and other specialties incident to rural industry. In the Great Plains, the Rocky Mountains, and the Pacific Coast.

The great want in this regard is accuracy. In ad

dental facilities supplied by records of the official, scientific, and railroad explorations of the great region—which will only be used for purposes of comparison, verification, and illustration—our regular correspondents, as well as local officials and residents of enlarged information and accurate and unbiased judgment, will be employed, public addresses examined, and the records of current newspaper and book literature searched, for the material, which will be sifted, analyzed, and compared, and the compilation made by the statistician and others, after exploration and observation to the greatest practicable extent. The work will be difficult and laborious, and may not be concluded for the report of 1871, but its results, it is hoped, will find at least a partial record in the annual of the current year.

With reference to this work the statistician joined the agricultural editorial excursion party, (consisting of many of the principal agricultural editors of the country,) which left New York on the 18th of July, passing through Southern New York, Northwestern Pennsylvania, Ohio, Indiana, (diverging here to Southern Kentucky,) and Illinois to St. Louis; making another diversion, *via* the Atlantic and Pacific Railroad, to the rich agricultural and mineral lands of Southwestern Missouri and to the verdure-clad and cattle-teeming prairie of the Indian Territory; thence to the fruit-yielding bluff-lands of Missouri, the long vista of intermingled corn and grasses for two hundred miles of the Kansas Valley, and the plains stretching through four hundred miles of buffalo pasture to Denver. Nearly three weeks were then spent in Colorado and Wyoming in observation by railroad, by carriage, on horseback, and on foot, among the agricultural valleys of the mountainous mining sections, the elevated pasture-grounds of the South Park, the productive farm-lands of the Grand Divide which separates the waters of the Arkansas from those of the South Platte, the great cattle-herding plains of Laramie and the valley-lands of the Platte and its branches, for a distance of six hundred miles. Opportunity was afforded to investigate the methods and prove the success and comparative cheapness of irrigation in farm and garden culture, and also to witness the wonderful progress of agricultural colonization, on a coöperative and peculiar basis, as illustrated at Greeley, in Weld County, near the junction of the Cache-a-la-Poudre and the South Platte Rivers. The location, about twenty-five miles from the Snowy Range, in a valley which gathers the waters of the most reliable mountain streams of Colorado, is a good one; the population is rapidly increasing, as is the price of lands; the crops are generally good, remarkably so for the first year of cultivation and the inexperience of colonists in irrigation.

The tree-planting operations of Mr. R. S. Elliott, industrial agent of the Kansas Pacific Railroad, which embrace three locations on the arid plains, and include several varieties of deciduous and evergreen trees, have thus far been quite successful, without irrigation. A great variety of trees, including maple, walnut, ash, pine, larch, ailanthus, chestnut, and poplar, presented nearly as promising an appearance as similar plantations in Illinois. The experiment will be continued with a reasonable expectation of continued success.

## LIVE STOCK IN IRELAND.

The registrar-general furnishes the following table of the number and value of horses, cattle, sheep, and pigs, in the several provinces of Ireland, in the years 1870 and 1871.

Provinces.	HORSES.		CATTLE.		SHEEP.		PIGS.		Total value of horses, cattle, sheep, and pigs.
	Number.	Value, at £8 each.	Number.	Value, at £6 10s. each.	Number.	Value, at 22s. each.	Number.	Value, at 25s. each.	
Leinster	{ 1870. 167,865	£1,342,920	942,766	£6,127,979	1,405,822	£1,546,404	353,870	£442,338	£9,459,641
	{ 1871. 166,725	1,333,800	946,300	6,150,950	1,371,367	1,508,504	392,010	490,012	9,483,266
Munster	{ 1870. 137,453	1,099,624	1,193,384	7,756,996	1,084,638	1,193,102	542,200	677,750	10,727,472
	{ 1871. 139,740	1,117,929	1,228,910	7,987,915	1,022,854	1,125,139	569,773	712,216	10,943,190
Ulster	{ 1870. 166,065	1,358,040	1,080,237	7,091,511	541,359	595,495	345,884	432,355	9,377,431
	{ 1871. 168,447	1,347,576	1,158,525	7,530,412	541,436	593,580	349,883	454,229	9,997,797
Connaught	{ 1870. 61,334	490,672	583,525	3,792,912	1,305,065	1,435,571	219,261	274,076	5,993,231
	{ 1871. 62,412	499,296	636,229	4,135,489	1,302,409	1,438,650	233,024	291,280	6,358,715
Total of Ireland	{ 1870. 532,657	4,261,256	3,799,912	24,699,428	4,336,884	4,770,572	1,461,215	1,836,519	35,857,775
	{ 1871. 537,354	4,298,532	3,969,964	25,804,766	4,238,066	4,661,873	1,614,190	2,017,737	36,752,908
Increase or decrease	4,697	£37,276	170,052	£1,105,338	98,318	£108,690	152,975	£191,218	Increase. £1,225,193

The following table gives the number and value of live stock in Ireland in each year from 1861 to 1871, inclusive.

Years.	HORSES.		CATTLE.		SHEEP.		PIGS.		Total value in each year.
	Number.	Value, at £8 each.	Number.	Value, at £6 10s. each.	Number.	Value, at 22s. each.	Number.	Value, at 25s. each.	
1861	614,232	£4,913,856	3,471,688	£22,565,972	3,556,050	£3,911,655	1,102,042	£1,377,552	£32,769,035
1862	602,804	4,823,152	3,254,890	21,156,785	3,456,132	3,801,745	1,154,384	1,442,905	31,224,587
1863	579,978	4,699,824	3,144,231	20,437,501	3,308,904	3,639,034	1,067,458	1,334,322	30,050,671
1864	562,158	4,497,264	3,262,294	21,294,911	3,366,941	3,703,635	1,058,480	1,332,100	30,728,910
1865	548,339	4,386,712	3,497,548	22,734,062	3,694,356	4,063,792	1,305,953	1,632,411	32,817,007
1866	535,799	4,286,392	3,746,157	24,350,020	4,274,282	4,701,710	1,497,274	1,871,593	35,209,715
1867	524,180	4,193,440	3,707,803	24,100,719	4,835,519	5,319,071	1,235,191	1,543,989	35,157,219
1868	524,703	4,197,624	3,646,706	23,704,174	4,901,496	5,391,646	1,269,578	1,646,972	34,880,416
1869	525,201	4,225,605	3,733,075	24,208,888	4,651,195	5,116,314	1,082,224	1,582,780	34,963,500
1870	532,637	4,261,256	3,799,912	24,699,428	4,336,884	4,770,572	1,461,215	1,836,519	35,557,775
1871	537,354	4,298,532	3,969,964	25,804,766	4,238,066	4,661,873	1,614,190	2,017,737	36,752,908

## FLAX CULTURE IN IRELAND.

The acreage in flax in the several provinces of Ireland in 1870 and 1871, together with the number of scutching-mills, is given by the registrar-general as follows :

	1870.	1871.	De-crease.	Scutch- ing-mills.
Ulster .....	180,412	147,188	33,224	1,409
Munster .....	4,192	2,929	1,263	39
Leinster .....	4,238	3,199	1,039	39
Connaught .....	6,068	3,448	2,620	31
	<u>194,910</u>	<u>156,764</u>	<u>38,146</u>	<u>1,518</u>

The following table shows the total extent of flax grown in Ireland in each of the years named :

	Acres.		Acres.
1851 .....	140,536	1862 .....	150,070
1852 .....	137,008	1863 .....	214,099
1853 .....	174,579	1864 .....	301,693
1854 .....	151,403	1865 .....	251,433
1855 .....	97,075	1866 .....	263,507
1856 .....	106,311	1867 .....	253,257
1857 .....	97,721	1868 .....	206,483
1858 .....	91,646	1869 .....	229,252
1859 .....	136,282	1870 .....	194,910
1860 .....	128,595	1871 .....	156,764
1861 .....	147,957		

## ENTOMOLOGICAL RECORD.

**THE COLORADO POTATO-BEETLE.**—As much anxiety has lately been manifested in the Eastern States, in consequence of the rapid approach of the much-dreaded western Colorado potato-bug, or ten-lined spearman of Walsh, (*Doryphora decem-lineata*, Say,) and as several reports have lately been published as to its appearance in Massachusetts, Pennsylvania, and other States, and as, in many of the cases, totally different insects have been mistaken for it, it may be well to give a short account of the general appearance and habits of this insect, for the benefit of those farmers who have as yet, fortunately, had no opportunity of seeing it, or of learning anything about its general natural history. The *Doryphora decem-lineata*, Colorado, or western ten-lined potato-bug, was described by Say in the journal of the Academy of Natural Sciences, in 1823, as occurring in Missouri and Arkansas, and was so named from the ten black lines on its wing covers, five on each side. One of the first notices of its appearance, as a destructive insect, was in 1861, when Judge Edgerton described it as being very destructive to the potatoes in Iowa; and, in 1862, it was reported by Thomas Murphy, of Atchison, in Kansas, as doing much damage to the crops and being very numerous. The insect is said to have first fed on a species of wild potato, growing out in the far West, and is stated to have traveled east about three hundred and sixty miles in six years, or at a rate of about sixty miles a year. They are now said to be found as far north as Canada, as far east as Ohio, and, according to some papers, (but doubtful,) even in New York and Pennsylvania. In 1864 Mr.

Walsh calculated that, if not checked, they would reach the Atlantic States about the year 1880. The eggs, to the number of seven hundred to twelve hundred, are deposited on the young leaves of the potato. These eggs are attached by one end to the under side of the leaves, usually in clusters of one to two dozen. The larvæ hatch out in a few days, and feed from seventeen to twenty days. They then bury themselves in the earth, where they change into pupæ, and remain as pupæ from ten to twelve days, and finally emerge from the earth as perfect beetles to deposit more eggs for a second generation. In order to give some idea of their powers of multiplication and the injury effected by them, the Canadian Entomologist states that all their transformations are effected in fifty days, so that the result of a single pair, if allowed to increase without molestation, would, in one season, amount to over sixty millions. And Mr. Walsh, after a careful examination of facts, states that in one year (1866) these insects had destroyed one and a quarter million dollars' worth of potatoes in one small portion of the United States which came under his observation. The insect, after laying its eggs, does not die immediately, Professor Daniels, of Wisconsin University, having kept a female alive six weeks without food after she had laid twelve hundred eggs. There are said to be three broods annually in Missouri and Illinois, the last brood remaining under ground all winter, and appearing as perfect beetles the following spring. This insect is stated to possess poisonous properties when incautiously handled; but the Canadian Entomologist has been unable to find any evidence of poisonous properties, and doubts the statement. It feeds upon the potato, tomato, egg-plant, thorn-apple, and black henbane, &c., &c.

There are several parasitical insects which destroy the Colorado potato-bug, but their numbers will not admit of their being enumerated in this article. Among the principal ones are several plant bugs, *Arma*, *Harpactor*, &c.; some beetles, *Lebia*, *Coccinella*, &c.; a two-winged fly, *Tachina*, besides several other insects which prey upon it in the larval state, and serve essentially to lessen the number of these pests. These insects should by all means be protected in the potato-fields and suffered to increase. The larva of the Colorado potato-bug is at first dark reddish-brown, but becomes paler, and brightens as it matures. The head is black, and it has a ring of black on the first segment of its body, and two rows of black spots on each side. The perfect insect is about half an inch in length, of a thick, oval shape, and of a yellowish cream color, with ten black lines running lengthwise down the wing-covers. The head and thorax are of an orange-brown color, spotted and marked with black. There is another insect closely resembling the true Colorado bug in form, coloration, and markings; this is called the *Doryphora juncta*, and may be distinguished by having the second and third stripes always united behind, and sometimes before, giving it the appearance of having only eight stripes instead of ten on the wing-covers. This insect has not yet been reported as having done any material injury to the potato, although in Alabama it has been said to injure the potato slightly, and is found in Maryland, Virginia, and South Carolina, feeding on the *Solanum carolinense*, and sometimes injures egg-plant in the South. A second insect, the three-lined potato-beetle, (*Lema trilineata*,) has also recently been mistaken for the Colorado bug, but may readily be recognized by its smaller size, more elongate form, and having only three longitudinal black lines on its reddish-yellow wing-covers. The larva may also readily be distinguished by its habit of carrying a disgusting mass of excrement on

its back, and by its smaller size. Some of the cantharides, (*Epicauta vittata* and *lemniscata* are also sometimes confounded with the Colorado beetle, by farmers, and, although they are striped in a similar manner on their wing-covers, they may be known by their much narrower and elongate form and narrow thorax. The Colorado bugs are partial to certain varieties of potatoes, such as the Mercer, Shaker, Pinkeye, &c., avoiding as much as possible the Peachblow, Early Rose, Peerless, and Chili, &c., when other varieties are to be obtained.

As a remedy, Professor Verrill recommends Paris green, mixed with eight to twelve parts of wheat flour, or with three parts of wood ashes, to be dusted over the plants when wet with dew; he, however, prudently adds, "It may be questioned whether it is safe or advisable to mix dangerous mineral poisons with the soil, for the arsenic and copper will remain in the earth, or may be absorbed by growing vegetables, or cause mischief in other ways." The American Entomologist also states that "Paris green (arsenite of copper) is a slow but dangerous poison; and when dusting plants with it the greatest care should be exercised, so that the wind may not carry it toward the person of the operator, and it may injure the soil if used repeatedly." In proof of this, peas planted at the Department of Agriculture, in soil mixed with Paris green rotted immediately and would not germinate, while those in unadulterated soil grew finely and flourished, but died immediately when transplanted into the soil mixed with Paris green. This dangerous remedy has already been used to such an extent that in an entomological paper it is stated that 1,200 pounds has been sold in one season at La Crosse, Wisconsin, for the destruction of these potato-bugs. Professor Cook, of Michigan Agricultural College, reports that some of their potato vines and egg-plants were totally ruined by a too free use of Paris green, mixed in the proportion of one part of the mineral to five parts of flour. Mr. H. H. McAfee, superintendent of the experimental farm of the University of Wisconsin, disapproves of the use of Paris green, on account of its poisonous properties, and recommends hand-picking and destroying the beetles when they first appear; he also states that the potatoes are often watery, rank, and of a bad flavor where the Paris green has been used. Mr. Riley says, "Watch for and destroy early beetles, and ensnare as many as you can by making small heaps of potatoes in the field planted; to these the beetles will be attracted for food, and may readily be killed in the morning." Paris green, (Scheele's green,) he states, if used too abundantly, will kill the vines, and recommends it to be used with six to twelve parts of flour, ashes, plaster, or slaked lime. He also says it is highly improbable that any substance sprinkled either on the vines or on the ground will ever accompany to the table a vegetable that develops under ground, or, in other words, that the arsenic cannot be absorbed by the plant, to render the root in some degree poisonous. The Canadian Entomologist also recommends Paris green, mixed with flour, ashes, or air-slaked lime, but states that flour is much the best when mixed in the proportion of one part of Paris green, by weight, to ten or twelve parts of flour, dusted over the plants when the dew is on the foliage, from an ordinary flour-dredge. Three pounds of Paris green to thirty or thirty-six parts of flour is sufficient for an acre of potatoes. It also states that it is not dangerous if carefully used.

Several substitutes for Paris green are also mentioned, among them arsenic itself, (arsenious acid,) which may be used in the proportion of one ounce to a pound of flour, but it should be colored black with charcoal or some other coloring matter, to lessen risk of accident from use.



Powdered cobalt, or fly poison, was also tested, but it is a much dearer remedy. Bluestone (sulphate of copper) solution injured neither bugs nor plant. Bichromate of potash, dissolved in water, killed insects and plants. Powdered hellebore had a perceptible effect. Carbolate of lime varies much in composition and character; some of it was partially successful with the larvæ, but doubtful with the perfect insect. Ashes and air-slaked lime gave no perceptible results.

In summing up all the evidence on the subject of remedies, it appears that hand-picking, especially very early in the season, when the insects first appear, and before they have had time to lay their eggs, is highly advantageous, and that the use of Paris green is recommended by the best authorities; but that, when using this dangerous poison, the greatest care should be taken when dusting the plants that none of it is carried by the wind on the person of the operator, or on any neighbor's fruit, vegetables, or forage crops, and that it should be mixed with at least ten to twelve parts of flour, plaster, or some other material, and that an overdose is apt to kill the plants, besides leaving a residuum in the soil which may prove injurious to the crops.

**INSECT DEPREDATIONS.—THE CHINCH-BUG.**—A correspondent of the Missouri Republican writes that, after trying other ways to prevent the chinch-bugs going through his corn, he tried salt, and found that it will effectually stop them. Take a pail of water and half a gallon of salt, stir well, then with a small broom or bunch of feathers sprinkle well a row of corn just ahead of the bugs, taking care that the ground between the hills of corn in said row is well sprinkled with the brine. Three pails of brine will sprinkle a quarter of a mile, if properly applied, and will stop the bugs, if well done. The bugs generally commence on a corn-field at one side and go through from row to row with almost as much precision as the plowman in plowing the corn.

**RAVAGES OF GRASSHOPPERS.**—These pests have been numerous and destructive during the past month in some portions of the Eastern States. In Sagadahoc County, Maine, the crops and pastures were injured by them very much; also in Hancock County. In Franklin many fields of grain were cut to save the crops from them and for feeding. In Oxford oats were "eaten entirely down, as clean as though fed upon by sheep." In some portions of Plymouth County, Massachusetts, they are reported to have eaten everything green. In Caledonia County, Vermont, they have been very destructive. All through Windsor they have been "a terrible scourge." In Orleans they are reported abundant, and in Windham they have done "much injury to some of the crops." In Wayne County, Pennsylvania, also, they are reported to have done much damage.

Reports from San Bernardino, California, state that grasshoppers in "brigades" are moving from San Geronio to the sea, destroying everything eatable on their line of march. These insects are said to be of extraordinary size and voracity.

**THRIPS ON ONIONS.**—The Massachusetts Ploughman learns that the genuine wheat-thrip has this season attacked the onion crop on one or two farms in Swampscot, carrying all before them and making a clean sweep. This is something new, if accurate, as there is great difference between the wheat plant and the onion.

**YELLOW-JACKETS.**—A correspondent of the Department, writing from Brookhaven, Mississippi, gives the following method of destroying yellow-jackets, *Vespa vulgaris*: "Into four ounces of water put

three ounces of cyanide of potassium; and of this solution pour two or three or four table-spoonfuls in and around the holes of the pests. Its contact appears to paralyze the insects, and they soon die. If the first application does not finish them, another one will. The nests can then be dug out and burned. Great care should be observed in handling the remedy, as it is poisonous." We believe the use of benzine would prove to be an equally efficacious remedy.

THE DECAY OF FOREST PINES.—A correspondent in Mississippi writes that, within a radius of five miles of his residence, many forest pine-trees have died this year from an unknown cause. Four clusters are entirely dead, three of which will average twenty trees each. In another and a larger cluster, seventy-five trees are dead. A small bark and wood eating insect, either a *Tomicus* or *Scolytus*, is probably the cause of the death of the trees. It would be well to examine the bark of a tree after its vitality has been destroyed, and if insects are found under its bark, the whole tree should be burned. By thus destroying the insects, other trees would probably escape injury.

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### SCIENTIFIC NOTES.

USE OF WATER-GLASS IN WASHING WOOL.—Among the many practical applications of water-glass, or the silicate of potash and soda, its use in the washing of wool is said to be not the least important. For this purpose one part of the water-glass is to be dissolved in forty of warm water, and the wool placed in it for a minute, and stirred around a little with the hand. It is then to be taken out and rinsed in cold or luke-warm water, when it will be white and entirely free from smell. After this treatment the wool is said to remain perfectly soft, and is not affected in the slightest degree, even if allowed to remain for several days in the solution, and then rinsed out with warm water. Wool may be washed very rapidly in this way, and in large quantity, by inclosing it in baskets or nets, immersing it in the solution, and treating it as above mentioned. Even the sheep can be rendered of snowy whiteness very quickly, if immersed for a minute in a vessel containing the above solution at a temperature of 100° to 120°, and then rinsed in pure water. In this case it may be necessary to take some precaution to prevent the introduction of the solution into the eye of the sheep, which may be done by fastening the legs securely to prevent struggling, and, perhaps, enveloping the head for the time in cloth.

A similar use of the water-glass is recommended for the ordinary washing of clothes, the process consisting in laying the fabrics in a solution of one part of glass and twenty to thirty of water at a temperature of 100° to 150° F., and allowing them to stand several hours, when they are to be stirred around with a stick, the bath having been previously heated up by the addition of warm water. The clothes are then laid upon a board or over bars to drain, when the liquid coming from them will be found to contain nearly all the dirt. After this, treatment in the ordinary way, with a very little soap, will quickly remove any remaining impurity. It is recommended to place the clothes a second time in a weak solution of water-glass—one part in fifty—and finally to rinse out with warm water. Clothes thus treated, it is said, become of a dazzling white, and do not need bleaching.

**PREPARATION OF DESICCATED VEGETABLES.**—A convenient method of preparing desiccated vegetables, as practiced largely in some countries, consists in drying them for a short time and then exposing them to a slow heat in ovens. When soaked for cooking, peas, roots, potatoes, beets, corn, and other substances, swell out and show very little change in their esculent properties. A modification of the process consists in placing the substances, after being sun-dried, in paper bags, which are pasted up at the mouth, and then covered with sand and heated until perfectly crisp, but not burned nor materially changed in color.

**ECONOMY OF LONG FURROWS IN PLOWING.**—A German agricultural journal observes that farmers usually pay very little attention to the length of the furrows to be plowed in a field, and yet great waste of time and labor is the necessary consequence of unsuitable arrangements in this respect. The turning of the plow and the commencing of a new furrow requires more exertion in the plowman and the team than continued work on a straight line, and how great may really be the loss of time from frequent interruptions in short turns may be shown by the following calculation: In a field 225 feet long, five and a half hours out of ten are used in redirecting the plow; with a length of 575 feet, four hours are sufficient for the purpose, and when the plow can proceed without interruption for 800 feet, only one and a half hours of the daily working time are consumed. Hence the rule to make the furrows as long as circumstances will admit.

**PASTEUR'S MODE OF PREPARING VINEGAR.**—The researches of Pasteur, in regard to the microscopic growths that affect the silk-worm, the vine, wine, &c., are well known to many of our readers; but they may not be so familiar with one of his many important practical applications of science to the economical manufacture of an excellent quality of vinegar. His method has been practiced in an extensive establishment in Orleans, France, for some time past, under his direction, although it is but recently that the details of the process have been made known. The apparatus employed consists of as many tubs, holding about thirty gallons each, as can conveniently be accommodated in one room, kept heated to a temperature of 70° to 80°. These are filled with a mixture of vinegar and wine, and the vinegar fungus is planted, or sown, upon the surface. This is an application of the fact, established by Pasteur, that the conversion of wine into vinegar is caused by the development in the liquid of the so-called vinegar fungus, or *Mycoderma aceti*. This planting, or sowing, is accomplished by the use of thin wooden spatulas, previously moistened to prevent adhesion, and then laid on the liquid covered by the fungus, so as to take off a thin layer, and afterward immersing this carefully in the unchanged liquid, and stirring round so as to carry the fungus to the bottom. This soon rises to the surface, which is completely covered by it in about eighteen hours. With the development of the plant the manufacture begins, accompanied by a considerably concomitant development of heat. In the course of nine or ten days, and sometimes in eight, the entire liquid is transformed into vinegar, the completion of the operation being shown by the tearing apart of the fungus layer, and its falling to the bottom. The vinegar, which by this time has become cold, is drawn off through an opening near the bottom of the tub; ninety-five parts of vinegar being obtainable from one hundred parts of the wine. When the vinegar is drawn off the tubs are to be well scrubbed out with clean water, so as to be entirely free from all particles of fungus; they are then ready for a new mixture of wine and vinegar. The advantage of this method consists in its simplicity and

in the ease with which the work can be prosecuted; the first results being obtained in ten days, and the whole completed in twelve or fourteen. In the old methods, it was necessary to add a very large proportion of vinegar to the wine in order to transform a small quantity of the latter, so that from one tub of one hundred quarts only nine quarts of vinegar were furnished weekly; while by the new method nine and a half quarts can be furnished daily, or sixty-six in a week, being seven times as much as by the old method. In consequence of the more rapid preparation by the new process, the vinegar is less aromatic when completed, but very soon acquires this important quality.

**ADULTERATION OF WOOL.**—An additional illustration of the modern tendency to adulterate articles of commerce, (in this instance, fortunately, the result not being injurious to health,) we find in an advertisement in a recent German journal offering to sell the secret of a process by which wool, in the yarn or the fabric, can be made to weigh from 10 to 25 per cent. more than originally, according to the color desired, and without injury to the fiber or affecting the most delicate colors, or the physical character of the article in the slightest degree.

**PROTECTING GRAIN FIELDS FROM CROWS.**—An effective method of preventing the devastation, by crows, of fields that have been recently planted with grain, is said to consist in stretching cords, longitudinally and transversely, upon stakes, about a foot above the earth, and about ten paces apart.

**ADULTERATION OF CLOVER-SEED.**—A confidential circular from an enterprising German in Hamburg has lately come to light containing an offer to sell several tons of sand suitable for mixture with clover seed, the grains of which resemble the seed so closely that it is almost impossible to distinguish them by the eye. The writer of this circular announces that this sand is in great demand, especially in England, for purposes of adulteration. Two colors are supplied, one for red clover and one for white.

**NITROGEN IN MULBERRY LEAVES.**—Some important investigations were prosecuted, not long since, by Dr. Reichenbach upon the chemical composition of the leaves of the mulberry in connection with the silk-worm disease, in the course of which he ascertained that such leaves, as grown in Europe generally, had a much less percentage of nitrogenous matter than those of China and Japan. He has lately continued his inquiries by an analysis of leaves from Turkistan, and has found in these an unusual percentage of nitrogen, varying from 3.35 to 4.05 per cent. in the dry leaf.

In some accompanying remarks upon this paper by Liebig, stress is laid upon the importance of such investigations in determining *a priori* the value of different qualities of leaves for raising silk-worms, and it is stated that where nitrogen is deficient, the silk-worm suffers in its general health, and consequently in its ability to produce a healthy and abundant silk cocoon. The cause of the paucity of nitrogen in the European leaves is believed to be the result of long-continued cultivation of the tree in the same soil, and especially the use of leaves from trees that have attained their full size. In a growing plant, as the roots are perpetually pushing out into new and unexhausted soil, the proper supply of nourishment is obtained; but the moment a complete development of the tree is accomplished a diminution of nitrogen in the leaves commences, with the results indicated; so much so that a

yield of even  $2\frac{1}{2}$  to 3 per cent. of nitrogen from the dry leaves is not common.

**TANNIN IN THE MANUFACTURE OF BEER.**—We have already referred to the increasing use of tannin as obtained from the grape, in the treatment of wine, for the special object of arresting fermentation and preventing change beyond a desired point. A similar application is now made with much success in the preparation of beer; and the result, according to critical authority, has been to establish a new epoch in this manufacture. It is to the presence of tannin in the leaves of the hop that its preservative peculiarities are due; and in the tannin of the nut-gall we have the same agent in greater intensity, 75 grains of tannin exerting as positive an action upon beer as a pound of the best hops. By taking tannin dissolved in ten times its weight of warm water and adding it to the wort, a complete clarification will take place, and on cooling a deposit will be thrown down. In all cases where the peculiar aroma and bitter substance of hops are not desired, but a sweet wine or beer is to be produced, the hops can always be replaced completely and with advantage by the tannin. The use of this new material allows the manufacture of several new kinds of beer, and obviates the necessity of using any other modes of clarifying.

**MANGANESE IN BEECH-NUTS.**—It has lately been ascertained, in corroboration of experiments made some years ago, but to which little importance was attached, that beech-nuts contain a large percentage of manganese, although the soil in which they are grown may exhibit no appreciable trace of this metal.

**SUBSTANCES AFFECTING THE GERMINATION OF SEEDS.**—According to a late paper by Dr. Vogel, upon the influence of various substances on the germination of seeds, it is stated that among those most injurious in this respect are dilute acetic acid, and carbolic acid, although the substances in question are present in very small percentage. Solutions of hydrocyanic acid, arsenic, phosphorus, &c., were found to be much less injurious in the same proportion than those first mentioned. This explains the unsatisfactory nature of experiments for the destruction of insects on plants by means of solutions of carbolic acid; the insects, it is true, being killed by a very weak solution, while at the same time the plants themselves rarely survive.

**INFLUENCE OF CONDITIONS OF HEAT ON THE GROWTH OF PLANTS.**—A paper has lately been published by Köppen, upon the relationship of conditions of heat to the phenomena of growth in plants; his first inquiry being limited to the questions connected with the germination of the seed. The general conclusion arrived at was that variations of temperature were in all cases prejudicial to the growth of the germ, even when amounting to but a few degrees, and these within limits favorable to energetic growth. That is to say, the germination proceeds more rapidly at a low temperature of a uniform degree, than at a higher, where subjected to more or less variation. From this we derive the inference that a nearly uniform spring temperature, with a cloudy sky, is more favorable to rapid development of vegetation than the alternation of hot days and cool nights, it being of course understood that the mean temperature in each case is about the same.

**INK-PLANT OF NEW GRANADA.**—Among vegetable substances useful in the arts is one that has long been known in New Granada under the name of the ink-plant, as furnishing a juice which can be used in writing

without previous preparation. Characters traced with this substance have a reddish color at first, which turns to a deep black in a few hours. This juice is said to be really less liable to thicken than ordinary ink, and not to corrode steel pens. It resists the action of water, and is practically indelible. The plant is known as *Coryaria thymifolia*.

**MURRAY ON BLIGHT IN PLANTS.**—At a recent meeting of the scientific committee of the Horticultural Society of London, Mr. Andrew Murray read a paper on the blight of plants, in which he combated the ordinary theory that the lower forms of vegetable organisms, which constitute ordinary blight, are developed from germs existing in the plant, or floating in the air.

**ACTION OF ELECTRICITY ON THE COLORED TISSUES ON VEGETABLES.**—In a recent memoir by M. Becqu rel, the elder, upon the action of electricity upon the colored tissues of vegetables, he remarks that electrical discharges, whether strong or weak, produce three distinct actions upon the colors of the leaves of plants and the flower: First, that by virtue of which the parts electrized allow the coloring matters, which are in a state of solution in the cellules, to be absorbed, or rather filtered, in cold water, in which they are plunged after electrization. This effect takes place principally with red and blue colors; while the yellow shades, due to the solid granules situated in the cellules, do not appear to be modified. Second, a direct decolorizing action upon red and blue coloring matters, which are found in a liquid state in the cellules whenever the electrization of the plant is sufficiently prolonged, this effect being sometimes very rapid. Third, infiltration, so to speak, or a transfer of coloring matter sensible to the preceding influences, and that found in the interior of the electrized organs. An example is seen in the effect produced in the red, found in the under surface of leaves of the *Begonia discolor*, its color, during the electrization of the leaf, becoming gradually infiltrated towards the upper green surface, so as to mask the color of the chlorophyl. He further remarks, that the atmosphere and the earth are constantly in two dissimilar electrical conditions; the first possessing an excess of positive electricity; the second, of negative; these two excesses becoming neutralized by means of the conducting substances found at the surface of the earth, plants especially.

**OIL FROM BIRDS.**—Our readers may be surprised to learn that the oil obtained from several distinct species of birds possesses a decided economical value, and that various sorts are recognized as articles of trade in different parts of the world. In our own domestic medicine goose-grease is known as an emollient, and for other purposes. The penguins, petrels, mutton-birds, frigate-birds, Mother Cary's chickens, &c., all ocean forms, are sometimes killed, in immense numbers, for their oil, and to such an extent is the destruction of penguins carried, in this connection, that while the fat of eleven penguins is required to furnish a gallon of oil, a single vessel has been known to bring back, after a six weeks' campaign, twenty-five to thirty thousand gallons, representing, of course, over ten times that number of birds. This is taken to London and used almost exclusively in currying leather. Ostrich fat has much reputation in Africa as a remedy for rheumatism, and is greatly sought after by the Arabs for this purpose. The Emu, or Australian ostrich, is hunted very much for a similar purpose. A single bird will produce six or seven quarts of a beautiful, bright yellow oil.

In South America a species of goat-sucker, known as guacharo, (*Steatornis caripensis*), and remarkable for its excessive fatness, is hunted in

large numbers by the Indians, the young birds especially. This species differs from the ordinary goat-sucker in being almost exclusively a vegetable-feeder, the result of which is the deposit of a large quantity of fat under the skin. The oil is half liquid, transparent, and so pure that it will keep more than a year without becoming rancid. In many parts of North America the fat of the wild pigeon is said to be collected by the Indians, both as an oil for light and as a substitute for butter. Very recently a trade has sprung up in the Gulf States in oil obtained from the American pelican, which, we learn, is actually quoted in the market of New Orleans at about a dollar and a half per gallon. A fleet of small vessels is occupied in following up these birds in their different haunts, and killing them, although the process by which the oil is extracted is not indicated; nor is the reason given why the value of the product should be so great, compared with that of nearly all the other animal oils in market. It is much to be regretted that this new mode of extermination of our coast birds should have been initiated; and it may well be asked whether it is not the duty of the proper authorities to pass stringent laws prohibiting this practice.

**NEW DISEASE OF THE COFFEE-PLANT.**—According to M. J. Berkley, a disease has lately appeared in the coffee plantations of Ceylon which threatens to become of serious import. The albumen of the berry is developed sufficiently to present the usual convoluted appearance, but the growth appears to be suddenly arrested. As a result, the substance is not sufficiently solidified, and consequently it contracts and acquires a dusky tinge, in some cases becoming black. No indications of fungi were observed by Mr. Berkley. The disease has been attributed to sudden changes of weather, and it is thought to be possibly of no more than local development.

**NEW MILK-PRODUCING TREE.**—A new milk-producing tree in the Valley of the Amazon has lately been brought to the notice of Europeans. It is known as the *Massaranduba*, and appears to be a species of *Mimusops*, of the natural order *Sapotaceæ*. The wood is valuable, and used for various purposes, and the milk flows freely from the trunk upon incision, but hardens on exposure to the air, and then has an elastic property similar to that of gutta-percha. This juice is used as food when fresh, but never in its pure state, being either mixed with a small quantity of water, or with coffee or tea like ordinary milk.

**TREMELLAT PROCESS FOR PRESERVING GRAPES.**—A recent process for preserving grapes through the winter, introduced by M. Tremellat, ofarseilles, is commended in agricultural journals as answering its purpose better than many of the improved methods of the day. This depends upon the fact that, in the ordinary storage of grapes, a portion of the water, both of the stem and of the berry, is lost by evaporation, so that they dry up unless moisture is restored to them. To obviate this difficulty the bunches are cut in such a manner as to leave a considerable portion of the adjacent woody part of the vine, and are then suspended over a vessel filled with water, so that while only hanging near the surface of the water the ends of the stems are immersed. As the moisture evaporates from the grapes it is restored by capillary absorption through the stem, and no change takes place. By means of the arrangement thus indicated M. Tremellat has succeeded in keeping grapes from one year over into another, fresh and fair as in the moment of gathering, and his method is now used on a large scale in Paris and elsewhere.

**CHARLIER HORSESHOE.**—A new horseshoe introduced in Paris by M. Charlier has been favorably received. It consists of a narrow rim of iron, thoroughly protecting the edge of the hoof without cramping its sole in the least. The material to be used must be of the best quality, but the weight being considerably less, the cost is not increased. Thousands of horses of the many public conveyances in Paris have been provided with these shoes, and they give general satisfaction.

**THE EUROPEAN PLANE-TREE IN CITIES.**—No tree resists so well the smoke and impure air of European cities as the plane, (*Platanus occidentalis*), although it is not a native of that continent. It is the tree most generally seen in the churchyards, squares, and other open spaces in London, thriving well, and living to a considerable age. This is probably in part due to the fact of the outer layer of bark being shed yearly, and thus not becoming choked with smoke so that its functions are destroyed. The rows of young plane-trees planted along the recently opened portion of the Thames embankment, from the Houses of Parliament to Charing Cross and the Temple, are growing vigorously, and promise in a few years to afford a grateful shade, and to add much to the beauty of the banks of the river.

**REPORT ON THE POTATO DISEASE.**—The Prussian Agricultural Academy has been occupied since 1863 in making laborious investigations into the mode of propagation and possible prevention of the potato disease. A report of operations has recently been published, from which it appears that the following points, among others, may be considered as finally determined: First. A relationship and connection between the disease of the leaf and of the tuber, and the fact that the potato-fungus is the cause of the wet-rot of the potato. Second. The wintering of the mycelium of the fungus in the diseased tubers is considered well established and as needing no further verification. The mode of dissemination of the disease, however, is considered as requiring additional investigation, including the development of the mycelium of the infected tubers in the superficial portion of the young plant, as well as the formation of the leaf fungus. The inquiry is suggested also whether the first traces of the leaf disease in the summer come from the mycelium of the infected seed-potatoes of the previous year. Experiments are also proposed for ascertaining whether, if the young plants are completely protected from the entrance of fungus-spores from the exterior, a diseased mother bulb would produce diseased plants. The effort to find some convenient mode of disinfection of seed-potatoes for the purpose of preventing the disease has not, so far, met with any satisfactory result. It is possible, of course, to destroy the mycelium of the fungus in the tuber by various means; but this generally injures the bud at the same time and prevents its growth.

One very important feature accomplished by these inquiries is the ascertaining that different varieties of potatoes vary extremely in their susceptibility to disease, some kinds being much easier of infection than others. It is suggested that the collateral inquiry be carried out for the determination of the best varieties of potatoes which enjoy a greater or less immunity from attack. What it is, in the plant or tuber, that causes this condition is not yet ascertained, and it is thought that possibly when the cause is known the more sensitive varieties may be so modified as to have an equal advantage. According to some the difference consists in the degree of smoothness of the external skin of the potato, while others maintain that it depends upon the thickness of the skin.



**SPECIFIC GRAVITY TEST FOR POTATOES.**—It is generally understood that the value of potatoes depends upon their specific gravity, and that the heavier the potato the greater the amount of nitrogenous matter it contains. This has suggested the idea of a convenient test by which the excellence of different varieties can be readily determined, and which consists in the use of saline solutions of different degrees of strength. If, assuming one variety as a standard, we make a solution of such strength that the potato will float at about the middle of the mass, neither falling to the bottom nor rising to the surface, and apply the same test to other potatoes, we may conclude that if one fall to the bottom it is better, or if it rise to the top it is poorer, than the standard. A series of standards has been suggested, therefore, by Dr. Neslee, of definite percentages of salt and water, thus producing a sliding scale applicable under any circumstances for the test in question.

**POISON FROM THE SHADE OF THE MANZANILLA.**—Mr. Karsten has lately published the detail of observations made upon himself, in reference to poison by exposure to the shade of the manzanilla tree, (*Hippomane manzanilla*.) After remaining several hours under the tree, he experienced a burning sensation over the entire surface of his body, which at length centered in certain parts of the skin, especially about the face, and above all around the eyes. After a time the eyes were swelled so as to be almost closed, and were so sensitive that for several days he found it necessary to remain in a perfectly-darkened room, being also in great pain. After three days the swelling diminished, and the epidermis began to peel off. These symptoms he supposed to be the result of poisonous exhalations from the tree, a peculiarity which is shared with the manzanilla in South America by several other species of plants. An analogue of these deleterious exhalations may be seen in certain volatile organic bases, such as trimethylamin; and it is suggested that similar nitrogenous combinations may have a much wider distribution than has hitherto been suspected.

### FACTS FROM VARIOUS SOURCES.

**EXPERIMENTS WITH WHEAT.**—Mr. J. I. Carter, superintendent, reports the results of experiments with sixty-nine varieties of wheat at the Eastern Experimental Farm, Chester County, Pennsylvania. Most of the varieties have done well, free from smut, rust, or blight to any great extent. The time of cutting, the weight of straw, and the yield of grain per acre are given as follows:

Quality.	Whencut.	Straw.	Wheat.	Quality.	Whencut.	Straw.	Wheat.
		<i>Pounds.</i>	<i>Bushels.</i>			<i>Pounds.</i>	<i>Bushels.</i>
S. White Blue Stem . . .	June 22	3,348	19.73	B. Week's White . . . . .	June 28	3,366	32.40
S. Diehl . . . . .	June 28	2,848	21.86	S. & B. Rough & Ready .	June 28	3,504	32.26
S. B. White Touzelle, (last year's product.)	June 28	3,600	26.13	B. Brittany . . . . .	June 28	3,696	32.00
S. B. White Touzelle, (recent importation.)	June 28	3,600	25.93	B. Light Red Chaff Med- iterranean Amber.	June 28	3,344	31.20
B. Mountain . . . . .	June 28	2,848	24.53	S. Early Georgia . . . . .	June 24	2,640	18.66
B. Polish . . . . .	June 28	3,376	14.13	B. Red Bearded Suisse	June 28	3,504	25.66
B. Jennings . . . . .	June 24	2,876	23.53	S. Arnold No. 1 . . . do . .	June 28	3,424	26.13
S. Talavera . . . . .	July 5	2,923	17.06	S. Arnold No. 2 . . . do . .	June 28	2,752	26.66
S. Rough Chaff . . . . .	July 5	2,904	15.20	S. Arnold No. 3 . . . do . .	June 28	3,008	23.46
S. Model White . . . . .	June 28	2,504	18.26	S. Arnold No. 4 . . . do . .	June 28	2,784	26.13
S. Tappahannock . . . .	June 24	3,152	21.86	S. Arnold No. 5 . . . do . .	June 28	3,392	25.60
S. Rogers's . . . . .	June 28	3,844	37.60	S. Arnold No. 6 . . . do . .	June 28	3,552	22.93
				S. Arnold No. 7 . . . do . .	June 28	3,552	25.08

Quality.	When cut.	Straw.	Wheat.	Quality.	When cut.	Straw.	Wheat.
		<i>Pounds.</i>	<i>Bushels.</i>			<i>Pounds.</i>	<i>Bushels.</i>
S. Arnold No. 8 Suissetto	June 23	3, 328	26. 66	B. Old White Chaff	June 28	4, 704	37. 86
S. Arnold No. 9 . . . do . . .	June 23	3, 228	22. 43	Mediterranean.			
B. Baard, (Cape of Good Hope.)	June 23	1, 936	15. 70	S. and B. Treadwell . . .	June 23	3, 760	29. 86
S. Du Loits, (Cape of Good Hope.)	June 24	2, 000	15. 73	B. Russian Amber . . . .	June 23	3, 428	30. 86
S. French Wheat, (introduced into Cape Colony in 1860.)	June 23	2, 464	15. 46.	B. Rae's Amber . . . . .	June 24	2, 736	26. 66
B. Black Ear, (Cape of Good Hope.)	June 23	976	500	B. Prolific Amber . . . .	June 24	2, 640	27. 46
S. White Surrey, (Cape of Good Hope.)	July 5	2, 952	11. 61	S. German Amber . . . . .	June 24	2, 528	21. 06
B. Golden Ball, (Cape of Good Hope.)	June 23	2, 424	20. 40	B. French Red Chaff . . .	June 23	2, 924	23. 66
B. Knopjes or Liebrits, (Cape of Good Hope.)	June 23	3, 072	9. 60	S. Hungarian Red . . . .	July 5	2, 128	16. 80
B. Strydoms, (Cape of Good Hope.)	June 23	2, 592	16. 00	S. Berdenska Red . . . .	June 23	3, 456	11. 73
S. Brink's, (Cape of Good Hope.)	June 24	1, 152	4. 80	B. American White . . . .	June 23	2, 656	19. 73
B. Bengal White, (Cape of Good Hope.)	June 23	1, 536	8. 00	B. Shade Mountain White.	June 28	2, 896	21. 06
B. White Australian . . .	June 23	2, 896	18. 80	S. Orceina . . . . .	June 28	1, 712	12. 00
S. Italian Red . . . . .	June 23	4, 240	27. 46	S. Salla Red . . . . .	July 5	2, 032	9. 86
B. French White Chaff Mediterranean.	June 23	3, 952	33. 33	S. California White . . .	June 23	2, 192	21. 06
B. Parker's Italian . . . .	June 24	3, 792	34. 66	S. Italian White . . . . .	June 23	2, 288	19. 46
S. and B. Witter . . . . .	June 23	3, 792	36. 53	B. Old Red Chaff Mediterranean.	June 28	2, 752	23. 46
B. White Chaff Mediterranean, (recent importation.)	June 23	4, 536	36. 13	B. Lancaster Red . . . .	June 28	2, 672	23. 73
				B. Ancona Red . . . . .	June 28	2, 336	20. 80
				B. Bohemia Red . . . . .	July 5	2, 304	13. 26
				B. Sakonka Red . . . . .	June 28	2, 992	16. 26
				B. Rochester Red . . . .	June 28	3, 024	24. 26
				S. Extra Early Jersey . .	June 24	2, 688	19. 20
				B. Michigan Amber . . . .	June 28	2, 976	22. 66
				B. Sandouira White . . . .	July 5	3, 344	12. 53
				B. Potts . . . . .	July 3	-----	20. 00
				B. Lancaster Early . . . .	July 3	-----	22. 80

NOTE.—S. smooth; B. bearded; S. B. short beards; S. and B. both smooth and bearded heads.

**EXCELSIOR OATS.**—Mr. S. S. Fenn, of Nez Percés County, Idaho, received from this Department, in the spring of 1869, two and a half pounds of the Excelsior oats. He sowed the seed about the 1st of June, and harvested 179 pounds. This product was sown the following year, and produced 194½ bushels, weighing 49 pounds per bushel. The land was irrigated and otherwise prepared with great care.

In another case one acre was sown with the Excelsior oats about the last of May, 1870, and 79½ bushels, of 49 pounds each, were harvested. This crop was raised on high and dry ground, without irrigation. The straw was bright and strong, and averaged 4 feet above ground. The common varieties of oats cultivated in that region average only 60 bushels, weighing 34 pounds each, and were considered an excellent crop when raised without irrigation. Other attempts at the cultivation of these oats in this region have met with flattering results.

**OLIVE CULTURE IN GEORGIA.**—Mr. P. M. Nightingale, of Brunswick, Georgia, writes us his observations and experience in the culture of the olive, and the manufacture of olive oil, as follows:

I have successfully cultivated the olive on Cumberland Island, my former place of residence, and before the war I made a very superior quality of sweet-oil, pronounced by very good judges to be quite equal, if not superior, to the best that has been imported. The olive grows with little care and great rapidity on Cumberland Island, and it is the impression of all who have seen the grove on that island, that the trees compare very favorably in point of size with those in Europe. They bear nearly every year, and produce two to three bushels of fruit to the tree. Each bushel of olives will yield one to two gallons of oil. I also succeeded in pickling the olives, but not to my entire satisfaction. This process is more difficult, and requires more care and judgment than extracting and preparing the oil. The fruit must be in exactly the right state for pickling. If that stage is passed, the pickles, though very nice at first, will not keep. If, on the contrary, the fruit is gathered for this process before it is sufficiently matured, it becomes hard and tasteless. The olive tree is easily propagated from cuttings, layers or shorts, or by ingrafting into the root. It begins to bear in about six years, but does not produce abundantly until it is ten or twelve years old. When matured it is larger than the largest apple tree. The oldest trees on Cumber-

land Island were planted by Mrs. Greene, the widow of General Nathaniel Greene, in 1793, and they are still fine vigorous trees, and may live a century longer. They are not subject to the devastations of the insect which has seriously injured the orange trees in Southern Georgia and in Florida for thirty years past. Mrs. Greene commenced the cultivation of the olive on Cumberland Island at the special recommendation of Mr. Jefferson.

**LOTUS AND THE VINE IN MICHIGAN.**—Mr. Thomas Whelpley, of Monroe, Michigan, writes to the Department as follows :

The *Nelumbum luteum*, or lotus of Asia, that I reported to the Smithsonian Institution in 1851 as existing in our bayous, though scarce and feeble, has since that time been rapidly spreading and increasing in vigor and proportions, until now we have hundreds of acres of our marshes and bayous occupied by it in solid masses, overriding and displacing all other water vegetation in its way. They turn out corollas 12 inches, toruses 6 inches, and leaves 30 inches in diameter, as a common thing. Some toruses mature 30 to 35 nuts, large and sweet as filberts, indicating an extraordinary mildness of climate for so high a latitude. (See Agricultural Report, 1861, p. 171.)

The mouth of the river Raisin this day rivals the famous Rhine, in Germany, in richness and luxuriance of vintage. The six miles square, including the city of Monroe, turned out last year 16,000 gallons of wine that is actually displacing the German Rhine wine in our midst, and the vintage of this year promises to double that of last.

**SIXTY-NINE BUSHELS TO THE ACRE.**—The San Joaquin Republican is informed that 58 acres of wheat on Sherman Island has this year produced 4,000 bushels of grain—very nearly 69 bushels to the acre. The same authority reports a yield of 6 tons of hay to the *acre* on the island. This island is reclaimed tule land. The American Rural Home, Rochester, New York, reports a yield of a trifle over 40 bushels per acre of the Diehl wheat, on between eight and nine acres in Monroe County. The soil on this farm is largely clay, deep and fertile. The owner seldom plows less than 12 inches in depth, using a strong team and a large Wiard plow. The furrows are leveled with a harrow, and the soil is then thoroughly disintegrated with a wheel-cultivator with teeth 15 inches long and drawn by four horses. The seed-bed is worked 12 inches deep; then it rests awhile and settles, and the seed is drilled in. James H. Graham, of Mason, Michigan, reports a yield of 35½ bushels per acre on a field of five acres; and Mr. C. T. Beck, of Monroe, 37 bushels 6 quarts per acre on a field of 5¼ acres. Mr. Joseph E. Roberts, of Burlington County, New Jersey, reports a yield of 412 bushels on 13 acres—over 31½ bushels per acre. Several crops of over 30 bushels to the acre are reported from the same neighborhood.

**PREMIUMS FOR COTTON.**—In connection with the fair of the St. Louis Agricultural and Mechanical Association, to be held in that city for one week from October 2, there will be held the exposition of the Woolen and Cotton Manufacturers' Association of the West and South. The merchants and manufacturers of St. Louis have contributed \$10,000 to be awarded in premiums for cotton, which amount will be distributed as follows: For the best bale of long or short staple cotton raised in Tennessee, \$500; for second-best bale, \$250; for the third-best bale, \$100. The same amounts will be paid, under the same conditions, for the best, second-best, and third-best cotton products of the States of Mississippi, Texas, Louisiana, Arkansas, Alabama, Georgia, South Carolina, North Carolina, and Missouri, respectively. A premium of \$500 is also offered for the best bale of cotton raised from Peeler, Dickson, Silk, Lace, or any other improved seed; and \$1,000 for the best bale of long or short staple cotton raised in any State. These large premiums will doubtless draw out many competitors and insure a fine display of the staple.

The Cincinnati Industrial Exposition of 1871 offer premiums amounting to \$2,450 for the best bales of cotton from Texas, Louisiana, Arkansas, Tennessee, Mississippi, Alabama, and Georgia; the premiums being,

respectively, \$250 for the best bale, and \$100 for the second-best bale, from each State. In addition, a large gold medal is to be given for the best bale among the total receipts from these States. Cotton will be admitted for entry up to September 30.

**NATIONAL AGRICULTURAL ASSOCIATION.**—The Tennessee Agricultural and Mechanical Association has issued circular letters inviting all societies of like description throughout the United States to meet in congress at Nashville, Tennessee, October 3, 1871, for the purpose of forming a national agricultural association. The object of this movement is to secure, by concerted action, unity and harmony in the promotion of agriculture, and to increase the advantages offered by experience, skill, and science, in its development. Each society taking part in the congress will be entitled to one delegate for every fifty members, or fractional part of that number. Manufacturers of agricultural implements, throughout the United States, are invited to exhibit their articles at a national exposition during the State Fair.

**ADDRESS OF DR. GEORGE B. LORING.**—Dr. George B. Loring, in an address before the New England Agricultural Society, at Lowell, Massachusetts, September 8, urged upon mechanics and others engaged in daily labor in large cities and towns the propriety of securing rural homes within reach of their daily avocations, thus advancing the health and moral well-being of themselves and their families, and establishing a surer basis of material prosperity. The address also contains these suggestive remarks on the pecuniary condition of the agricultural population of Massachusetts:

I think I may safely say that we have no industrious farmers who are poor, and very few farms, unless it be those which are in the hands of what are called fancy farmers, which are unprofitable. The homesteads of the agricultural community are in good condition; good houses, good barns, and well-tilled fields greeting you on every hand. Farms which were mortgaged ten years ago are now free from incumbrance; and even while the debts resting upon them have been paid, it would be difficult to estimate the amount of money which has been drawn from them in the shape of taxes for general and local purposes, and of contributions to all charitable purposes.

**SOILING CROPS.**—Mr. E. W. Stewart gives the following as a good division of soiling crops when twenty cows are wholly soiled: *First*, two and a half acres of winter-rye, sown late in August or early in September, in the Middle and New England States; but may be somewhat later in the season in the South. Cut in the spring before the heads form, so that it will immediately commence a new growth. Under favorable conditions of soil and climate, rye may be cut in the way recommended every three weeks. *Second*, two and a half acres of orchard-grass and early clover, sown together, and cut just before coming into blossom. Three cuttings may be obtained on good ground in moist seasons. Sow twenty pounds of orchard-grass and twelve pounds of clover to the acre on land in fine tilth and well manured. *Third*, two and a half acres of timothy and large red clover, to be cut before coming into blossom. Ten pounds of timothy-seed and ten pounds of clover-seed to the acre will be sufficient. *Fourth*, two and a half acres of oats, sown early in April, at the rate of three or four bushels of seed to the acre, to be cut while in blossom. *Fifth*, four acres of corn, sown as follows: one acre each on the 20th of May, and on the 1st, 10th, and 20th of June. The rotation recommended will permit the feeding of a variety of food to stock at the same time, as clover with corn—a practice always desirable.

**IRRIGATION IN CALIFORNIA.**—For two years the wheat crop in California has suffered greatly from drought, and the journals of that State

are earnestly advocating the more extended construction of irrigating, canals as a safeguard for the future. The Stockton Independent claims that San Joaquin County would at this moment have been richer by one million of dollars had a canal been constructed last year to carry the waters of the Mokelumne upon the plains.

The canal which is being constructed from the San Joaquin River, near Firebaugh's Ferry, Fresno County, California, for the irrigation of the plains west of that river, will be about one hundred and ten miles in length. At the middle of August four hundred men and three hundred teams were pushing forward the work at the rate of two-thirds of a mile per day, and thirty-five miles of the canal had been completed. Its width at the bottom is thirty-two feet; at the top, forty-eight feet. The excavation is two feet in depth, but embankments are carried up on the sides to the height of four feet above the level of the plain, making the entire depth six feet. The canal is also designed for navigation.

CHINESE LABOR IN LOUISIANA.—Mr. J. Y. Gilmore, editor of the Louisiana Sugar-Bowl, gives a favorable account of the working of Chinese labor on seven plantations in the parishes of St. Mary, Terrebonne, Lafourche, and Assumption, in that State, the total number of Chinamen employed on these plantations being about two hundred and fifty. Two hundred of these were imported in one cargo, and previous to arrival had been, for the most part, unaccustomed to agricultural labor. These are scattered among five plantations, where they receive \$13 per month and rations, lost time being charged against them, and three-thirteenths of their wages held in reserve till the expiration of their contract for three years, or an equivalent of nine hundred and thirty-six days of actual work. Their rations consist of one and three-quarters pounds of rice and one-half pound of pork daily, and they receive medical attendance and rations when sick. A majority of those planters and overseers with whom Mr. Gilmore conversed preferred Chinamen to negroes, the former being the more easily managed, and doing better work, though requiring more time for performance than the latter.

FRUIT IN PERRY COUNTY, PENNSYLVANIA.—A correspondent writes: most of our apple-orchards contain few of the best varieties—generally young trees. The most reliable for productiveness are the Baldwin, Tulpehocken, Wilderness, and Maiden's Blush, in the order named. Our peaches are chiefly from seedling trees. Hale's Early, Oldmixon, and Crawford's Late do well, considering that the peach crop is very uncertain here, except in a few favored localities. Pears are also uncertain, Louise Bonne de Jersey, Buffum, and Beurré d'Anjou being the most reliable among the varieties tried. Plums do quite well when the curculio is not unusually destructive. More than twenty varieties of American grapes have been tried by me. Concord, Creveling, Union Village, Ives, Martha, Hartford Prolific, and Clinton are reliable. I have never seen mildew on Ives, Creveling, or Union Village. Delaware and Rogers's 15 mildew frequently; Maxatawney more or less every year.

THE CALIFORNIA FRUIT-TRADE.—The growing importance of the overland trade in California fruit is shown by the following statements: From July 20 to August 1, of the present year, four houses in Sacramento forwarded to points on the overland railroad, beyond the State line, shipments of fruit averaging over eleven and one-half tons daily; pears, peaches, apples, plums, grapes, &c. Producers received, per pound, on an average, for pears  $2\frac{1}{2}$  cents; peaches,  $2\frac{1}{2}$  cents; apples,  $1\frac{1}{2}$

cents; plums, 3 cents; grapes, 3 cents. According to estimate, the length of the shipping season would be about ninety days, producers receiving for this period a total of \$49,500 on shipments from Sacramento; and the total of shipments from Marysville, Lincoln, and Auburn would equal that from Sacramento. In addition to these amounts, other points in California make large shipments.

**TRANS-CONTINENTAL TRADE.**—During the present year the commerce of San Francisco with China and Japan has very largely increased. July 15th the steamship *America*, from China and Japan, brought 25,215 packages of tea, of which 16,357 packages were in transit for eastern cities, overland; besides 514 packages of silk for the East, by rail. In addition to this very large cargo of teas and silk, the steamer also brought 800 bales of hemp, 300 bags of coffee, oils, spices, and chowchow, and of treasure \$83,000. August 13th the steamer *Japan* brought 42,821 packages of teas, 1,025 of silk, and 1,663 of assorted merchandise. This is much the largest single importation of teas that ever entered an American port. Of this quantity no less than 29,735 packages were for New York, 2,092 for Boston, 263 for Philadelphia, 135 for Cincinnati, and 4,599 for Chicago, making a total of 36,824 packages for Atlantic and western markets. The *Japan* was thirty-three days in making the trip from Hong-Kong, and twenty-three days in coming from Yokohama. The *San Francisco Commercial Herald*, of August 18, states that 30,000 tons of teas, silks, &c., were awaiting shipment to America from Asiatic ports at the time of the sailing of the *Japan*, the greater part of which would probably come to that city. Our trade with Asia, by way of San Francisco and the Union Pacific Railway, has suddenly assumed very large and gratifying proportions.

**SILK-CULTURE IN UTAH.**—Reports of success with silk-worms in Utah are increasingly frequent. The worms have been healthy under proper treatment, and the yield of cocoons satisfactory in style and soundness. Samuel Carnaby, of Spanish Fork, states that upward of fifty families in his neighborhood have produced silk this season. He has silk from worms fed upon osage orange, and reports a successful experience of four years in the exclusive use of that plant.

**SASSAFRAS-OIL.**—In Richmond, Virginia, a firm of colored persons has for two years manufactured sassafras-oil on a large scale. The root is purchased at the factory at the rate of 30 cents per hundred pounds, and 40,000 pounds are used per week, producing 2 per cent., or 800 pounds of unrectified oil. Since this establishment commenced operations, other factories of like description have been started in Virginia. Sassafras-oil is used for scenting toilet soaps, flavoring tobacco, &c.

**COTTON IN CALIFORNIA.**—Recent accounts from California state that the cotton plantation on the Merced River bottoms is giving an excellent promise, and that southern experts who have visited the region pronounce its climatic conditions more favorable to the crop than those of the best portions of the South.

**THE LOUISIANA ORANGE CROP.**—The Louisiana Sugar-Bowl says that, notwithstanding the severity of the past winter, which greatly injured the orange-trees in some localities, where the branches were not killed by the freeze, they are, in every locality in Western Louisiana, well filled with fruit. The crop is a very sure one along the water-courses in Southern Louisiana. The lower Tèche, Atchafalaya, Bœuf, Black, Du Large, Grand Caillou, Little Caillou, Lower Bayou Terrebonne, Le Bleu, and

Bayou Lafourche, are all well adapted to the growth of the tree, and generally have good facilities for shipping the fruit to market.

**THE DESTRUCTION OF SHADE-TREES.**—The wanton destruction of shade-trees is meeting with just condemnation in influential quarters in England. The Gardeners' Chronicle calls for the appointment in each town and city of a public officer, to be called the conservator of trees, whose duty it shall be to protect from ruthless destruction all ornamental and shade-trees on the line of public highways and side-walks. Officers with similar powers are needed in this country.

**RICE-CULTURE IN CALIFORNIA.**—The Sacramento Bee states that rice-culture has been successful in the swamp lands. In district No. 28, two persons planted a few acres in rice, last year, with results so encouraging as to induce them to greatly extend their enterprise this year. There is reason to believe that this branch of production may be greatly enlarged in these swamp lands.

**TEA-SEED FROM JAPAN.**—W. W. Hollister, of Santa Barbara, California, has received fifteen to twenty bushels of tea-seed, from Japan, to plant on his farm near Santa Barbara.

**CHEAP COOKING APPARATUS.**—E. C. Coombs, of Cherokee, Iowa, states that he uses, in cooking food for stock, a box, chiefly of 2-inch oak plank, made flaring, the length being 8 feet, the depth 2 feet, and the width 2 feet at bottom and  $2\frac{1}{2}$  feet at top. The bottom of the box is made of heavy sheet iron, lapping on the sides and ends. The box is set on a brick or stone flue, and is found especially valuable in cooking corn on the ear for hogs.

**CATTLE-DISEASE IN DAKOTA TERRITORY.**—A note has been received from the post-surgeon of Fort Randall, J. Frazee Boughter, M. D., giving the following statement concerning the disease among the cattle of that vicinity:

A disease has appeared among the cattle at this post; over fifty head have died in less than four months. The animals are generally sick only a few hours before dying. The disease I regard as a blood-poison, of some malignant nature; the spleen and liver are the organs principally affected. If you can give me some information, or refer me to some authorities, I shall be greatly obliged. I think the disease here is the so-called "splenic fever."

It may be the Texas cattle-fever, if we may judge from the reference to the organs mainly implicated. What are the other symptoms? Are Texas herds, recently arrived, kept in the neighborhood, or have any such herds been driven over the feeding-grounds of the native stock? .

• **THE WESTERN CATTLE-BLINDNESS.**—A singular disease of the eyes, resulting in blindness, is prevailing among cattle in Western Missouri. In the early stage of the disease the eyes commence swelling, at the same time running water. The swelling lasts from five to fourteen days, and when the discharge of water ceases, a firm white film covers the eyes, completely destroying sight. The disease is said not to impair the general health of the animal. The Kansas City Times, (Jackson County, Missouri,) states that this "epidemic" is spreading rapidly through that county, and along the line of the Memphis and Kansas City Railroad. In Independence from thirty to forty cattle, some of them very fine animals, are completely blind, and in Kansas City there are two hundred blind cows, some of the dairies having had fifteen blind milkers at one time.

**THE STATISTICS OF LABOR.**—In 1869 the State of Massachusetts instituted a bureau of statistics, whose office it is to collect, assort, systematize, and present, in annual reports to the legislature, statistical details relating to all departments of labor in the commonwealth, especially in its relations to the commercial, industrial, social, educational, and sanitary condition of the laboring classes, and to the permanent prosperity of the productive industry of the commonwealth. General Henry K. Oliver, the chief of this bureau, has presented two reports, in volumes covering more than a thousand octavo pages, and has given a full history of "labor reform" movements and their antecedents, "dependencies, and contingencies," not only in our own country but in England. Acting upon this example, the State of New Hampshire, through its legislature, has recently instructed its governor to appoint a committee of three persons to collect material and present a plan for the organization of a bureau of labor statistics, to be established at the next session of the legislature. The relations of capital to labor are everywhere but imperfectly understood, and any light that may be thrown upon them, especially with the view of harmonizing their interests, will be timely and valuable.

**INLAND FISHERIES.**—The attorney general for South Carolina, in an official opinion directed to the acting commissioner of agricultural statistics of that State, declares that the uniform legislation of the State since 1780, has been in favor of protecting the inland fisheries, by making unlawful all obstructions to the free passage of migratory fish from the ocean through the rivers to the creeks and smaller streams. All such obstructions are declared by law public nuisances, which the parties aggrieved may summarily abate.

The act of January 19, 1870, provides for a board of fish commissioners, to inspect all inland streams, and to report to the legislature any obstructions or impurities permitted to flow into them. It is, further, their duty to report violations of the fish laws to the solicitors of the various judicial circuits, in order that offenders may be prosecuted. At the late session of the legislature, the leading features of former laws were embodied in a new statute forbidding any obstruction, and designating as "close time" in each week from Saturday night to Monday morning, during which it is unlawful to take fish. Effective penalties are prescribed for violations of the act.

The commissioner of agricultural statistics, in a note to this Department, promises a vigorous effort, with the assistance of the law officers, to remove existing illegal obstructions, and to admit the passage of migratory fishes to the inland streams.

**UNJUST DEALINGS WITH FARMERS.**—An Illinois correspondent complains of the practices of buyers in his region, who, in their dealings with farmers, contrive to obtain 60 pounds of shelled corn to the bushel, or 72 pounds in the ear, dry, selling the same in the Chicago market at the legal rate of 56 pounds of shelled corn to the bushel, equivalent to 70 pounds of dry ear-corn. Rye is also bought from first hands at 60 pounds to the bushel, and put on the market at the legal rate of 56 pounds. He urges farmers to make common cause against these practices, and wherever they are persisted in, to club and ship their corn &c., directly to the large markets. A united protest and refusal to sell at unlegalized rates will remedy the injustice.

**SALE OF BERKSHIRE HOGS.**—A company of gentlemen residing in Scott County, Kentucky, known as the Scott County Importing Com-



pany, some time ago sent an agent to England, who purchased a number of the finest Berkshire hogs to be found in the best herds of that country. The sale of this stock took place on Thursday, July 13, at the farm of Mr. Barbee, near Georgetown, and attracted a large attendance. Eighteen animals were sold at an average of \$171 each. One sow sold for \$510, another for \$335, and another for \$300. The lowest figures for a sow were \$65. The highest price for a boar was \$160 and the lowest \$80.

**A NEW HEDGE-PLANT.**—The Kangaroo hedge-plant is about to be tried in California. It is a native of Australia, where it is largely used for fencing purposes, is a rapid grower, and peculiarly adapted to dry soils. The success of Australian timber trees in California augurs well for the result of this new experiment.

**BEE-KEEPING.**—There is a growing interest in this specialty, and bee-keepers' associations have been organized in many States. Two national associations have been formed, one in December, 1870, and the other in February of the present year, both of which will meet at Cleveland, Ohio, in December, 1871.

**THE CLIMATE OF ASTORIA, OREGON.**—Mr. Lewis Wilson, of Astoria, Oregon, has compiled the following table of the monthly mean temperature of that place since 1865, three observations having been made daily:

	1866.	1867.	1868.	1869.	1870.
January .....	37.3	41.7	29.4	41.7	41.2
February .....	37.1	39.4	39.2	41.6	42.3
March .....	44.1	37.2	42.7	47.7	41.0
April .....	46.5	46.5	48.6	50.4	48.5
May .....	51.0	52.6	52.2	55.1	52.2
June .....	55.0	56.3	56.1	59.8	57.4
July .....	59.5	60.6	59.9	60.1	.....
August .....	59.2	60.4	59.5	58.5	.....
September .....	57.7	57.4	54.5	57.0	.....
October .....	52.7	50.6	52.2	52.2	.....
November .....	48.2	47.3	45.6	47.8	.....
December .....	44.1	42.6	44.1	42.2	.....
Annual mean .....	49.4	49.3	48.6	51.2	.....

**DROUGHT IN GEORGIA.**—A correspondent at Cartersville, Georgia, states that drought is much more prevalent in North Georgia now than formerly, owing probably to destruction of forests on the line of march of the two armies during the war. Wheat, with the seed ordinarily used, has ceased to be remunerative.

**AN ENGLISH PRIZE FARM.**—The prize offered by the Royal Agricultural Society, of England, for the best farm of the year, has been adjudged to Mr. Forrester, Sherlowe, High Ercall, near Wellington. His farm has been cultivated by him for more than twenty years, on the principle of a four-course rotation—wheat, barley, turnips, and clover. It comprises 400 acres, of which less than 300 acres are arable, the soil being characterized as good, but not of the best quality. Nine horses are employed and do all the work easily. Twenty tons of manufactured turnip-manures and two tons of nitrate of soda are used annually, besides large quantities of farm-yard manure from cake-fed animals. The annual meat product of the herds and flocks of the farm

is, approximately, 28 Herefords, between the ages of two and a half years and three years, selling for £30 each, amounting to £840, and 200 fat shearlings, fifteen months old, selling for £2 10s. each, amounting to £500; making the value of the annual meat product £1,340, exclusive of hogs fed, but not bred, on the farm. There are 72 acres in wheat, giving an average of 34 bushels per acre, or a total of 2,448 bushels; and an equal area in barley gives an average of 47 bushels per acre, or a total of 3,384 bushels.

**PROTECTION OF ANIMALS IN BELGIUM.**—The “Société Royale Protectrice des Animaux” held its annual session on Sunday, May 21, 1871, M. Aug. Visscher, the president, in the chair. The report of the secretary, upon the labors of the society during 1870, was read. Among the interesting points presented was the project of a confederative union of the animal-protective societies of Belgium, an idea which, however, had been found very difficult to realize. The tendency to organize independent associations in different provinces is strongly deprecated. The society has been very active in the work of publication. In addition to its Monthly Official Bulletin, it purchased a newspaper—*L'Album Populaire*—of considerable circulation, reduced its price 50 per cent., and gave it a new character of devotion to the humane mission of benevolence to animals. It also published several works bearing upon the subject. For all its publications it has found an increasing demand, showing that the cause it represents is winning its way to the popular heart. During the year 1870 not less than eighty medals were distributed, mostly among hackney coachmen, for services in bringing to justice cases of cruelty to horses, perpetrated by men of their own calling. In the prosecution of cases of this character, the society has manifested an energy and determination which have gone far toward the repression of cruelty. During the last year, in Brussels alone, seventy-five offenses were prosecuted to conviction; of these, fifteen were for the maltreatment of horses, nine for maltreatment of dogs, and one for cruelty to a cat. In thirteen cases, in addition to the payment of damages done to the animals, imprisonment varying from one to five days was added. The omnibus companies, in reply to the letters addressed them by the president of the society, promise strict compliance with the law fixing the number of passengers that may be transported in each vehicle. An American street-railroad had been built, the director of which sympathizes with the objects of the society and asked admission to membership.

**GROWING MADDER IN ENGLAND.**—Experiments made by Mr. Sidebotham, in England, in the cultivation of madder for dyeing purposes, have proved substantially a failure. The roots were nearly equal in size to fine French roots, but showed in fracture an orange or yellow, instead of a deep red color. On application to fabrics the dyes derived from the madder appeared at first full in color, but, on being cleared with soap, proved quite the contrary, resembling Dutch madder, the purple element almost entirely wanting, and the reds and pinks weak and loose. M. Sidebotham inclines to the opinion that good madder cannot be grown in England.

**THE FOOT AND MOUTH DISEASE.**—This disease is spreading in Glasgow, Scotland. The last week in August the inspector seized upward of one hundred head. In Lancashire, England, reports are made daily of fresh outbreaks. The disease is extremely prevalent in West Derby Hundred, and in the north of Amounderness Hundred. In Fulwood and

Broughton, in the neighborhood of Preston, thirty-five farms are declared infected; and in Leyland Hundred ninety farms have been reported. The inspector reports that the disease has made its appearance on twenty farms in Halsted, Febmarsh, Lamarsh, &c., nearly two hundred cattle and pigs being affected.

**HEALTHFULNESS OF SEWAGE-FERTILIZED PRODUCTS.**—On the 26th of July several members of the Essex Chamber of Agriculture paid a visit of inspection to the farm of Mr. W. V. Hope, which is irrigated with the Romford sewage, and subsequently held a meeting in the town of Romford, to discuss the subject of legislation affecting the utilization of sewage. In the course of an address before the meeting, Mr. Hope stated that one of the objections to the utilization of sewage by irrigation, advanced by Dr. Cobbold, that it would produce parasites in cattle fed upon the land thus irrigated, and that the eggs of those parasites would be taken into the stomachs of the people, had been refuted by an experiment he had recently made. He had fed an ox for twenty-two months on sewage-produce—grass, mangel-wurzel, cabbage-leaves, and very often the rakings of the grass. The animal was slaughtered on the 15th of July, in the presence of Dr. Cobbold and other scientific gentlemen, and after it had been minutely dissected and examined, these gentlemen failed to detect any trace of disease whatever, and Dr. Cobbold was entirely converted to sewage irrigation. The meeting adopted a resolution declaring, “That, in view of the large amount of foreign wheat paid for every year by the population of England, and the large amount of manure wasted in polluting rivers with town sewage, it is desirable that such pollution should now be prohibited by legislative enactment.”

**A STEAM-DITCHER.**—A steam ditching-machine recently exhibited at Wolverhampton, England, is stated to be capable of digging a ditch two feet deep, at the rate of about one mile an hour. The following is a general statement of its construction: A strong frame is supported on four wheels, the front and smaller pair being provided with steering gear, and the two hind wheels mounted on a cranked axle, having a segment by which it can be turned. A wire rope leads from the hauling-engine around a sheave at the front of the ditcher and back to the hind wheel of the engine, thus securing a double purchase. Beneath the main frame of the ditcher is attached, by three strong colters, a large scoop, resembling in form a right-hand and a left-hand plow joined back to back. In digging, the two outside colters and the share cut the sides and bottom of the ditch, and the mass of earth, split by the central colter, is brought to the surface and thrown at some distance from the margins of the cutting. The lifting of the scoop is thus brought about: The sheave over which the hauling-rope passes, at the front of the ditcher, communicates by clutch with a small winding-drum operating a chain which passes over the segment on the hind axle, and the winding up of the chain turns the hind axle and wheels, and throws the scoop upward.

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#### LIST OF FAIRS FOR 1871.

American Pomological Society, at Richmond, Virginia.....	Sept. 6—8.
Cotton States, Augusta, Georgia.....	Oct. 31 to Nov. 7.
New England, Lowell, Massachusetts.....	Sept. 5—8.
American Institute, New York City.....	Sept. 7 to Nov. 2.

## STATE FAIRS.

Alabama, Montgomery,.....	Oct. 16—20.
Arkansas, Little Rock.....	Oct. 3—6.
California, Sacramento.....	Sept. 18—23.
Colorado Territory, Denver.....	Sept. 12—16.
Georgia, Macon.....	Oct. 23.
Illinois, Du Quoin.....	Sept. 25—30.
Indiana, Indianapolis.....	Oct. 2—7.
Iowa, Cedar Rapids.....	Sept. 11—15.
Kansas, Topeka.....	Sept. 11—15.
Louisiana, New Orleans.....	Nov. 18:
Maryland, Baltimore.....	Oct. 3—6.
Michigan, Kalamazoo.....	Sept. 19—22.
Michigan, (Pomological,) Grand Rapids.....	Sept. 12—15.
Mississippi, Jackson.....	Oct. 23—28.
Minnesota, St. Paul.....	Sept. 26—29.
Nebraska, Brownville.....	Sept. 26—29.
New Jersey, Waverly Station.....	Sept. 19—23.
New York, Albany.....	Oct. 2—6.
New Hampshire, Dover.....	Sept. 26—29.
Ohio, Springfield.....	Sept. 25—29.
Oregon, Salem.....	Oct. 9—15.
Pennsylvania, (Horticultural,) Philadelphia.....	Sept. 12.
Pennsylvania, Scranton.....	Sept. 19—22.
South Carolina, Columbia.....	Nov. 6—11.
Tennessee, Nashville.....	Sept. 26—30.
Vermont, St. Johnsbury.....	Sept. 12—15.
Virginia, Richmond.....	Oct. 31 to Nov. 3.
Virginia (Pomological,) Richmond.....	Sept. 6—8.
Virginia, (Trial of Plows,) White Sulphur Springs..	Aug. 15.
Wisconsin, Milwaukee.....	Sept. 25—29.

## DISTRICT FAIRS.

Agricultural and Horticultural, Aurora, Illinois....	Sept. 25—29.
Agricultural and Industrial, Atlanta, Georgia.....	Oct. 6—21.
Agricultural College, Ames, Iowa.....	Sept. 26—28.
Agricultural, Horticultural, and Mechanical, Indianapolis, Indiana.....	Sept. 25—30.
Belle Plain Union, Belle Plain, Iowa.....	Sept. 19—22.
Blue Grass and Kansas Valley, Manhattan, Kansas.....	Sept. 26—28.
Bridgeton District, Bridgeton, Indiana.....	Aug. 28 to Sept. 2.
Cedar Valley, Cedar Falls, Iowa.....	Sept. 19—21.
Central Fair, Hubbardstown, Iowa.....	Oct. 3—5.
Central Illinois, Jacksonville, Illinois.....	Sept. 19—22.
Central Iowa, Des Moines, Iowa.....	Sept. 19—21.
Central Kentucky, Danville, Kentucky.....	Sept. 19—20.
Central Michigan, Lansing, Michigan.....	Oct. 3—5.
Central New Jersey, Trenton, New Jersey.....	Sept. 19—21.
Central Ohio, Mechanicsburg, Ohio.....	Sept. 19—22.
Central Pennsylvania, Altoona, Pennsylvania.....	Sept. 12—16.
Cherokee and Alabama, Rome, Georgia.....	Oct. 10—13.
Cincinnati Industrial, Cincinnati, Ohio.....	Sept. 6 to Oct. 7.
District Fair, Cambridge, Indiana.....	Sept. 25—29.
District Fair, Middleton, Indiana.....	Sept. 12—16.

District Fair, Ripon, Wisconsin .....	Sept. 19—21.
District Fair, Russellville, Indiana .....	Sept. 4— 9.
District Fair, Waupun, Wisconsin .....	Sept. 14—16.
District Fair, Elgin, Illinois .....	Sept. 12—25.
East Pennsylvania, Norristown, Pennsylvania .....	Sept. 27—30.
Fall Creek District, Pendleton, Indiana .....	Sept. 26—29.
Farmers and Mechanics' Institute, Danville, Illinois .....	Sept. 19—21.
Honey Creek District, New London, Indiana .....	Sept. 25.
Horse Fair, Dixon, Illinois .....	Sept. 13—16.
Horse Fair, Kalamazoo, Michigan .....	Aug. 15—18.
Industrial, Savannah, Georgia .....	Nov. 21—25.
Industrial, Richmond, Indiana .....	Sept. 12—15.
Memphis Agricultural and Mechanical, Memphis, Tennessee .....	Oct. 16—21.
Mooreville District, Mooreville, Indiana .....	Sept. 4— 8.
Minneapolis Association, Minneapolis, Minnesota .....	Sept. 12—16.
Nishua Valley, Cass County .....	Oct. 12—13.
Northern Kansas, Atchison, Kansas .....	Oct. 3— 6.
New York and Pleasant Valley Grape Growers', Ham- mondsport, New York .....	Sept. 26—28.
Northern Kentucky, Florence, Kentucky .....	Sept. 19.
Northern Michigan, Grand Rapids, Michigan .....	Sept. 12—15.
Northern Missouri, Hannibal, Missouri .....	Sept. 25—30.
Northern Ohio, Cleveland, Ohio .....	Sept. 12—17.
Northern Wisconsin, Oshkosh, Wisconsin .....	Oct. 2— 6.
Northeastern Iowa, Postville, Iowa .....	Oct. 4— 6.
Northwestern Iowa, Clermont, Iowa .....	Oct. 4— 6.
Northwestern Horticultural, St. Joseph, Missouri .....	Oct. 5— 7.
Pekin District, Pekin, Illinois .....	Sept. 18—22.
Poweshick Central, Malcom, Iowa .....	Sept. 26—28.
Sabine Valley, Louisiana .....	Oct. 3.
San Francisco Mechanics' Institute, San Francisco, California .....	Aug. 8 to Sept. 5.
San Francisco Bay Horticultural, San Francisco, Cal- ifornia .....	Aug. 8 to Sept. 5.
San Joaquin Valley, Stockton, California .....	Sept. 12—15.
Santa Clara Valley, .....	Aug. 28 to Sept. 1.
Shenandoah Valley, Winchester, Virginia .....	Oct. 18—20.
Sonoma and Maria District, Petaluma, California .....	Sept. 25 to Oct. 1.
Southern Kansas and Missouri, Fort Scott, Kansas .....	Sept. 25.
South Kentucky, Glasgow, Kentucky .....	Oct. 3— 6.
South Georgia, Thomasville, Georgia .....	Oct. 3 to Nov. 4.
Southern Wisconsin, Jonesville, Wisconsin .....	Sept. 12—15.
Southeast Missouri, Cape Girardeau, Missouri .....	Oct. 12—14.
Southwest Wisconsin, Mineral Point, Wisconsin .....	Sept. 5— 9.
Southwest Iowa, Red Oak, Iowa .....	Oct. 3— 6.
Southwestern Virginia, Wytheville, Virginia .....	Oct. 11—13.
St. Louis Agricultural and Mechanical, St. Louis, Missouri .....	Oct. 2— 7.
Stock Fair, Salvisa, Kentucky .....	Sept. 15.
Swine Exposition, Chicago, Illinois .....	Sept. 19—21.
Tennessee Central, Murfreesborough, Tennessee .....	Sept. 26 to Oct. 1.
Thorntown Union, Thorntown, Indiana .....	Sept. 25—29.
Union Central, Atlanta, Illinois .....	Aug. 29 to Sept. 2.
Union Fair, Centralia, Illinois .....	Sept. 18—22.
Union Fair, Covington, Indiana .....	Sept. 26—29.

Union Fair, Kingston, Indiana.....	Aug. 29 to Sept. 1.
Union Fair, Liberty, Indiana.....	Aug. 29 to Sept. 1.
Union Fair, Mechanicsville, Iowa.....	Sept. 19—22.
Union Fair, Sandwich, Illinois.....	Sept. 5— 8.
Union Fair, Warren, Illinois.....	Sept. 12—15.
Union Fair, Wilton, Iowa.....	Aug. 23—25.
Upper Sacramento Valley, Chico, California.....	Sept. 26.
West Alabama, Eutaw, Alabama.....	Oct. 17—21.
Western New York, Rochester, New York.....	Sept. 26—29.
Western Texas, San Pedro Springs, Texas.....	Sept. 27—30.
West Virginia Central, Clarksburgh, West Virginia.....	Sept. 19—21.

### MARKET PRICES FOR FARM PRODUCTS.

Articles.	August.	September.
NEW YORK.		
Flour, State.....per barrel..	\$4 65 to \$6 50	\$4 95 to \$6 40
western.....do.....	4 65 to 9 00	4 95 to 9 00
Wheat, No. 1 spring.....per bushel..	1 28 to 1 40	1 32 to 1 36
No. 2 spring.....do.....	1 35 to 1 37	1 32 to 1 36
winter, amber, western.....do.....	1 38 to 1 46	1 37 to 1 46
Corn, new western, mixed.....do.....	65 to 67½	65 to 68
old western, mixed.....do.....	65 to 67½	65 to 68
Rye.....do.....	Nominal.	Nominal.
Barley.....do.....	Nominal.	Nominal.
Oats, western, mixed.....per bushel..	62 to 63	40 to 48
State.....do.....	62 to 63	40 to 48
Hay, shipping qualities.....per ton..	22 50 to —	20 00 to —
prime.....do.....	26 00 to 32 00	23 00 to 27 00
Pork, mess.....per barrel..	13 62 to 14 00	13 50 to 13 55
prime mess.....do.....	12 00 to 12 75	10 25 to 11 00
Beef, mess.....do.....	8 00 to 12 00	7 00 to 11 00
extra.....do.....	13 00 to 15 00	11 00 to 14 00
Lard, extra.....per pound..	10 to 10½	9½ to 9½
Butter, western.....do.....	11 to 20	12 to 20
State.....do.....	15 to 30	15 to 31
Cheese, dairy.....do.....	5 to 10	5 to 10
factory.....do.....	8 to 11	8 to 10½
Cotton, ordinary.....do.....	15½ to 17½	15½ to 17½
middling.....do.....	18½ to 21½	18½ to 21½
Tobacco, sound lugs, light grades.....do.....	6½ to 7½	6½ to 7½
sound lugs, heavy grades.....do.....	7½ to 8	7½ to 8
common leaf, light grades.....do.....	8 to 8½	8 to 8½
common leaf, heavy grades.....do.....	8½ to 9½	8½ to 9½
Wool, combing fleece.....do.....	45 to 60	62 to 62½
extra, pulled.....do.....	45 to 60	46 to 46
Texas, common to medium.....do.....	38 to 42½	31 to 45½
California, common.....do.....	38 to 42½	31 to 45½
BOSTON.		
Flour, western, superfine.....per barrel..	5 00 to —	4 75 to 5 50
extra.....do.....	5 50 to 7 00	5 50 to 6 50
choice.....do.....	7 00 to 9 00	7 00 to 9 00
Corn, yellow.....per bushel..	77 to 78	77 to 79
mixed.....do.....	74 to 76	75 to 77
Oats.....do.....	60 to 66	47 to 55
Rye.....do.....	95 to 1 00	75 to 80
Barley.....do.....	90 to 1 10	Nominal.

## Market prices for farm products—Continued.

Articles.	August.	September.
BOSTON—Continued.		
Pork, mess.....per barrel..	\$16 00 to \$16 50	\$14 00. to \$15 00
prime.....do.....	13 00 to 14 00	12 00 to 12 50
Beef, mess.....do.....	12 00 to 14 00	12 00 to 14 00
extra mess.....do.....	15 00 to 17 00	15 00 to 17 00
Lard.....per pound..	10½ to 11½	9½ to 11½
Butter, New York and Vermont.....do.....	15 to 28	12 to 23
Canada.....do.....	18 to 26	18 to 27
western.....do.....	12 to 23	15 to 24
Cheese, eastern factory.....do.....	5 to 10½	5 to 11
Hay, prime.....per ton..	30 00 to 33 00	30 00 to 37 00
Wool, western.....per pound..	59 to 65	60 to 63½
combing, and delaine fleeces.....do.....	46 to 67	65½ to 75
tub.....do.....	72 to 1 07½	70½ to 90
pulled.....do.....	40 to 62½	52½ to 65
CHICAGO.		
Flour, winter, extras.....per barrel..	5 90 to 6 25	6 00 to 6 87½
spring, extras.....do.....	5 25 to 6 00	4 50 to 6 25
Wheat, No. 1 spring.....per bushel..	1 05 to 1 06	1 07 to 1 07½
No. 2 spring.....do.....	1 01 to 1 03½	1 06½ to —
No. 3 spring.....do.....	95 to —	1 00 to 1 02
Corn, No. 2.....do.....	43 to 45½	54 to 54½
rejected.....do.....	41 to 42	52 to 52½
no grade.....do.....	—	—
Oats, No. 2.....do.....	28½ to 29	48½ to 49½
rejected.....do.....	25 to 25½	46 to 47½
Hay, timothy and clover, (in trade).....per ton..	13 00 to 14 00	14 00 to 15 00
prairie.....do.....	9 00 to 11 00	8 00 to 11 00
Pork, mess.....per barrel..	13 25 to 13 75	14 50 to —
prime mess.....do.....	—	12 00 to 13 50
Beef, mess.....do.....	12 00 to 12 50	11 00 to 13 00
extra mess.....do.....	14 00 to 14 50	14 00 to 15 00
Lard.....per pound..	9½ to 9¾	10½ to —
Butter, firkin and tub.....do.....	9 to 18	7½ to 19
extra.....do.....	19 to 20	17 to 20
Cheese, New York factory.....do.....	10 to 11	10 to 11
western factory.....do.....	8 to 9	9 to 10
western reserve.....do.....	—	—
Wool, medium fleece.....do.....	50 to 59	45 to 55
unwashed, medium.....do.....	37 to 42	33 to 42
tub.....do.....	—	55 to 64
CINCINNATI.		
Flour, family.....per barrel..	5 50 to 5 65	5 50 to 5 75
extra.....do.....	5 25 to 5 40	5 25 to 5 50
superfine.....do.....	4 75 to 4 90	4 25 to 4 75
low grades.....do.....	4 00 to 4 50	4 00 to 4 50
Wheat, No. 1 white.....per bushel..	1 25 to —	1 25 to —
No. 2 white.....do.....	1 22 to —	1 22 to —
No. 1 red.....do.....	1 12 to 1 13	1 19 to —
No. 2 red.....do.....	1 10 to —	1 17 to —
Corn, No. 1 ear.....do.....	51 to 52	54 to —
new ear.....do.....	—	52 to —
Rye, No. 1.....do.....	65 to —	68 to —
No. 2.....do.....	63 to —	65 to —
rejected.....do.....	—	—
Barley, No. 1.....do.....	—	—
No. 1 State.....do.....	65 to 70	70 to —
Oats, No. 1 mixed.....do.....	35 to 37	34 to 35

## Market prices for farm products—Continued.

Articles.	August.	September.
<b>CINCINNATI—Continued.</b>		
Oats, No. 2 mixed..... per bushel..	\$0 33 to \$0 35	\$0 30 to \$0 33
Hay, tight-pressed..... per ton..	16 00 to 18 00	15 00 to 18 00
loose..... do.....	18 00 to 27 00	16 00 to 22 00
Pork, mess..... per barrel..	12 50 to 13 00	12 25 to 12 75
prime mess..... do.....	-----	-----
Lard, prime steam..... per pound..	9½ to -----	8½ to -----
Butter, choice Ohio..... do.....	17 to 22	18 to 22
fair to good..... do.....	12 to 15	12 to 14
Cheese, western reserve..... do.....	-----	-----
factory..... do.....	9½ to -----	9 to 9½
Cotton, ordinary..... do.....	13½ to 17½	13½ to 16½
middling..... do.....	18 to 20½	17 to 19
Tobacco, lugs, West Virginia..... do.....	4½ to 8½	4½ to 7½
lugs, Kentucky..... do.....	8½ to 12	8½ to 12
common to medium leaf, West Virginia..... do.....	7½ to 10	7 to 10
common to medium leaf, Ky..... do.....	12 to 18	12 to 18
Wool, tub-washed..... do.....	65 to 67	65 to 67
fleece-washed..... do.....	50 to 55	50 to 55
unwashed..... do.....	40 to 45	40 to 42
pulled..... do.....	50 to 52	50 to 52
<b>ST. LOUIS.</b>		
Flour, superfine..... per barrel..	4 00 to 4 50	3 75 to 4 20
extras..... do.....	5 00 to 6 00	4 75 to 6 00
Wheat, spring..... per bushel..	-----	-----
winter No. 1..... do.....	1 22½ to 1 40	1 30 to 1 40
winter No. 2..... do.....	1 18 to 1 20	1 20 to 1 26
winter No. 3..... do.....	1 10 to 1 15	1 10 to 1 15
red..... do.....	1 07 to 1 28	1 07 to 1 33
Corn, mixed..... do.....	41 to 44	43 to 50
yellow..... do.....	42½ to 43	-----
Rye..... do.....	40 to 58	58 to -----
Barley, winter..... do.....	55 to 90	65 to 75
spring..... do.....	45 to 68	70 to 85
Oats, mixed..... do.....	31½ to 38	33 to 41
yellow..... do.....	-----	-----
Hay..... per ton..	18 00 to 20 50	16 00 to 24 00
Pork, mess..... per barrel..	14 25 to 14 50	13 00 to -----
Lard, tierce..... per pound..	10½ to -----	9½ to 9½
keg..... do.....	11½ to -----	11 to -----
Butter, choice..... do.....	18 to 20	18 to 21
fair to medium..... do.....	14 to 15	14 to 16
Cheese, factory..... do.....	10½ to 12	9½ to 10
Cotton, middling..... do.....	19 to 19½	18 to 18½
Tobacco, sound leaf..... per cwt..	5 50 to 7 50	6 50 to 7 75
common leaf..... do.....	7 25 to 8 00	7 00 to 8 00
medium..... do.....	8 00 to 9 00	8 50 to -----
Wool, tub-washed..... per pound..	59½ to 67½	60 to 68½
fleece-washed..... do.....	50 to 60	48 to 56
combing..... do.....	40 to 44	42 to 43½
pulled..... do.....	-----	-----
<b>NEW ORLEANS.</b>		
Flour, superfine..... per barrel..	5 25 to -----	4 50 to -----
extras, (according to grade)..... do.....	6 25 to 9 25	5 25 to 8 00
Corn, mixed..... per bushel..	72½ to 73	67 to 68
yellow..... do.....	74 to -----	70 to -----
white..... do.....	77 to 78	70 to -----



## Market prices for farm products—Continued.

Articles.	August.	September.	
NEW ORLEANS—Continued.			
Oats, prime .....	per bushel..	§0 64 to §0 66	§0 49 to §0 50
Hay, choice .....	per ton..	32 00 to —	32 00 to 35 00
prime .....	do.	30 00 to —	—
Pork, mess .....	per barrel..	14 50 to 15 75	14 00 to 14 50
Lard, tierce .....	per pound..	10 $\frac{3}{4}$ to 11	10 $\frac{1}{4}$ to 10 $\frac{1}{2}$
keg .....	do.	11 $\frac{1}{2}$ to 11 $\frac{3}{4}$	11 $\frac{1}{4}$ to 11 $\frac{1}{2}$
Butter, choice western .....	do.	20 to 23	21 to 22
choice northern .....	do.	32 to 34	30 to 34
common .....	do.	—	—
Cheese, choice factory .....	do.	12 to 13	10 to 12 $\frac{1}{2}$
western reserve .....	do.	11 to —	—
Cotton, ordinary .....	do.	13 to 17	16 $\frac{1}{4}$ to 17
low middling .....	do.	18 to 18 $\frac{1}{2}$	17 $\frac{1}{4}$ to 17 $\frac{3}{4}$
middling .....	do.	20 to 20 $\frac{1}{2}$	18 $\frac{1}{4}$ to 18 $\frac{3}{4}$
Tobacco, lugs .....	do.	6 to 7	6 $\frac{1}{4}$ to 8 $\frac{1}{2}$
low leaf .....	do.	7 to 7 $\frac{1}{2}$	—
medium leaf .....	do.	7 $\frac{1}{2}$ to 8	8 to —
SAN FRANCISCO.			
Flour, superfine .....	per barrel..	5 75 to 6 25	6 25 to 6 50
extras .....	do.	6 25 to 6 50	6 75 to —
Wheat, State .....	per cental..	2 20 to 2 25	2 42 $\frac{1}{2}$ to 2 47 $\frac{1}{2}$
Oregon .....	do.	2 20 to 2 25	—
Corn, white .....	do.	2 15 to 2 20	2 40 to —
yellow .....	do.	2 15 to 2 20	2 40 to —
Hay, State .....	per ton..	17 00 to 20 00	17 00 to 22 00
Pork, mess .....	per barrel..	25 00 to —	22 00 to —
prime .....	do.	22 00 to —	20 00 to —
Beef, mess .....	do.	14 00 to —	17 50 to —
Lard .....	per pound..	12 $\frac{1}{2}$ to 14 $\frac{1}{4}$	—
Butter, State .....	do.	—	30 to 38
Oregon .....	do.	—	—
overland .....	do.	20 to 30	17 to 25
Cheese .....	do.	14 to —	9 to 14
Wool, choice .....	do.	40 to 42 $\frac{1}{2}$	28 to 37
inferior to medium .....	do.	27 $\frac{1}{2}$ to 35	Neglected.

# METEOROLOGY.

## JULY AND AUGUST, 1871.

COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY THE OBSERVERS OF THE SMITHSONIAN INSTITUTION.]

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain-fall, (in inches and tenths,) for July and August, 1871, as reported by the observers at the stations named. Observations daily at 7 a. m., and 2 and 9 p. m.

Stations in States and Territories.	JULY.					AUGUST.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
<b>MAINE.</b>												
Houlton	13, 15	82	17	54	67.1	2.13	3	83	22	45	65.9	3.85
Surry	15	89	1	57	70.5		3, 17	85	23	52	69.0	
Williamsburgh							3	83	21	50	66.5	4.00
West Waterville.	13	88	26	59	70.5	4.21	4, 5	84	13	56	70.7	4.98
Gardiner	2	90	24	58	69.3	4.58	4	82	23	53	67.5	4.93
Lisbon	7, 15	88	22	54	68.4	3.90	5	88	22	50	67.7	6.22
Standish	6, 9, 13	90	{ 12, 12, 20, 22 }	58	70.5	4.61	4	89	17	53	70.2	4.74
Norway	13	89	22	55	69.7	5.25	4	89	21	55	68.7	5.50
Cornish	13, 15	86	23	53	68.2	4.95	4	86	20	50	67.6	6.62
Cornishville	6, 9, 13	87	17, 26	58	71.5	5.80	4	90	21	55		
<b>NEW HAMPSHIRE.</b>												
Stratford							4	90	20	43	63.7	5.15
Whitefield	6, 13	87	1	50	66.3	3.87	15	87	20	44	64.3	5.89
Tamworth	6	89	17, 20	51	69.2	7.08	4	89	20	50	68.3	3.61
Contocoocville	9	91	22, 24	55	71.8	3.60	4, 5	88	20	52	69.5	4.50
Amoskeag	9	93	18	42	67.5	2.50	4	93	18	38	67.8	5.77
<b>VERMONT.</b>												
Lunenburg	6, 13	88	18	50	68.2	4.33	16	90	18	50	66.9	7.07
Craftsbury	14	89	20, 22	47	64.3	7.00	4	88	13, 19, 31	47	62.5	6.54
South Troy	13	90	22	53	69.2	7.44	15	88	20	50	66.6	9.72
East Bethel.	6, 13	93	21, 22	51	65.1	3.13	15	90	20	42	66.9	5.40
Woodstock	13	85	1, 22	50	66.0	4.67	4	84	20	45	64.0	3.93
Norwich	6	89	23	52	71.1	3.30	15	90	18, 20	50	69.5	4.00
Near St. Albans.	2	93	21, 23	55	67.8	6.90	16	87	19	51	66.4	6.50
West Charlotte	13	94	22	56	71.5	9.06	4	90	20	55	71.6	6.31
Panton	13	90	22	55	70.8	8.29	15, 24	88	19, 20, 21	56	68.8	6.39
Castleton	13	87	22	54	70.7	5.95	4, 15	85	20	49	68.9	5.00
<b>MASSACHUSETTS.</b>												
Kingston	13	92	23	57	72.2	2.25	4	92	20	56	71.9	5.49
Lawrence	9, 13	89	22	55	70.8	3.35	{ 4, 12, 24, 27 }	85	21	52	70.7	5.39
Georgetown	9	89	22	55	69.8	2.65	4, 12	87	20	54	70.2	5.27
Milton	6, 9	93	24	56	72.3	2.68	4, 12	90	23	52	72.6	2.67
North Billerica	13	90	22, 24	56	71.3		12	87	19	50	71.5	
New Bedford	12	83	25	57	69.1	1.75	6	81	19	57	70.0	6.49
Worcester	9, 13, 15	83	22	55			12, 17	83	20	54	69.7	3.94
Lunenburg	13	87	23	54	69.8	3.65	7, 12, 27	84	20	51	69.8	5.75
Mendon							7, 12	84	20	54	69.6	4.60
Amherst	13	86	1	54	69.2	3.52	7	85	20	50	69.2	6.45

Table showing the range of the thermometer, &amp;c., for July and August—Continued.

Stations in States and Territories.	JULY.					AUGUST.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
<b>MASS.—Contin'd.</b>		<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>		<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>
Richmond .....	3, 18	90	1	54	72.7	6.45	7, 16	91	20	50	70.2	12.81
Williams College.	13	87	23, 24	52	72.8	4.73	16	87	20	52	68.7	6.53
Hinsdale .....	13	85	22, 23	52	66.3	5.90	7	84	18, 19, 20	52	66.9	5.90
<b>RHODE ISLAND.</b>												
Newport .....	12	91	23	59	72.9	1.94	7, 11, 12	88	23	60	74.0	7.68
<b>CONNECTICUT.</b>												
Columbia .....	15	94	{ 22, 23, 24, 25 }	58	72.0	3.44	12	94	23	53	72.2	8.31
Middletown .....	12	88	23	53	70.0	5.48	7	90	20	52	72.2	8.31
Southington .....	13	84	22	57	69.7	2.15	7	85	20	58	71.0	8.72
Round Hill .....	6, 11	86	25	58	71.1	4.24						
Colebrook .....									20	51	67.3	10.28
<b>NEW YORK.</b>												
Moriches .....	11	93	22	62	73.7	5.36	10	87	20	58	74.8	3.18
Warrensburgh .....	{ 6, 9, 13, 14 }	90	1	55	71.8	8.15	9	96	21, 26	55	73.6	3.47
South Hartford .....	14, 15	90	17	56	72.8	5.45	4, 7, 16	87	20	53	73.1	9.10
North Argyle .....	9	88	22	56	70.8	5.22	3, 4	85	20	56	72.9	5.70
Troy .....	6	91	22	58	73.1	7.24						
Garrison's .....	12, 13	86	23, 25	58	70.0	4.63	16	86	19	55	72.6	6.12
Throg's Neck .....	13	90	25	60	72.9	.....	5	88	20	61	74.5	.....
White Plains .....	12	84	25	59	71.2	.....	5, 7	83	19	57	69.2	.....
Cooper Union .....	15	87	25	61	73.3	6.27	27	86	31	65	75.2	6.41
Brooklyn .....	15	90	25	61	72.9	5.53	16	88	20	60	74.3	9.91
Flatbush .....	5, 15, 16	89	25	61	73.7	5.05	9	90	24	62	75.9	9.74
Glasco .....	9	93	23	52	72.2	3.11	16	80	6	48	72.1	7.35
Middleburgh .....	9, 12, 13	90	25	58	73.8	8.40	8	92	20	52	73.7	4.50
Cooperstown .....	13	87	24	50	67.7	4.64	16	89	20	46	69.2	4.50
Gouverneur .....	13	86	22	51	65.3	3.33	16	86	19	48	66.1	2.84
Canton .....	13	90	17	54	67.6	.....	16	88	20	49	67.9	.....
North Hammond .....	6, 13	90	19	58	69.0	4.23	14	96	19, 28	58	74.3	3.21
Lowville .....	9, 13	86	21, 24	51	66.2	2.53	3, 16	87	20	46	67.3	3.58
Houseville .....							3	89	31	52	68.8	6.31
South Trenton .....	14	94	21	48	66.1	4.00						
Oneida .....	13	90	20, 22	52	64.0	4.49	7, 16	90	19	50	68.9	5.40
Depauville .....	6	84	22	53	65.7	2.65	14	88	20	50	67.7	4.40
Oswego .....	9	84	.....	.....	66.2	2.62	29	90	18, 20	53	68.8	5.91
Palermo .....	9, 13	93	22	52	65.2	1.40	{ 4, 7, 11, 14 }	90	20	51	68.8	5.20
North Volney .....	13	92	21, 23	56	70.1	.....	3	92	10	54	71.2	.....
Waterburgh .....	9	95	20	49	66.6	.....	4, 16	92	20	48	68.6	.....
Nichols .....	9	91	22, 24	50	68.4	.....	15	94	19	50	70.9	.....
Newark Valley .....	2, 9, 13	88	23	49	67.8	5.40	15	95	20	50	69.8	5.90
Himrods .....	9	88	22	50	66.1	1.80	16	92	20	51	69.7	3.06
Rochester .....	9	92	19, 20	57	71.7	3.00	11	96	19	56	73.1	4.90
Little Genesee .....	9	91	22, 23	48	66.2	3.32	15	94	19	42	68.0	3.48
Angelica .....	9	89	23	44	66.2	3.02	15	93	19	42	68.4	3.72
Carleton .....	14	90	21, 25	54	68.0	1.88	15, 16	88	19	52	69.4	3.25
Lockport .....	13	89	19, 21, 22	56	68.4	2.85	15	92	25	56	70.4	5.83
Buffalo .....	13	92	22	51	69.5	.....	7	93	31	55	73.6	4.43
<b>NEW JERSEY.</b>												
Jersey City .....	15	89	25	60	74.1	4.87	12	89	21	62	75.3	3.78
Newark .....	10, 13, 15	86	23	56	71.5	4.14	12	86	21	56	73.1	5.31
South Orange .....	6	88	23	55	69.8	4.56	12	90	19	50	69.7	4.61
Trenton .....	6	90	1, 25	62	76.2	6.54	4	90	20	62	77.2	5.14
Rio Grande .....	9, 11	90	25	54	69.7	14.13	8	94	20	53	73.3	3.25
Moorestown .....	6	87	1, 25	59	72.3	6.22	5, 7	89	20	60	73.3	6.82
New Germantown .....	9	90	22	58	71.4	3.67	7, 12	89	19	52	73.2	9.48
Readington .....	6	92	22, 24	58	71.6	.....	7, 12	92	20, 21	56	73.6	.....
Greenwich .....	11	88	22	58	73.4	5.14	16	84	20	59	75.9	1.67
Vineland .....	11	93	23	57	74.9	9.82	16	91	31	60	76.2	3.92

Table showing the range of the thermometer, &amp;c., for July and August—Continued.

Stations in States and Territories.	JULY.					AUGUST.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	
PENNSYLVANIA.												
Nyces .....	2		22	52	68.3	4.50	3	90	20	46	70.6	11.10
Hamlington .....	13	86	20, 22	52	68.3	7.63	16	91	31	51	72.4	4.73
Dyberry .....	2, 13	84	23	47	65.5	7.68	15	88	31	50	67.6	5.22
Fallsington .....	10	89	25	60	72.0	5.70	16	88	20	61	73.0	4.00
Philadelphia .....	10	89	25	61	75.6	6.38	16	90	23	64	77.2	6.13
Germantown (M.) .....	8	90	22	54	73.7		7, 16	91	20, 23	61	75.0	
Do (T.) .....	13	88	22	58	75.1	6.04	16	88	20	60	75.0	3.17
Horsham .....	15	86	22	56	70.8	6.35	16	87	20	57	72.9	6.63
Plym'th Meeting .....	15	88	24	57	72.2	4.51	16	89	20	57	74.4	4.49
Egypt .....	16	94	22	50	71.8		16	96	20	49	74.5	
Factoryville .....	13	90	22, 23	50	67.7	13.05	15	91	19, 20, 31	52	70.3	6.68
Reading .....	15	88	22, 23, 24	59	73.3	5.13	16	94	20	57	75.7	5.12
West Chester (M.) .....	6, 13	90	22	56	72.4	7.38	16	92			74.4	6.60
Do (J.) .....	15	87	1	59	74.7	6.68	16	87	23	63	75.4	2.87
Parkersville .....	{ 11, 13, 15, 16 }	90	26	58	74.1	6.92	14, 15, 16	90	19, 31	63	76.4	5.00
Ephratah .....	9, 11	88	20	57	72.3	6.08	16	92	23, 31	62	75.6	9.98
Do (M.) .....	9	88	20	57	72.9	6.10	16	92	23, 31	62	75.3	10.38
Harrisburgh .....	11	95	21, 22	60	75.8	8.49	16	96	19	62	78.7	8.75
Carlisle .....	9	94	23	58	73.8	4.50	16	96	20	58	74.0	9.40
Mt. Rock .....							16	96	31	61	77.4	6.99
Fountain Dale .....	16	90	20	56	72.7	2.60	16	95	31	62	76.3	3.40
York Sulp'r Sp'gs .....	11	92	21	54	72.0	4.05	16	94	19	57	74.4	3.50
Tioga .....	14, 15	90	24	47	67.0	6.55	16	96	31	42	71.1	6.15
Lewisburgh .....							16	93	20	54	73.1	4.33
Grampian Hills .....	9	91	21	46	67.3	4.12	15	91	18	50	70.2	3.71
Johstown .....	9	92	24	50	68.1	3.45	15	93	2, 20	52	71.8	5.12
Franklin .....	9	94	23	49	68.8	3.49	15	96	18	48	71.3	5.10
Greensburg .....	9	97	21	51	70.4	3.50	13	95	18	55	73.2	6.40
Connellsville .....	9	94	21	52	73.0		15	97	31	54	74.8	
Greenville .....	9	90	21	50	67.8	6.40	15	90	18	50	70.3	6.80
Newcastle .....	9	95	22, 23	47	72.1	5.80	14, 15	94	18	45	74.5	3.00
Beaver .....	9	88	21	56	72.3							
Cannonsburgh .....	9	94	25	51	70.3	3.25	16	93	18	52	72.8	5.31
DELAWARE.												
Dover .....	6, 11	94	21	60	76.0	8.20	16	94	31	64	76.8	1.20
Milford .....	11	96	20, 23	59	75.1	10.00	7, 8, 16	91	20	58	77.8	3.70
MARYLAND.												
Woodlawn .....	13	90	21, 25	60	73.3	4.65	15, 16	88	20	60	75.8	4.61
Annapolis .....	10	91	21, 22	58	76.9	7.91	16	92	31	64	79.9	1.06
Woodstock Coll. ....	11	89	21, 22, 23	57	71.9	5.17	16	90	21	52	74.0	1.78
Sam's Creek .....	13	91	25	58	74.3	4.58	16	94	31	63	76.8	3.30
Frederick .....							16	99	20	65	79.9	1.10
Cumberland .....	9	90	22	54	73.5	1.10	15	91	31	58	76.0	3.20
DIST. OF COLUMBIA.												
Washington .....	7, 10	88	22	60	78.5	6.55	16	89	20	64	78.2	1.80
VIRGINIA.												
Johnsontown .....	7, 10	92	22	61	74.9	5.30	16	89	31	66	77.6	5.00
Capeville .....							5	94	31	68	81.6	
Hampton .....	7	97	22	58	77.0	5.90	5	94	31	70	79.5	5.57
Surry C. H. ....	9, 11	102	22, 23	62	80.3	2.70	17	99	31	64	81.6	3.03
Comorn .....	10	91	21	61	76.6	5.06	16	94	20	65	79.3	2.55
Mt. Solon .....	3, 6, 7, 8	87	21, 23	52	71.0	2.00	16	94	31	54	75.4	3.04
Vienna .....	16	93	21	58	74.6	4.50	16	99	31	62	79.2	1.20
Do (W.) .....	7, 29	84	21	58	72.0	1.88	18	94	10	62	78.0	2.50
Do (B.) .....												
Accotink .....	6	93	22	59	76.3	3.66	15	94	21	65	78.2	1.50
Near Waterford .....	11	95	21	57	74.6		16	102	31	60	80.0	7.70
Piedmont .....	10	94	21	53	72.2	4.90	16	99	31	62	79.2	1.20
Piedmont Station .....	6	93	25	56	75.9	2.75	15	96	11, 21, 31	68	74.8	1.15
Markham Station .....	10, 16	89	20, 21	58	74.5		14	92	31	62	75.9	6.70
Keswick Station .....	9, 10	98	21	58	77.4	1.25	16	102	31	63	81.9	2.10

Table showing the range of the thermometer, &amp;c., for July and August—Continued.

Stations in States and Territories.	JULY.					AUGUST.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
VA.—Continued.												
Lexington .....	9, 11	Deg. 91	22	Deg. 52	Deg. 72.9	In. 4.09	16	Deg. 92	21, 31	Deg. 63	Deg. 78.3	In. 3.75
Lynchburg .....	9	90	22, 23	61	61	4.13						
Near Wytheville.	9	88	23	51	71.2	1.70	3, 13	89	31	56	73.3	3.40
WEST VIRGINIA.												
Weston .....	8	93	25	54	72.8	-----	15	94	31	54	74.5	-----
Cabell C. H. ....	31	93	20	53	72.4	4.10	5	96	31	52	71.8	0.80
NORTH CAROLINA.												
Oxford .....	9	94	22	53	77.0	3.75	18	98	31	62	79.1	2.35
Fayetteville .....	9	97	24	62	81.0	1.60	16	92	3	68	78.7	7.40
Albemarle .....	10, 12	98	23, 26	52	77.9	3.05	7, 16	99	21, 31	56	79.3	2.38
Statesville .....	{ 9, 10 11, 12 }	94	24, 25	52	76.4	7.00	17	98	21, 31	54	77.3	2.75
Asheville (A.) ..	10	93	24	53	71.2	3.20	3, 16	88	21	57	72.4	7.40
Do. (H.) .....	8	84	24	50	70.5	-----	3, 5	82	31	56	72.8	-----
SOUTH CAROLINA.												
Aiken .....	10	95	26	66	80.0	4.88	3	96	21	67	78.6	7.96
Gowdeysville .....	9, 10, 12	95	24, 25	64	81.5	1.63	5	94	21, 31	66	81.7	4.30
GEORGIA.												
Berne .....	9, 10	90	25	63	76.6	4.55	10	89	20	66	75.7	13.95
St. Mary's .....	10, 11, 16	92	27, 28	73	81.1	4.49	4	90	21	73	80.6	9.73
Sandersville .....	13, 16, 31	94	23, 24	68	81.0	-----						
Atlanta .....	8, 17	93	27	68	80.4	2.00						
ALABAMA.												
Huntsville .....	18	90	23, 24	65	78.9	2.00	4	90	31	63	79.9	6.00
Carlowville .....	{ 10, 11, 12 16, 17, 18 }	96	24, 25, 26	72	84.5	0.85	22	98	21, 24, 26	72	83.4	4.71
Selma .....	17	97	26, 27	72	84.5	1.40	22	98	21	74	84.7	4.05
Moulton .....	7, 8, 17, 18	90	23	63	78.2	-----	4	89	31	61	77.2	2.49
Greene Springs ..	7, 16, 17	97	21, 26	70	83.0	2.95	22	98	31	71	84.0	4.70
Coatopa .....	6	97	26	68	77.5	2.00	17	98	{ 21, 22 30, 31 }	70	83.1	0.20
FLORIDA.												
Near Port Orange	15	95	24, 25	70	79.2	3.09	22	91	2	72	78.7	16.97
New Smyrna .....	10	92	24	70	81.5	3.30	22, 23	90	1	73	81.7	23.00
Jacksonville .....	11	97	24	71	83.8	3.95	9, 31	95	18	72	81.5	13.70
Picolata .....	10, 11	93	26	71	82.3	-----	4	94	18	73	80.9	-----
Pilatka .....	8, 10, 11	98	25	66	82.5	4.30	29	95	21	72	81.3	21.35
Ocala .....							4, 8, 9, 31	96	25	64	80.8	-----
Tampa .....	10, 27	92	25	67	76.1	5.30	23	89	25	67	75.6	13.45
Welborn .....	10, 11	96	26	68	83.5	2.63	5	96	21	76	83.8	12.21
TEXAS.												
Clarksville .....	16	100	1	72	85.7	-----						
Near Clarksville.	16	97	22	70	-----	2.37						
Houston .....	3, 5, 20	99	9	77	84.6	-----	14, 27, 29	99	25, 31	76	85.5	-----
Gilmer .....	16	100	3	73	84.1	1.76						
Clear Creek .....	31	97	28	76	82.7	3.80	23, 24, 29	98	16	71	84.4	2.88
Oakland .....	21	103	5	76	86.9	0.85	24	102	25	70	86.9	2.85
Sand Fly .....	21	100	24, 27, 28	78	89.9	0.10	7, 12	101	25	74	87.3	0.30
Bluff .....	21	97	1	78	87.3	-----	6, 7, 12	99	25, 30, 31	78	87.2	3.19
Victoria .....	20, 21, 22	104	7	84	91.1	0.50	12	106	16, 17	82	91.2	1.10
Clinton .....	{ 15, 19 21, 31 }	100	22	78	86.1	0.75	24	102	17	75	85.7	0.80
Austin .....	31	100	5, 7, 11	77	86.9	-----	7, 12	102	31	72	86.1	2.14
San Antonio .....	{ 2, 3, 19 23, 30 }	102	6, 11	75	87.3	0.02	12	104	31	75	86.9	1.74

Table showing the range of the thermometer, &amp;c., for July and August—Continued.

Stations in States and Territories.	JULY.					AUGUST.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
LOUISIANA.												
New Orleans.....	17	Deg. 94	24, 27	Deg. 73	Deg. 81.0	In. 4.70	20	Deg. 94	6	Deg. 73	Deg. 80.1	In. 3.80
Shreveport.....	7, 17	95	22, 23, 24	72	84.6	.....	8	97	29, 31	74	85.4	.....
Ponchatoula.....	5	98	26	74	85.0	10.35	18	98	8	77	84.8	4.40
MISSISSIPPI.												
Marion Station.....	16	102	26	68	82.9	4.20	3, 5	100	20, 21, 23	68	81.2	1.20
Philadelphia.....	{ 17, 18, 19, 20 }	92	25, 26	65	76.0	2.80	2	92	31	70	80.7	3.50
Grenada.....	16	93	24, 26	65	78.9	6.20	11	92	20	64	80.2	2.47
Near Brookhaven.....	6, 16, 17	96	25	73	84.0	4.80	{ 14, 19, 24, 26, 27 }	94	22	66	83.3	3.30
Holly Springs.....	17	99	27	60	79.4	9.00	1, 2	96	31	62	77.1	2.20
ARKANSAS.												
Pocahontas.....	8, 17	103	23	58	81.6	.....	.....	.....	.....	.....	.....	.....
Helena.....	7	97	24	67	80.1	.....	.....	.....	.....	.....	.....	.....
Clarksville.....	{ 8, 15, 16, 17, 18 }	99	21	71	79.7	2.20	7, 22	100	31	60	82.5	1.25
Washington.....	{ 8, 15, 16, 17, 18 }	92	{ 23, 24, 29, 31 }	72	70.1	4.13	{ 11, 12, 21, 22, 24 }	92	2, 30, 31	72	80.8	1.00
Mineral Springs.....	{ 8, 16, 17, 19, 20 }	98	22	62	78.3	5.23	{ 7, 8, 10, 11, 12, 21, 24, 25 }	98	18, 19, 20	62	80.8	3.25
TENNESSEE.												
Elizabethton.....	9	96	22	50	74.1	3.19	{ 4, 7, 13, 14, 15, 16 }	96	31	51	77.0	2.65
Tusculum College.....	8	89	23, 24	62	76.3	1.80	.....	.....	.....	.....	.....	.....
Lookout Mount'n.....	7	90	22	63	78.0	.....	4	93	31	66	79.1	6.37
Clearmont.....	7	91	21	60	75.6	2.90	2, 15	92	31	59	75.3	4.78
Austin.....	{ 7, 8, 10, 16 }	94	24	60	78.0	3.50	2, 16	96	19	58	79.3	7.80
Clarksville.....	8	91	23	57	75.3	2.58	3	92	31	55	76.3	2.41
Trenton.....	8, 16	98	1, 2	64	79.4	3.20	2, 3	94	31	57	79.1	2.60
La Grange.....	7	96	26	65	80.1	7.50	3, 25	94	31	64	80.2	1.00
Knoxville.....	10	93	22	61	73.2	3.22	2	95	31	54	78.8	3.79
KENTUCKY.												
Pine Grove.....	8, 9	96	{ 20, 21, 22, 23 }	60	74.2	1.75	13, 14, 16	98	31	60	77.6	3.45
Near Louisville.....	8	99	23	50	77.2	2.22	14	102	18, 31	52	79.2	3.04
OHIO.												
Salem.....	9	98	22	50	70.4	5.80	7	100	31	50	73.8	2.97
New Lisbon.....	9	88	21	50	70.2	6.43	.....	.....	.....	.....	.....	.....
Stuebenville.....	9	93	21, 22	55	73.0	3.44	16	91	20, 31	58	75.4	6.40
Martin's Ferry.....	.....	.....	.....	.....	.....	.....	15	96	18	54	74.7	.....
Painesville.....	9	90	23	50	69.0	3.80	15	90	31	54	71.3	7.70
Milnersville.....	14	88	22	48	68.0	7.09	15	95	31	48	70.2	5.70
Cleveland.....	9	87	22	54	69.0	3.42	.....	.....	.....	.....	.....	.....
Adams's Mills.....	9	96	22	55	72.8	2.39	15	98	18	57	76.0	5.23
Pennsville.....	9	98	20	52	76.4	5.60	.....	.....	.....	.....	.....	.....
Gallipolis.....	9	96	21	52	75.1	3.46	16	98	31	60	78.6	2.27
Oberlin.....	9	96	22	50	69.5	1.50	.....	.....	.....	.....	.....	.....
Sandusky.....	8	90	20, 23	59	72.2	3.90	15	95	31	57	72.1	8.21
Carson.....	9	93	19	57	72.7	3.17	.....	.....	.....	.....	.....	.....
North Fairfield.....	9, 14	88	20, 22	54	71.6	2.91	15	94	31	56	73.1	7.00
Westerville.....	8	91	22	53	71.4	1.50	15	96	31	53	72.9	3.86
North Bass Isl'd.....	8, 14, 16	91	19, 28	58	73.1	2.00	15	100	31	57	74.1	3.63

Table showing the range of the thermometer, &amp;c., for July and August—Continued.

Stations in States and Territories.	JULY.					AUGUST.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.
OHIO—Continued.		Deg.	Deg.	Deg.	In.		Deg.	Deg.	Deg.	Deg.	In.
Marion .....	8	94	19, 20	54	71.7	3.84	15 95	31 52	72.5	5.08	
Hillsboro .....	8, 9	90	20, 21	56	71.8	4.15	{ 3, 14, 15, 16 } 89	18, 31	58	74.5	4.97
Bowling Green ..	9	99	22	55	76.2	5.30	15 101	30 55	75.0	2.89	
Kenton .....	10	99	19, 23	68	80.2	3.00	24 100	31 60	80.6	12.81	
Bellefontaine ..	8	94	19	52	70.5	2.73	15 94	31 53	73.4	9.80	
Urbana Univ .....	8	93	22	53	72.7	2.45	15 96	31 56	74.8	6.48	
Bethel .....	8, 9	94	22	55	72.3	5.25	15, 16 96	31 54	73.8	3.87	
Edgerton .....	8	94	19, 20, 24	54	72.3	1.25					
Carthagena .....	8	93	22	55	74.5	3.88					
Farmer .....							15 97	31 56	78.5	4.27	
Jacksonburgh ..	8	94	1	52	73.3	2.82	16, 23 94	31 58	75.4	8.75	
Oxford .....	8	98	22	57	74.8	2.03	16 98	30, 31 58	75.8	6.07	
Mt. Auburn Inst.	8, 9	93	21	58	76.0	4.62	16 93	31 59	77.8	5.89	
Cumminsville ..	8	94	23	56	72.5	5.12	4 89	31 55	72.7	7.24	
Cincinnati (H.) ..	9	95	21	57	74.8	3.37	16 95	31 55	76.9	5.22	
Do. (P.) .....	9	97	30	51	77.6	4.75					
College Hill .....	8, 9	98	22, 23	60	77.6	5.13	14, 15, 16 94	31 62	77.4	8.30	
MICHIGAN.											
Detroit .....	14	96	19	54	72.1	4.12	15 98	30 55	71.4	1.91	
Monroe City .....	9	98	19, 28	58	75.9	2.53	20 95	30 58	75.6	2.85	
Ann Arbor .....	8	91	19	55	71.8	2.02	15 98	30, 31 56	72.6	2.32	
Alpena .....	2, 13	75	21	51	62.8	3.77	6 76	30, 31 52	65.0	0.88	
State Agr'l Col.	13	95	19	49	70.6	3.10	15 100	19, 30, 31 54	71.3	1.42	
Olivet College ..	8	94	19, 20, 22	54	71.8	3.50					
Litchfield .....	8	92	20, 22	53	69.5	3.40	15 92	30, 31 54	69.3	4.18	
Coldwater .....	13	93	20, 23	47	69.1	1.63					
Battle Creek .....							14 95	31 54	71.6	12.61	
Grand Rapids (H.)	13	98	19	55	73.2	1.71	15 96	31 54	72.8	2.00	
Do. (S.) .....	13	91	19	53	71.0	1.68	14, 15 90	31 41	70.2	2.85	
Northport .....	12	90	19	50	65.4	4.25	2 89	31 52	67.3	1.87	
Benzonia .....	12	90	20	53	67.2	2.90	6 83	31 51	68.0	1.90	
Copper Falls .....	12	93	18	44	60.9	1.35	1 85	27 45	61.9	4.90	
Ontonagon .....	12	92	27	50	63.1	3.00					
INDIANA.											
Fort Wayne .....	8	99	20	57	77.4	2.50	15 98	31 55	73.9	4.30	
Aurora .....	8	102	21, 22	59	75.7	5.48	15 102	31 58	77.2	4.06	
Rising Sun .....	8	93	22	55	73.4	5.45	16 94	31 56	75.5	3.37	
Vevey .....	8	97	23	58	75.2	3.82	16 96	31 56	77.3	4.06	
Mt. Carmel .....	8	98	21	60	77.4	3.58	13 96	31 65	79.1	3.52	
Spiceland .....	8	98	20, 22	57	75.0	1.68	14, 15 99	30, 31 54	76.5	2.78	
Laconia .....	8	98	20	59	75.8	3.22	2, 3 96	31 56	76.8	4.95	
Knightstown .....	8	100	18, 19, 21	59	75.0	2.18					
Beech Grove .....	8	95	23	53	72.6	3.15	15 96	31 48	71.9	4.73	
Bloomington .....	8	95	22	58	74.3	4.63	15 92	31 55	74.8	3.47	
Rensselaer .....	8, 9	96	21	57	74.2	7.10					
Merom .....	9	98	22	61	78.3	3.30	14 97	31 55	78.1	1.45	
New Harmony .....	8	98	22	63	78.4	2.06	15 98	31 57	81.8	1.24	
ILLINOIS.											
Chicago .....	8	101	23	60	77.1	2.55	14 99	31 58	76.2	1.65	
Near Chicago .....	8	102	19	56	74.7	2.33	14 98	31 60	74.0	1.25	
Evanston .....	8	92	20	59	70.4	2.33	14 86	30 57	72.1	3.41	
Marengo .....	30	93	21	51	70.2	1.04	14 93	31 43	69.4	3.07	
Mattoon .....	8	102	24	60	78.8	7.70	14 101	31 53	79.0	4.00	
Aurora .....	8	90	19	53	75.6	1.75	14, 15 96	30 50	73.6	1.97	
Louisville .....	8	100	20	60	74.6	3.50	15 104	31 56	79.7	2.35	
Belvidere .....	8, 30	94	23	55	72.5	2.58					
Sandwich .....	8	95	19	53	73.9	2.06					
Decatur .....	8	100	24	63	77.5	1.85	15 101	31 51	77.5	1.05	
Pana .....	8	98	20	60	77.0	1.65	14 95	31 56	77.2	1.90	
Rochelle .....	8	92	19	53	73.2						
Wyandot .....	30	95	24, 28	53	73.2	1.89					

Table showing the range of the thermometer, &amp;c., for July and August—Continued.

Stations in States and Territories.	JULY.					AUGUST.							
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	
<b>ILLINOIS—Con'd.</b>													
Tiskilwa.....	{ 8, 12, 30, 31 }	{ 96 }	1, 22	60	76.3	.....	14	99	31	47	75.1	.....	
Hennepin... (O.)	8	98	23	54	76.8	1.80	15	98	31	48	76.0	3.60	
Peoria.....	8	96	23	62	76.7	3.76	15	96	31	49	75.7	4.95	
Havana.....	8	98	20	60	76.9	5.25	1	98	30, 31	54	75.8	2.15	
Waterloo... (J.)	16	98	2	60	75.7	4.50	14, 21	96	29	54	72.1	3.90	
Dubois.....	8	98	22	63	78.6	1.09	10, 15	100	31	58	81.3	2.60	
Galesburgh.....	8	90	20	61	76.0	3.51	14	90	31	52	73.9	6.46	
Manchester.....	9	95	20	62	77.5	1.40	15	98	31	53	76.4	0.80	
Mt. Sterling.....	8, 31	90	20, 21	63	76.8	2.20	.....	15	93	31	60	78.1	5.22
Andalusia.....	9	92	20, 22	58	75.0	1.88	{ 1, 3, 12, 14, 15 }	{ 90 }	31	46	74.2	2.32	
Quawka.....	{ 8, 9, 13, 14, 15 }	{ 95 }	20	63	78.2	1.79	1, 14	95	30, 31	57	76.6	12.00	
Augusta.....	31	93	20	64	77.2	2.81	15	95	31	51	75.2	6.48	
Warsaw.....	8, 31	94	{ 20, 21, 22, 23 }	62	75.5	2.34	7	96	31	55	75.2	2.25	
<b>WISCONSIN.</b>													
Sturgeon Bay....	12	92	19, 20	54	68.8	1.85	3	94	30, 31	53	68.7	1.10	
Manitowoc.....	13, 15	90	20	53	68.1	3.42	.....	.....	.....	.....	.....	.....	
Hingham.....	13	90	21	55	70.7	.....	6	90	31	53	69.3	.....	
Milwaukee.....	8	96	22, 24	52	70.2	1.84	6	93	5	47	69.2	3.77	
Geneva.....	8, 12, 15	95	22	52	72.0	2.43	1	97	31	50	70.9	4.16	
Waupaca.....	12	92	21	55	71.8	.....	3	92	30, 31	55	69.7	.....	
Embarrass.....	12, 15	92	13, 20, 28	50	71.5	3.00	3	92	24	50	64.5	4.70	
Rocky Run.....	8	91	19, 21	54	71.5	5.50	14	89	31	50	69.3	2.87	
Madison.....	.....	.....	.....	.....	.....	.....	10	91	31	52	69.8	3.35	
Edgerton.....	30	100	22	54	74.7	4.30	1	96	29, 31	55	72.7	6.20	
Mosinee.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.80	
Baraboo.....	8	94	28	56	72.9	2.13	14	94	31	50	70.6	3.56	
New Lisbon.....	13, 30	94	22	50	72.3	.....	2	90	30, 31	50	67.3	.....	
Bayfield.....	12	96	20, 27	56	68.3	.....	.....	.....	.....	.....	.....	.....	
<b>MINNESOTA.</b>													
Beaver Bay.....	13, 17	87	4, 10, 27	50	62.7	3.67	.....	.....	.....	.....	.....	.....	
Beaver.....	8, 30	88	1, 6	50	70.4	2.65	1	88	31	44	65.7	2.60	
St. Paul.....	8	90	19	55	71.3	1.78	1	93	31	47	69.5	4.83	
Minneapolis.....	12	93	19, 21	53	70.0	1.93	1	92	31	45	67.9	5.40	
Sibley.....	30	94	22	47	70.3	0.25	1, 2	93	31	36	68.5	3.03	
Litchfield.....	15	92	13	52	68.1	2.90	1	89	30	44	66.1	2.40	
New Ulm.....	15	97	19	56	73.0	3.88	1	95	30	53	71.7	2.50	
<b>IOWA.</b>													
Dubuque.....	8, 30	97	20	56	76.3	1.29	1, 10	96	31	49	72.1	6.40	
Monticello.....	30, 31	98	22	56	74.3	2.05	1, 14	96	31	46	72.2	5.15	
Durant.....	16	98	19	56	74.3	2.70	14	101	31	50	72.6	4.45	
West Branch.....	.....	.....	.....	.....	.....	.....	14	95	31	48	72.7	4.13	
Bowen's Prairie.....	30	98	19, 22, 23	58	73.5	0.50	.....	.....	.....	.....	.....	.....	
Fort Madison.....	31	96	21, 22	62	78.1	4.07	14, 15	96	30, 31	56	75.8	7.45	
Guttenberg.....	30	100	{ 19, 20, 21, 23 }	52	71.2	.....	1	96	30, 31	46	69.4	.....	
Mount Vernon.....	13, 30	95	21	57	73.8	.....	1, 14	97	31	50	72.2	.....	
Iowa City.....	8	82	7	50	73.3	6.56	10	95	31	44	71.8	5.23	
Independence.....	30	102	20	55	75.1	2.65	1	105	31	45	73.8	2.47	
Near Independence.....	30	97	18, 23	62	74.7	1.90	1, 2	98	31	44	71.6	3.30	
West Union.....	30	100	20	57	74.8	1.14	14	96	31	48	73.8	4.40	
Rockford.....	8	90	22	57	71.2	.....	1	89	31	50	69.6	.....	
Ames.....	15, 30	96	19	60	75.2	7.70	14	96	30, 31	52	73.8	4.96	
Algona.....	15, 31	94	19	57	74.1	.....	1	94	30	46	70.6	.....	
Boonesboro.....	8	91	1, 2	55	71.0	5.72	7, 10	91	31	40	71.9	5.10	
Afton.....	15, 16	91	22	57	72.7	4.00	7	92	30, 31	48	70.6	4.90	
Fontanelle.....	16	100	21	58	75.9	5.00	13	97	30, 31	51	72.9	6.00	
Grant City.....	30	98	19	55	74.0	3.20	13	98	31	45	73.4	5.80	
Sac City.....	18	91	3	57	70.6	4.40	1, 13	92	25	52	69.3	5.10	







## NOTES OF THE WEATHER.

JULY, 1871.

- Houlton, Me.*—Aurora 8th; no soaking rain; ground dry beneath.
- Union, Me.*—Haying 7th; cherries ripe 12th; corn silking 25th.
- Norway, Me.*—Grasshoppers destructive to 15th; slight earthquake 20th.
- West Waterville, Me.*—Damaging hail 20th. Heat about July average.
- Gardiner, Me.*—Month  $\frac{3}{4}^{\circ}$  colder than mean of thirty-five years; dry till last week.
- Lisbon, Me.*—Slight earthquake 20th; haying finished generally 31st.
- Peterboro, N. H.*—Large hail, covering the ground, 16th.
- Whitefield, N. H.*—Very heavy thunder; earthquake shocks at 3 a. m. 20th.
- Tamworth, N. H.*—Frost 1st; earthquake 20th; long drought about ended.
- Contoocookville, N. H.*—Haying begun 3d; oats ripening 25th, harvested 28th.
- Amoskeag, N. H.*—Slight frost 18th; frequent showers 15th to 31st.
- Lunenburg, Vt.*—Earthquake of 30 seconds, north to south, at 1 a. m. 20th.
- Craftsbury, Vt.*—Very dry till 20th, then wet till close—heavy rains.
- East Bethel, Vt.*—Heavy thunder-showers; fine hail 18th; earthquake 20th.
- West Charlotte, Vt.*—First real rain and wind-storm this season, 31st.
- Panton, Vt.*—Terrific thunder-storm 14th, with large hail, 4 inches deep, 28th.
- Kingston, Mass.*—Most of month very dry after great drought of May and June.
- North Billerica, Mass.*—Copious showers during last week in July.
- Lunenburg, Mass.*—Earthquake, shaking houses, &c., north northwest to south southeast, 20th.
- Middletown, Conn.*—Heavy thunder, copious rain, and damaging hail 15th.
- Southington, Conn.*—Cicada (locust) 10th. Coldest July since 1859.
- South Hartford, N. Y.*—Fifteen light showers during July; one very heavy 31st.
- Brooklyn, N. Y.*—Month showery but pleasant; no signs of midsummer.
- Cooperstown, N. Y.*—Frost 24th; month  $6^{\circ}$  colder than in 1870.
- North Hammond, N. Y.*—Drought 1st; haying begun 5th; harvest 31st. Cool July.
- South Trenton, N. Y.*—Ground covered with hail, large as bantam eggs, 20th.
- Depauville, N. Y.*—Wheat harvest began 14th. Heat  $3^{\circ}.8$  below mean of seven years.
- Palermo, N. Y.*—Coldest July in eighteen years, except in 1860, ( $62^{\circ}.09$ ;) warmest, 1868, ( $79^{\circ}.12$ .)
- Nichols, N. Y.*—Wettest July (hardest showers) in many years.
- Newark Valley, N. Y.*—Very wet month; weather quite cool.
- Little Genesee, N. Y.*—Showers light; streams never lower, some dry.
- Lockport, N. Y.*—Month unusually cold; on 17th, before sunrise,  $53^{\circ}.5$ .
- Newark, N. J.*—In twenty-eight years, warmest July 1866, mean  $76^{\circ}.08$ ; coldest, 1859, mean  $70^{\circ}.23$ ; 1871,  $71^{\circ}.475$ ; four Julys whose

means were lower than this, but none whose maximum was lower, and only one, 1863, as low. Locusts on 16th; no katydids yet, and few mosquitoes.

*Rio Grande, N. J.*—Grand thunder-storm 6th; rain 19th, overflowed gauge.

*New Germantown, N. J.*—Hail 16th, 28th; frequent showers, light winds.

*Greenwich, N. J.*—Showers on thirteen days; warm 6th to 16th; 20th to 26th needed fires; cool to 31st. Peaches 3d; tomatoes 10th; corn cooked 24th; sweet-potatoes 31st.

*Vineland, N. J.*—Violent hurricane 16th, houses, &c., destroyed. Very wet July.

*Dyberry, Pa.*—Very wet month, rain on sixteen days; destructive hail-storm 16th, hail piled up 6 to 12 inches deep in some places.

*Horsham, Pa.*—Month cool and wet; showers seen nearly every day.

*Plymouth Meeting, Pa.*—Temperature but once above 80°, 17th to 31st.

*Factoryville, Pa.*—Terrible tornado, demolishing buildings, trees, &c., 9th; hail-storm, size of hen's eggs downward, destroying crops, and even cattle, 16th; hail 6 inches deep covered several counties. A severely destructive month.

*Parkerville, Pa.*—Rains on eighteen days, four or five very heavy.

*West Chester, Pa.*—Heavy thunder-storms 3d, 6th, 11th, 16th, 27th. A wet month.

*Ephratah, Pa.*—Thunder and terrific hail-storm, damaging houses, &c., 6th.

*Carlisle, Pa.*—Tornado from northwest in Perry and this county, with much hail, large as walnuts, destroying trees and crops, 16th. A showery month.

*Fountain Dale, Pa.*—Month dry; but little rain, yet damp air.

*York Springs, Pa.*—Hail storms frequent after 15th to 31st.

*Tioga, Pa.*—Month cool and wet; some nights cold; frost in some places.

*Grampian Hills, Pa.*—Terrific hail-storm, injuring fruit and crops, 16th.

*Greensburgh, Pa.*—Oats housed 24th; martins left 30th. Very cool July.

*Newcastle, Pa.*—Season two weeks earlier than ever known here.

*Dover, Del.*—Heavy thunder-storms 11th, 15th; heaviest rain in years 25th, 26th.

*Milford, Del.*—From 15th to close of month was cold and wet.

*Woodlawn, Md.*—Month 3° below average of six years, and cloudy and showery.

*Johnsontown, Va.*—Aurora 22d; first real rainy day this year 25th.

*Hampton, Va.*—First half of month hot and dry; last half cool and wet.

*Surry Court House, Va.*—To 10th hot and dry; remainder showery and copious rains; 25th the coldest July day ever known here—fire was comfortable.

*Comorn, Va.*—Second and third weeks very wet, rest favorable. Rain-fall 5.06—average for twenty-two years 3.88.

*Wytheville, Va.*—Cutting oats 7th; katydids 27th. A very dry July.

*Oxford, N. C.*—The coldest July known to any person here.

*Albemarle, N. C.*—Storms, incessant thunder, 6th, 12th, 13th. Very dry month—crops drying up, and wells and springs failing.

*Statesville, N. C.*—Rain, incessant thunder, 6th; heavy rain 12th.

*Aiken, S. C.*—Rain on eight days, with hail on 18th.

*Gowdeysville, S. C.*—Slight rains and showers on six days.

- Berne, Ga.*—Frequent sprinkles and light showers on fifteen days.
- Atlanta, Ga.*—Heavy thunder-storm, and hail an inch deep 23d.
- Moulton, Ala.*—Cotton blooms 15th. Month dry to 10th, then copious rains; cool 18th to 28th, then dry and dusty.
- Coatopa, Ala.*—Thunder and lightning on eleven days, often without rain.
- New Smyrna, Fla.*—On 24th, sea and river water almost ice-cold; many fish died; water cold for several days. Air at 70° to 85° 24th to 31st.
- Jacksonville, Fla.*—A warm July till 25th, then three days cold.
- Picolata, Fla.*—Northeast winds since 22d, bringing intermittent fevers.
- Pilatka, Fla.*—All rains were thunder-storms. Cold 25th to 28th.
- Welborn, Fla.*—Isabellas and catawbas ripe 15th; scuppernongs ripe 22d.
- Gilmer, Texas.*—Month very dry; rains very light; crops suffering.
- Oakland, Texas.*—Hottest summer in many years; crops suffer from drought.
- Sand Fly, Texas.*—Highest mean of any month in twelve years; last rain June 8th.
- Victoria, Texas.*—Very little thunder and lightning; very dry; light winds.
- Clinton, Texas.*—Long drought and great evaporation; month hot.
- Ponchatoula, La.*—Rain in some directions, and thunder every day.
- Brookhaven, Miss.*—Recent rains have revived late crops; cold 25th.
- Marion, Miss.*—Chilly 21st; drying winds for a week past, 28th.
- Washington, Ark.*—Katydids 8th; cotton opening 31st; copious showers came in time to save the crops.
- Elizabethton, Tenn.*—Cloudy to 15th; eight thunder-storms in July.
- Clearmont, Tenn.*—Drought continues; month dry.
- La Grange, Tenn.*—Cool, pleasant days; nights chilly, 19th to 24th; cold rain 25th; fires needed 25th, 26th; then cool nights; warm, oppressive days to 31st.
- Pine Grove, Ky.*—After 13th dry; crops suffering; grass drying up.
- New Lisbon, Ohio.*—Frosts 19th, 20th, 21st; thunder-storm, hail 21st.
- Cleveland, Ohio.*—July mean for seventeen years: temperature 72°·38; rain 3.29 inches.
- Adams's Mills, Ohio.*—Hottest day for over twenty years 9th.
- North Fairfield, Ohio.*—Most destructive tornado ever known here 16th; hail large as one's fist; crops, buildings, trees, destroyed.
- North Bass Island, Ohio.*—Tornadoes; some damage 9th, little 16th. Mornings and evenings cool, noondays hot; vegetation drying up.
- Hillsborough, Ohio.*—Showers and sprinkles on thirteen days in July.
- Kenton, Ohio.*—Frost 23d, making frost every month this year. Ground dry.
- Urbana, Ohio.*—Thunder-storm, large hail, 9th. Month 3°·5 cooler than last year; 1°·19 below June. Rain 1.15 inches below average. Vegetation suffering.
- Alpena, Mich.*—Brightest aurora this year, covering whole northern sky, 21st; moderate 20th, 22d; sweet elder blossoms 31st.
- Northport, Mich.*—Month closes very dry, and vegetation suffering.
- Vevay, Ind.*—Violent thunder and rain storm 16th.
- Mount Carmel, Ind.*—Violent gale, then thunder-storm, 9th.
- Laconia, Ind.*—Terrific thunder, pouring rain and damaging gale, 16th.
- Marengo, Ill.*—Driest July on record; only one-fifth of average rain of ten years.

*Mattoon, Ill.*—First thunder-storm this month 27th; very warm and dry.

*Aurora, Ill.*—Frost 22d; killed buckwheat and vines in places.

*Louisville, Ill.*—Heavy thunder-storms 9th, 10th, 16th; cold 19th to 25th.

*Belvidere, Ill.*—Month dry. Some finished stacking grain by 31st.

*Wyanet, Ill.*—Thunder-showers frequent till 14th.

*Havana, Ill.*—Rain on 10th 4 inches. Entire season dry.

*Dubois, Ill.*—Katydid 1st. Month  $2^{\circ}.26'$  warmer than average of seven years. Average July rain for seven years 3.92 inches; this July 1.09 inches.

*Mount Sterling, Ill.*—To 14th, seven thunder-storms; dry to 31st.

*Manitowoc, Wis.*—Nine thunder-storms; large hail on 30th.

*Waupaca, Wis.*—Terrific thunder-storm, with high wind and hail, 8th.

*Mosinee, Wis.*—Southern lights with streamers to horizon 24th; slight frost 28th; harvest not yet begun 31st.

*St. Paul, Minn.*—Rain for seven months above average, yet the Mississippi is lower than in seven years and still falling.

*Minneapolis, Minn.*—Month nearly  $3^{\circ}$  lower than in 1870.

*Guttenberg, Iowa.*—Harvest stacked and part thrashed. Locusts gone by 12th. Pastures and cisterns dry, and Mississippi as low as ever known.

*Iowa City, Iowa.*—June 5th to July 2d 11.20 inches rain. Harvest three weeks early.

*West Union, Iowa.*—Ground dry at depth of 2 feet—temperature  $68^{\circ}$ , open air  $89^{\circ}$ .

*Independence, Iowa.*—Soaking rain 5th; coolest July weather known here; 28th, thermometer  $102^{\circ}$  in shade,  $121^{\circ}$  in sun 30th.

*Ames, Iowa.*—Too much rain 6th; hail 8th; tornado 13th; harvest ended 27th. Coolest and warmest July known here.

*Algona, Iowa.*—Soaking rain 28th. Month favorable for farmers.

*Boonesborough, Iowa.*—To 15th terrific wind, lightning, &c.; then fine harvest.

*Logan, Iowa.*—Heaviest rain known here 28th; bridges, &c., swept off.

*Council Bluffs, Iowa.*—Thunder-storms on seven days; heavy rains 28th, 29th.

*St. Joseph, Mo.*—Tornado, destroying buildings, trees, crops, &c., 13th.

*Hematite, Mo.*—Magnificent thunder-storm 10th; another, with tornado, 18th.

*Jefferson City, Mo.*—Hurricane 5th to 6th; thunder-storms, gales, 13th, 14th, 17th, 18th.

*Cave Spring, Mo.*—Hay and oats cut 1st; rain sufficient till 30th.

*Oregon, Mo.*—Katydid 1st; blackberries 5th; great storm, hail, 13th.

*Williamstown, Kan.*—Severe gale 2d; katydids 13th; cutting prairie grass 19th.

*Paola, Kan.*—Heavy blows; thunder 10th, 11th, 14th; gale 18th.

*Holton, Kan.*—More thunder-storms and rains than usual.

*Burlingame, Kan.*—Terrible lightning, killing grass in circles of from 20 to 50 feet in diameter, 6th, 10th, 14th, 17th.

*Council Grove, Kan.*—Over eighty days of clouds obscuring sun's rays, and more rain than in any July in ten years, except 1867.

*De Soto, Neb.*—Tornado, with hail, 5th—blew cars off the track of B. and F. Railroad; another 28th, with a deluge, doing immense damage by rain and by wind.

*Emerson, Neb.*—Great thunder-storm, gale, and 4.4 inches rain, 29th.

*Bellevue, Neb.*—Heaviest rain known here 1st; another, with hail, 28th.

*Newcastle, Neb.*—A dry summer, no rain, save a few drops.

*Taylorville, Cal.*—Flaming auroras 7th, 10th; frosts 21st, 22d, severe 30th, 31st.

*Deer Lodge City, Mont. Ter.*—Severe frost 8th; new snow on mountains 9th.

*Missoula, Mont. Ter.*—Light frost 7th; frequent light showers.

*Cathlamet, W. Ter.*—Very dry month; no rain from June 2 to 27th inst.

*Port Angeles, W. Ter.*—Aurora 28th. Foggy and thick; only four clear days.

*Union Ridge, W. Ter.*—Auroras 21st, 26th. Month dry till 27th.

*Templeton's Gap, Col.*—Very heavy thunder-shower 31st. Month dry.

*Eola, Oregon.*—Thunder-showers 28th to 30th. Harvest begun 31st.

*Laramie City, Wy. Ter.*—More rain fell on 20th than in the previous year, and the heaviest ever known here on 22d, with some hail.

### AUGUST, 1871.

*West Waterville, Me.*—Month  $1^{\circ}.69$  warmer than average of last seven Augusts; 1.27 inches rain more than August average of seven years.

*Gardiner, Me.*—Auroras 5th, 13th, 17th, 19th, 21st, 24th. Mean temperature for thirty-five years  $67^{\circ}.019$ . Drought continued till 26th.

*Lisbon, Me.*—Severe hail-storm 5th; heavy rains 26th, 27th, 30th.

*Amoskeag, N. H.*—Slight frost 18th. Last of month quite wet.

*Tamworth, N. H.*—Hot night of 14th; auroras 5th, 17th; drought severe to 25th.

*Troy, Vt.*—Auroras 10th, 12th, 13th, 17th, 21st, 24th. Rain on eleven days.

*East Bethel, Vt.*—White frost 20th; long drought ended 26th.

*Near St. Albans, Vt.*—Thunder and hail storm 8th; light frost 20th.

*West Charlotte, Vt.*—An October day 19th; orioles and swallows gone 29th; drought ended 26th.

*Lunenburg, Mass.*—Heavy thunder-showers 8th, 30th; high winds 27th.

*North Adams, Mass.*—Heavy thunder-storm, hail, 8th; rain, high wind, 21st.

*Hinsdale, Mass.*—Heavy rain, with almost a tornado, 27th.

*Newport, R. I.*—A very wet month, dense fogs, and much rain.

*Moriches, N. Y.*—A very cloudy and damp month; not very rainy.

*Garrison's, N. Y.*—More than usually uniform temperature and moisture.

*Brooklyn, N. Y.*—Frequent rains, some heavy; foliage green as in June.

*North Hammond, N. Y.*—To 26th great drought, ground baked, vegetation dried to a crisp; then dews, rains, reviving vegetation.

*Lowville, N. Y.*—Shooting stars seen 10th, 12th; 11th cloudy. Aurora 12th.

*Depauville, N. Y.*—Auroras 5th, 9th, 10th, 12th, 13th, 15th, 21st; meteors 10th, 12th, 13th, (11th cloudy;) thunder-storm, high wind, 29th.

*Waterbury, N. Y.*—Until the last week month very dry and warm.

*Nichols, N. Y.*—Many hazy days; rainiest August in twelve years.

*Newark Valley, N. Y.*—A heavy rain and severe hail-storm 24th.

*Buffalo, N. Y.*—Month  $3^{\circ}.97$  warmer than the August average of thirteen years; rain-fall three inches above the average.

*Newark, N. J.*—Warmest August,  $74^{\circ}.61$ , 1864; coldest,  $67^{\circ}.3$ , 1866;

this,  $73^{\circ}.12=2^{\circ}$  above average of twenty-eight Augusts. Average rain 5.11 inches, this month 5.31.

*New Germantown, N. J.*—Lightning on seven days; a very wet month.

*Greenwich, N. J.*—Warmest day of 1871, 16th; first rain in four weeks 23d. Summer mean  $2^{\circ}.33$  below 1870, and  $1^{\circ}.04$  below seven summers past.

*Vineland, N. J.*—A good season; warm month; farmers pleased.

*Dyberry, Pa.*—The last part of the month was very wet.

*Horsham, Pa.*—A heavy thunder-storm 30th; for ten days sultry and damp.

*Plymouth Meeting, Pa.*—Thermometer  $80^{\circ}$  and above, twenty-two days; rain every day 23d to 30th, eight days. Summer mean  $72^{\circ}.2$ ; rain-fall 17.06 inches.

*Factoryville, Pa.*—A hazy month,  $2^{\circ}.5$  warmer than average of seven years.

*Carlisle, Pa.*—Thunder-storm, 4 inches rain in two hours, 7th; many meteors 11th; hottest day 16th. Too much rain for farmers.

*York Sulphur Springs, Pa.*—Ground dry for three months 8th; streams very low 20th.

*Tioga, Pa.*—Month favorable for farmers; the late rains seasonable.

*Grampian Hills, Pa.*—Severe drought 10th to 24th, then copious rains.

*Greensburg, Pa.*—Severe thunder-storm, almost a tornado, 16th. Atmosphere very hazy all summer.

*Fallston, Md.*—Rain-fall in the year ending with this month, 41.49 inches.

*Sam's Creek, Md.*—Severe drought ended 25th—wells were drying up.

*Capeville, Va.*—Heaviest thunder-storm this season 8th; copious rains.

*Hampton, Va.*—Thunder-storms on seven days, violent 1st; no day entirely clear.

*Surry Court-House, Va.*—Warm and showery till 29th—very favorable for crops.

*Mount Solon, Va.*—Fruit trees lost much foliage during drought this month.

*Accotink, Va.*—Little thunder or rain, except in lower Maryland.

*Piedmont, Va.*—Run at Somerset dry 19th to 25th—first time in thirty years.

*Wytheville, Va.*—Rain 26th, 27th, the first of note since July 12th.

*Albemarle, N. C.*—Long drought to 18th; more rain 27th, 28th.

*Gowdeysville, S. C.*—No general rain from July 2d to 26th instant.

*Berne, Ga.*—Violent gale, with hard rain, 17th, 18th, and with showers 25th, doing much damage by wind and floods.

*St. Mary's, Ga.*—Gales, from southeast 18th, from northeast 25th, with much rain.

*Huntsville, Ala.*—Crops dried up to 24th, then gusts of wind and rain.

*Moulton, Ala.*—Warm; dry till 24th, then sufficient rain; cool 31st.

*Ocala, Fla.*—Tornado and pouring rains 16th, 17th, and again and worse 25th; immense destruction by wind and flood.

*New Smyrna, Fla.*—Most violent gale since October 23, 1865, with thunder and deluging showers, 16th, 17th, 18th, and again, and as hard, 24th, 25th.

*Jacksonville, Fla.*—Gales and rains of 17th, 18th, and 25th very destructive here; worse south of this; scarcely felt on Gulf coast.

*Picolata, Fla.*—Storms of 16th to 19th came in puffs, destroying trees, buildings, &c.



*Pilatka, Fla.*—Cyclone with sheets of rain (11.6 inches in forty hours) 16th, 17th, 18th; another as severe 25th. Damage to shipping, buildings, &c., cannot be estimated.

*Ponchatoula, La.*—Violent thunder every day, but few showers, 1st to 15th; smoky, continued rains 20th to 23d; violent storm 28th.

*Brookhaven, Miss.*—Cotton-picking 28th; whippoorwills silent 31st; summer dry.

*Elizabethton, Tenn.*—Month exceedingly dry; upland crops damaged.

*Trenton, Tenn.*—A dry month; weeds and rust ceased among cotton.

*Washington, Ark.*—Very little rain during August; crops suffering.

*Westerville, Ohio.*—First sufficient rain of the season 26th.

*North Bass Island, Ohio.*—Vegetation suffered severely in drought from 5th to 25th.

*Hillsborough, Ohio.*—Rain on eleven days, with thunder 24th, 25th.

*Kenton, Ohio.*—First rain from northeast (all day) in many years 25th.

*Urbana, Ohio.*—Warmest day of 1871 15th; mean of month 3° above average for twenty years; rain 3 inches above August average.

*Bethel, Ohio.*—Great damaging hail three miles south 1st; a good needed rain 25th.

*Jacksonburgh, Ohio.*—Martins leave 6th; light frost 31st.

*Cincinnati, Ohio.*—Terrific thunder-storms, an inch rain in thirty minutes, 7th, and 1.5 inches, in an hour 11th; a heavy one also on the 8th.

*College Hill, Ohio.*—Thunder-storm, 3.25 inches rain fell in two hours, 11th.

*Detroit, Mich.*—Hottest day of season 15th; hazy and smoky 9th to 26th. Drought, on uplands earth dry 3 feet down, many wells dry, up to 25th.

*Alpena, Mich.*—Auroras 11th, 12th, 23d. Many smoky days.

*Litchfield, Mich.*—Auroras 9th to 12th, 17th. Very dry; no frost yet.

*Northport, Mich.*—Driest season known here; trees losing foliage.

*Copper Falls, Mich.*—Auroras 23d, 24th; heavy rain (3.3 inches) 28th, 29th.

*Rising Sun, Ind.*—Slight frost, first this fall, 31st.

*Vevay, Ind.*—Except thunder-storm 7th, dry till rains 25th, 28th, 29th.

*Beech Grove, Ind.*—Rain scarce since May, 1870, till 28th inst.

*Mattoon, Ill.*—Very dry 1st to 8th, but little rain afterward; cool nights.

*Louisville, Ill.*—Locusts 2d; first light frost 31st.

*Hennepin, Ill.*—Month hot, windy, and only slight rain till 28th.

*Belvidere, Ill.*—No rain 10th to 22d; slight rains to close; hot to 29th.

*Manchester, Ill.*—Few rains and slight; drought severe; wells nearly dry.

*Andalusia, Ill.*—Light frost in low places, no damage, 31st.

*Milwaukee, Wis.*—Almost tornadoes at 12.30 and 9.30 p. m. of 7th.

*Embarrass, Wis.*—Most thunder-storms this summer from northwest, bringing cold weather—almost frosts.

*Minneapolis, Minn.*—First frost, slight, 31st. Month 2° above last year's.

*Guttenberg, Iowa.*—Thunder-showers and hail 7th, 22d; first rain this summer to soak the ground 25th. Thrashing done, plowing begun.

*Independence, Iowa.*—First day hot, (105°,) last day frost; dry month.

*Rockford, Iowa.*—Thunder-storms 2d, 3d, 13th; light frost 31st.

*Ames, Iowa.*—Tornado 3d; aurora 16th; frost in low lands 31st.

*Algona, Iowa.*—Warm month, best corn season known here.

*Boonesborough, Iowa.*—August average of eighteen years 67°—this 71°. Frost 31st.

*St. Louis, Mo.*—Violent gale, terrific lightning and thunder, and heavy rain 8th.

*Hematite, Mo.*—June, July, and August have been excessively hot and dry.

*Rolla, Mo.*—Heavy thunder-storms 3d, 16th, 22d, 23d, with gale 28th.

*Cave Spring, Mo.*—Gale, thunder-storm, 27th. Month dry, streams very low.

*Oregon, Mo.*—Great thunder-storm, heaviest rain since July 21th, 1868; many meteors 10th, 11th, 12th; fire needed 26th to 30th. Great storms frequent near here.

*Atchison, Kan.*—Brilliant aurora 16th; light frost on low lands 30th.

*Paola, Kan.*—Month began very wet, but ended very dry, springs failing.

*Holton, Kan.*—A warm and dry month, splendid for harvesting, thrashing, &c.

*Omaha Agency, Neb.*—A dry, pleasant month; most nights cool.

*Deer Lodge City, Mont. Ter.*—New snow on mountains 12th; first killing frost 22d.

# MONTHLY REPORT

OF THE

# DEPARTMENT OF AGRICULTURE

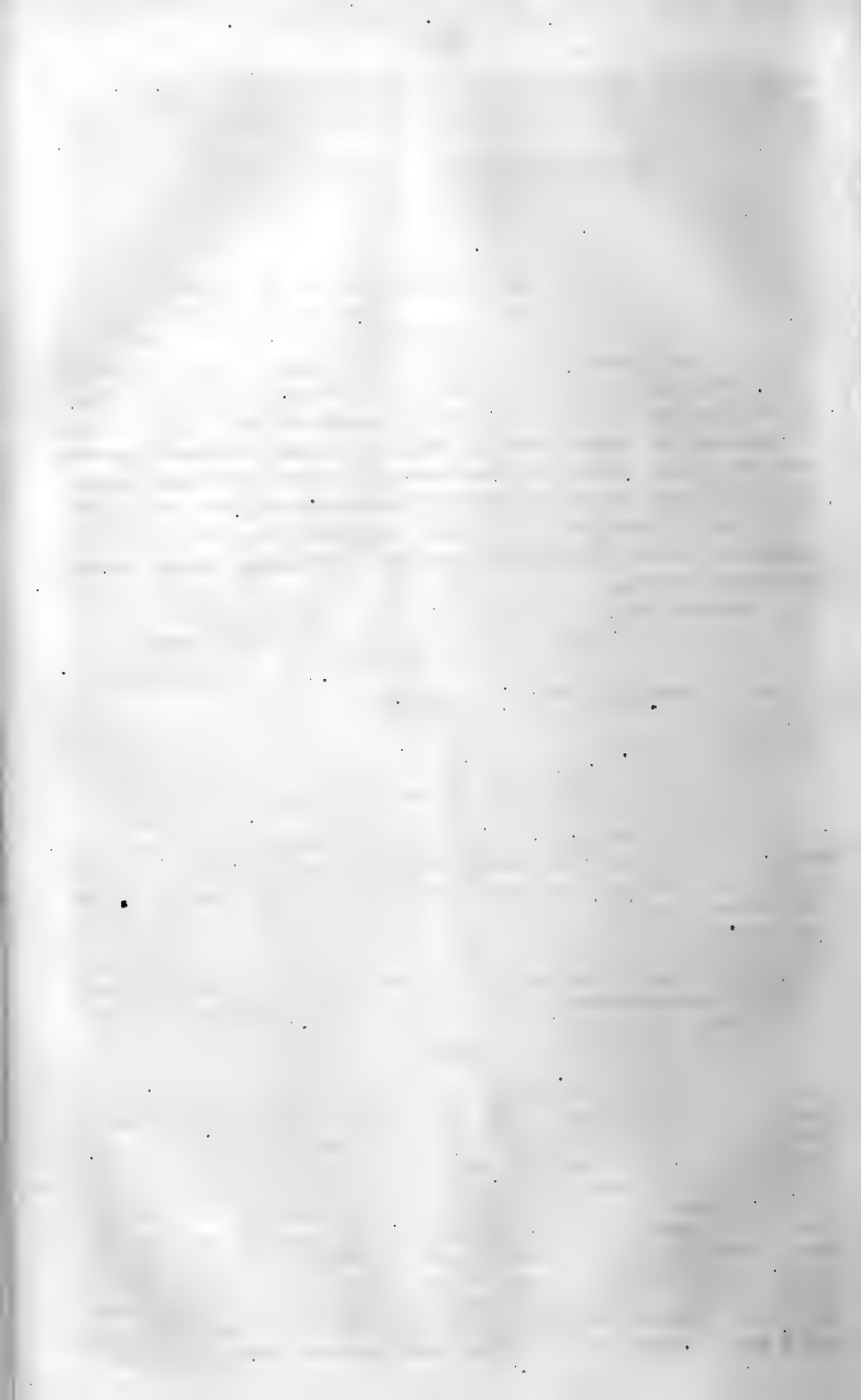
FOR



OCTOBER, 1871.



WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1871.



# MONTHLY REPORT.

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DEPARTMENT OF AGRICULTURE,  
STATISTICAL DIVISION,  
*Washington, D. C., October 19, 1871.*

SIR: I present herewith, for publication, a digest of the reports of our correspondents upon the condition of the growing crops, and the product and quality of those harvested, together with a variety of notes of reporters in relation thereto. Also a number of general extracts from the communications of regular correspondents, with articles upon the drought and the great fires in the Northwest, the jute plant, cundurango, entomological record, scientific notes, facts from various sources, market prices of farm products in several cities, meteorological tables and notes, &c., &c.

Respectfully,

J. R. DODGE,  
*Statistician.*

Hon. FREDERICK WATTS, *Commissioner.*

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## CONDITION OF THE CROPS.

The influence of drought and of the unusually low temperature of September have been unfavorable to the ripening of fruits and to the maturing of corn and other crops. No general or serious damage has resulted to corn, a large portion of the crop being well advanced by the high temperature of August before the recurrence of frost. The drought of midsummer has been almost unbroken in the West up to the date of these returns, interfering greatly with the seeding of winter grain, and with the germination and growth of the areas which farmers have been able to plant.

### CORN.

In Maine and Vermont injuries from early frosts are reported, and in portions of the former State from grasshoppers. The other New England States indicate comparatively high condition. On Lake Ontario an injurious frost is recorded as early as the 21st ultimo, and injuries from frost are indicated in Erie, Franklin, Putnam, Ulster, and Wyoming. In some of the upper counties of New Jersey, and in the highlands of Northeast Pennsylvania, there will be immature corn from the same cause; in Greene, Pennsylvania, the fodder is much damaged, though the corn itself is too far advanced for material injury. In all the States between New York and Virginia, condition averages high. In Virginia the best soils well cultivated are covered with superior corn, and several counties report the best crops in several years; others have

suffered from drought, as Clarke, where "many fields will not make a bushel per acre," while in Albemarle one farmer will harvest fifty bushels per acre on 300 acres. The crop has been reduced in quantity and quality in the Carolinas by drought, mainly upon uplands of a light character. The bottom-lands in Georgia have been flooded to an unusual extent at various times, and especially during the great storms of August, and drought has parched thin soils; otherwise the crop would have been superior. Similar causes have reduced the yield in Alabama, and drought has wrought much damage in Mississippi and the more western Gulf States. Arkansas is the only Southern State that claims average condition for this important crop. The increase in area was so large that a greater product than that of last year may be expected in the cotton belt.

In the West, Kentucky, Illinois, and Michigan, report reduced condition in consequence of drought; and while local damages from this cause appear in other Western States, their average condition is high, and a large crop is certain. Some fields were injured by frost in Northern Ohio and in Michigan on the 21st ultimo. The yield in Wisconsin and Minnesota will be heavy, without injury from frost; and in Iowa, Nebraska, Kansas, and Missouri, another overflowing harvest of sound corn is assured.

The present condition, expressed as a percentage, 100 representing a good crop, is as follows: Above an average, New Hampshire, 111; Massachusetts, 103; Rhode Island, 101; Connecticut, 105; New Jersey, 102; Delaware, 108; Maryland, 103; Arkansas, 102; Missouri, 112; Ohio, 104; Wisconsin, 108; Minnesota, 110; Iowa, 114; Kansas, 119; Nebraska, 112.

*Androscoggin County, Maine.*—Extra crop.

*Oxford County, Maine.*—Many fields are worthless except for fodder, owing to the grasshoppers.

*Hillsborough County, N. H.*—Crop 15 per cent. less than last year.

*Stafford County, N. H.*—Being harvested in splendid condition.

*Windsor County, Vt.*—Fully three weeks later than last year.

*Grand Isle County, Vt.*—Ripened slowly, and many fields were seriously injured by frost.

*Orleans County, Vt.*—Frost killed the corn when it needed two weeks to mature.

*Norfolk County, Mass.*—Greatly injured by frost.

*New London County, Conn.*—Better than last year.

*Ulster County, N. Y.*—Frost, 21st September, killed corn.

*Putnam County, N. Y.*—Much better than anticipated.

*Wyoming County, N. Y.*—Late crop injured by frost.

*Franklin County, N. Y.*—Heavy frost, 16th September, killed corn before it was ripe.

*Ontario County, N. Y.*—Injured in some localities by the frost of 21st September.

*Eric County, N. Y.*—Injured by drought and frost. Little over half a crop.

*Alleghany County, N. Y.*—About an average crop, but not so good as last year.

*Gloucester County, N. J.*—Very heavy, but late. All cut.

*Bergen County, N. J.*—Seriously injured by the frost of September 21.

*Burlington County, N. J.*—The past month has been very favorable for ripening late corn, of which we have rather more than usual.

*Indiana County, Pa.*—Cut short by drought.

*Westmoreland County, Pa.*—Much of the crop will be soft, it is feared.

*Wayne County, Pa.*—Damaged by frost.

*Greene County, Pa.*—Killing frosts injured fodder where the corn was not cut up. Corn too far advanced to be damaged.

*Northumberland County, Pa.*—Crop unusually large and good.

*Tioga County, Pa.*—Ripened early and harvested in better condition than usual.

*Baltimore County, Md.*—Fair average yield of good quality.

*Charles County, Md.*—Crop exceeds the average for ten years past.

*Albemarle County, Va.*—A grand crop in some sections. One farmer, it is estimated, will harvest 50 bushels per acre on 300 acres. In other sections the crop is short.

*Culpeper County, Va.*—Early planted, a good average crop; late planted, about half a crop.

*York County, Va.*—Best season for corn since 1865.

- Madison County, Va.*—Short generally, but much improved by September rains.
- King George County, Va.*—Best crop for many years.
- Alexandria County, Va.*—All crops injured by drought.
- Clarke County, Va.*—Drought disastrous. Many fields will not make a bushel to the acre. On the river bottoms and along other streams there are some good fields of corn.
- Fauquier County, Va.*—Materially reduced by drought.
- Stony County, Va.*—Very good. More corn than in any year for six years past.
- Gloucester County, Va.*—Large crops wherever the cultivation has been good.
- Watauga County, N. C.*—Crop injured about 10 per cent. by a severe storm of rain and wind on the 1st of September.
- Caldwell County, N. C.*—Early summer very wet, followed by drought in July and August, reduced the crop very much.
- Bladen County, N. C.*—Crop reduced at least one-third by drought on all uplands. Bottom lands rather better.
- Franklin County, N. C.*—We have had one of the most disastrous droughts ever known in this county. Crops of all kinds have suffered. The corn acreage was largely increased, and a supply of corn will probably be made.
- Mecklenburgh County, N. C.*—Early crop much the best. The crop is light, and mostly nubbin, except in the bottoms. Crop in the county will not average over five bushels to the acre.
- Gaston County, N. C.*—Very short on high lands and very good on low lands. Drought reduced the upland crop two-thirds.
- Beaufort County, N. C.*—Late crop injured by drought, but as a whole the yield will be about an average.
- Craven County, N. C.*—Heavy, sound, and good.
- Person County, N. C.*—Injured by drought.
- York County, S. C.*—Three-fourths of a crop. It has turned out better than reported last month.
- Clarendon County, S. C.*—Yield per acre not so good as last year. Acreage increased 20 per cent.
- Lexington County, S. C.*—Fully up to an average; which, with the very promising pea crop, will supply abundant food for man and beast.
- Newberry County, S. C.*—The crop gathers light; much less than anticipated.
- Putnam County, Ga.*—Most unfavorable season within my recollection for both corn and cotton.
- Schley County, Ga.*—Sufficient for home consumption.
- Lumpkin County, Ga.*—Injured by storm in August by being blown down.
- Clayton County, Ga.*—Injured by wet weather in spring and summer, and severe storm in August.
- Bulls County, Ga.*—Injured by drought and by storms.
- Crawford County, Ga.*—Nearly all the corn on the river and large creek bottoms destroyed by floods.
- Spalding County, Ga.*—Over an average. Where it was well cultivated it is superior.
- Habersham County, Ga.*—Bottom corn flooded while in the milk.
- Suwanee County, Fla.*—Some fields ungathered at the overflow of the river were destroyed.
- Lvy County, Fla.*—Badly damaged by the storms of August. When ready for gathering it was broken down and covered with water, and a great deal of it rotted.
- Greene County, Ala.*—Late corn destroyed by drought.
- Wilcox County, Ala.*—Very light and inferior.
- Dallas County, Ala.*—Not over three-fifths of a crop, and quality inferior.
- Macon County, Ala.*—Almost an entire failure.
- Chambers County, Ala.*—Early corn good; late cut off by drought in August.
- Sumter County, Ala.*—Scarcely any corn. Quality poor.
- Clarke County, Ala.*—Early planted corn on the uplands, over an average crop. The river and creek lands, owing to overflow, were planted late, and are an entire failure.
- Hancock County, Miss.*—Crop reduced by drought at one time and excessive rains at another.
- Jefferson County, Miss.*—Almost a total failure.
- Wilkinson County, Miss.*—Heavily damaged by drought.
- Marshall County, Miss.*—Injured by drought when in the milk state. When the rains came it was heavy, with a brisk wind, which blew the stalks down, and much of the corn was destroyed.
- Rapides Parish, La.*—Not over five per cent. of a crop.
- Franklin Parish, La.*—But little more than half a crop.
- Milam County, Texas.*—Much better than anticipated two months ago.
- Hardin County, Texas.*—Crop gathered—abundant and of good quality.
- Smith County, Texas.*—The increased acreage brings the aggregate production up to that of last year.
- Red River County, Texas.*—Below an average; but sufficient for home use and to spare

*Upshur County, Texas.*—The drought, followed by the extreme wet weather, cut the crop short.

*McLellan County, Texas.*—Half a crop; now worth \$1 25 per bushel.

*De Witt County, Texas.*—Cut short by drought, though many farmers have harvested better crops than usual.

*Williamson County, Texas.*—Shortened by a four months' drought. Selling at \$1 per bushel. Last year, same date, 50 cents.

*Washington County, Ark.*—Probably an average crop; but the yield will be less than anticipated. Wet weather in the spring, poor cultivation while young, drought after middle of July, so that the crop did not mature well.

*Columbia County, Ark.*—Crop greater than last year.

*Drew County, Ark.*—Notwithstanding the large area planted, the crop will not more than suffice for home consumption.

*Johnson County, Ark.*—Yield reduced by drought. Ears small, but sound. Housed in good condition.

*Fayette County, Tenn.*—Larger acreage and better yield per acre than last year.

*Doddridge County, W. Va.*—The dry weather of the last month has been very favorable to the corn crop.

*Taylor County, W. Va.*—Late corn crop considerably injured by the heavy frosts in September.

*Brooke County, W. Va.*—Slightly damaged by the extreme drought.

*Lincoln County, Ky.*—Corn does not exceed half a crop, owing to drought from July 1 to September 13; late planted of no account.

*Graves County, Ky.*—Late corn was considerably injured by the heavy frost September 28.

*Breckinridge County, Ky.*—Injured 20 per cent. by dry weather in August.

*Henderson County, Ky.*—Corn much improved by rains the last of August.

*Gentry County, Mo.*—Crop well matured; sufficiently dry to harvest.

*Carroll County, Mo.*—Corn crop has been considerably injured by the chinch-bug and drought during August and September.

*Audrain County, Mo.*—Corn injured by chinch-bug more than for many years.

*Perry County, Mo.*—Drought for six weeks and the chinch-bug have nearly destroyed the corn crop on old lands; chinch-bugs never so numerous.

*Callaway County, Mo.*—Pretty good yield, but some of it light and chaffy.

*Moniteau County, Mo.*—Early corn crop large; late corn almost a failure.

*Clay County, Mo.*—Corn crop splendid; price advancing.

*Peniscont County, Mo.*—Crop considerably diminished by drought in August and September.

*Lee County, Ill.*—Badly damaged by drought on sandy soil; on moist land above an average crop.

*DeWitt County, Ill.*—Corn crop about an average; greatly reduced by dry weather.

*Perry County, Ill.*—Corn crop very much injured by drought.

*Lawrence County, Ill.*—Corn on the prairies almost entirely destroyed by the chinch-bug.

*Wabash County, Ill.*—Corn averages about three-fourths of a crop; quality good.

*Pike County, Ill.*—Corn on moist lands never better; on dry not more than half a crop, owing to drought.

*Jersey County, Ill.*—Injured by dry weather and chinch-bug.

*Ogle County, Ill.*—Crop ready for harvesting several weeks earlier than usual.

*De Kalb County, Ill.*—Dry weather has injured the corn considerably; the quality is excellent.

*Boone County, Ill.*—Corn crop diminished by severe drought in August and September; quality good.

*Livingston County, Ill.*—There will be a large crop of corn notwithstanding injury by drought.

*Carroll County, Ill.*—Ripened unusually early, and is in good condition to harvest.

*Macoupin County, Ill.*—Owing to light rains in early summer corn has done well; late crops injured by drought.

*Hancock County, Ill.*—Considerably injured by dry weather and chinch-bug.

*Fayette County, Ill.*—Crop considerably less than last year, owing to injury by chinch-bug and drought.

*St. Clair County, Ill.*—Corn in northern part of county good; southern and eastern very poor.

*Pulaski County, Ind.*—Corn crop has been diminished 15 to 25 per cent. by drought.

*Madison County, Ind.*—Crop light, but safe from injury by frost.

*Noble County, Ind.*—Dry weather has considerably injured the corn crop.

*Decatur County, Ind.*—Corn is good, and out of danger from frost.

*Ohio County, Ind.*—Corn is fully an average crop; all ripe.

*Clark County, Ind.*—Corn is not maturing well.

*Dubois County, Ind.*—Much above an average, and well matured.



- Floyd County, Ind.*—Perfectly matured, and much of it harvested.  
*Union County, Ind.*—Best crop of corn for four years.  
*St. Joseph County, Ind.*—Not more than three-fourths of a crop, owing to excessive dry weather.  
*Franklin County, Ind.*—Corn ripening in excellent condition; not so heavy in kernel as last year.  
*Fayette County, Ind.*—Corn is ripening very fast; will soon be ready to harvest.  
*Loraine County, Ohio.*—Late-planted corn injured by severe frost September 20.  
*Lawrence County, Ohio.*—Crop the best known for many years.  
*Geauga County, Ohio.*—No better crop of corn ever seen in the county.  
*Athens County, Ohio.*—The quantity of corn is much reduced by long-continued drought.  
*Crawford County, Ohio.*—The crop of corn is unusually large and fine.  
*Hamilton County, Ohio.*—Owing to dry weather in the spring, corn on bottom and sandy soils is not so good as in other localities.  
*Ross County, Ohio.*—In fine condition for harvesting.  
*Defiance County, Ohio.*—Late corn was entirely killed by the heavy frosts the 21st and 22d of September.  
*Union County, Ohio.*—Corn all ripe and in good condition.  
*Adams County, Ohio.*—Drought has injured the corn crop considerably.  
*Mason County, Mich.*—Late corn injured by early frost.  
*Muskegon County, Mich.*—Continued drought has diminished the corn crop materially.  
*Emmet County, Mich.*—Half a crop, with quality so inferior as to make it equal to about one-fourth of that of last year.  
*La Fayette County, Wis.*—Heaviest crop of corn ever raised in the county.  
*Fillmore County, Minn.*—Corn is being harvested in good order.  
*Steele County, Minn.*—Best crop we have ever had, both in product and quality.  
*Cass County, Iowa.*—Corn crop probably the best ever raised in the county.  
*Marshall County, Iowa.*—Corn well ripened and in good condition.  
*Clinton County, Iowa.*—Corn crop best for five years; perfectly ripe.  
*Tama County, Iowa.*—Late corn injured by dry weather during the last two months.  
*Mahaska County, Iowa.*—Corn all ripe and in good condition to harvest; a month earlier than usual.  
*Washington County, Iowa.*—Corn crop the best known for twenty years.  
*Muscatine County, Iowa.*—A very great yield of corn; all wanting more crib-room.  
*Webster County, Iowa.*—Best crop of corn ever raised in this county; average yield, about fifty bushels per acre.  
*Keokuk County, Iowa.*—Corn crop truly wonderful; nothing before to be compared with it.  
*Dallas County, Iowa.*—Corn has ripened finely without injury from frost.  
*Monona County, Iowa.*—Corn crop exceeds any before raised in this county.  
*Harrison County, Iowa.*—Corn fully matured; crop heavy.  
*Jackson County, Kans.*—Corn very good; selling at 25 cents per bushel.  
*Riley County, Kans.*—The crop of corn is large; rain destroyed the chinch-bugs.  
*Douglas County, Kans.*—Corn good; suffered some injury from chinch-bug.  
*Jefferson County, Kans.*—Corn nearly fit to harvest; crop bountiful.  
*Norris County, Kans.*—Corn crop is unsurpassed.  
*Crawford County, Kans.*—Most corn in vicinity of wheat injured by chinch-bug.  
*Wyandotte County, Kans.*—Yield of corn large; crop is being harvested.  
*Doniphan County, Kans.*—Corn crop the largest ever raised in the county.  
*Osage County, Kans.*—Many fields badly damaged by chinch-bug.  
*Merrick County, Nebr.*—Chinch-bug injured corn crop considerably.  
*Cass County, Nebr.*—Corn is drying up early; injured by chinch-bug.  
*Douglas County, Nebr.*—Best corn crop ever raised in this section of the country.  
*Kearney County, Nebr.*—Corn is much better than last year, both in quantity and quality.  
*Saunders County, Nebr.*—Acreage increased 150 per cent.; condition 50 per cent. above average.  
*Curry County, Oreg.*—Corn has grown well notwithstanding the severe drought.

## WHEAT.

The product of wheat, as calculated from county estimates of our correspondents, appears to be about 7 per cent. less than last year. The percentages of last year's crop in the several States are as follows: Maine, 87; New Hampshire, 106; Vermont, 94; Massachusetts, 104; Connecticut, 100; New York, 104; New Jersey, 125; Pennsylvania, 123; Delaware, 100; Maryland, 120; Virginia, 85; North Carolina, 65; South Carolina,

60; Georgia, 65; Alabama, 71; Mississippi, 84; Texas, 90; Arkansas, 85; Tennessee, 60; West Virginia, 103; Kentucky, 75; Missouri, 102; Illinois, 93; Indiana, 90; Ohio, 99; Michigan, 110; Wisconsin, 90; Minnesota, 75; Iowa, 90; Kansas, 113; Nebraska, 96; California, 90; Oregon, 101. The quality is generally superior. It is placed above an average in all the Western States except Kentucky, Iowa, and Nebraska.

Drought and grasshoppers reduced the yield materially in portions of Maine and Vermont. In Albany County, New York, there was loss of early-sown wheat from weevil, but in several of the best wheat-growing counties of that State the best result for several years was obtained. A fine crop in quantity and quality is reported in Pennsylvania; in some places where the straw was short the season was favorable for heading well. The wheat of the Southern States was considerably injured by rust. The Tappahannock is still the most reliable variety in that section. One correspondent in Tennessee (Sullivan County) reports that notwithstanding the general failure of wheat, he was able to secure, upon poor soil,  $24\frac{1}{2}$  bushels per acre, by the application of twenty two-horse loads of sheep manure per acre. Wheat was greatly injured in Kentucky by the frost of April 23, and the severe drought which followed reduced still further both yield and quality. The losses in the West were mainly from insects, slightly from winter-killing, and from April frosts, and to some extent due to drought which retarded growth and tillering. Spring-wheat was in many places almost destroyed by the chinch-bug.

The yield in Minnesota is greatly reduced. Several counties report an average of only eight bushels per acre. Disappointment is experienced in many places at the result in thrashing. The depreciation in Iowa is estimated at 10 per cent. The chinch-bug was especially injurious in the Northwest. The product is large in Kansas, notwithstanding the destruction of spring-wheat by this pest. In Doniphan County, fall-wheat is unusually heavy and of fine quality, averaging sixty-three pounds to the bushel and twenty five bushels per acre, but spring-wheat is so destroyed by the chinch-bug as to be scarcely worth harvesting. In Nebraska there will be a large increase of fall sowing, as the result of experience of the past. The crop of Oregon is a good one; one county (Polk) reports a product of half a million bushels.

#### OATS.

The product of oats will be about as large as the crop of last year. The States producing more than in 1870 are New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, Mississippi, Arkansas, Indiana, Ohio, Wisconsin, Iowa and Kansas. The quality in the Eastern, Middle, and Western States is good. Drought and grasshoppers cut short the crop in Maine. The product is large in New York, though not uniform, some counties reporting less than last year, others an "enormous yield." The harvest was shortened in New Jersey by dry weather early in the season, and wet weather prior to harvesting; and also in sections of Pennsylvania, as in Berks, where the weight is reported at 24 to 30 pounds to the bushel. Rust prevailed generally in the Southern States, and drought wrought local injury. In Kentucky, oats is the best grain crop. In Illinois the product is an average one. In Decatur, as in many other counties, the crop is reported good, notwithstanding the drought, and in Livingston, as elsewhere, "the yield is 40 to 50 bushels per acre where not injured by the chinch-bug." In Lafayette County, Wisconsin, is reported "the finest crop of oats ever raised;"

in some cases 95 bushels per acre. In Milwaukee County, the White Schonen (distributed by the Department of Agriculture) "averages 65 bushels per acre, the Norway 38½ bushels." In Muscatine County, Iowa, the yield is 40 to 75 bushels per acre. The losses from the chinch bug were general in Missouri, yet a nearly average crop is reported; and Kansas has bid defiance to chinch-bugs, and claims an increase of 10 per cent. on last year.

#### BARLEY.

The product is greater than last year in New Hampshire, Vermont, New York, Ohio, Indiana, Wisconsin, Iowa, Kansas, and Oregon. The quality is above an average in all of the New England States except Maine, and in New York, Tennessee, West Virginia, Ohio, Michigan, Wisconsin, Iowa, Kansas, and Oregon. As a whole, the quality may be said to be fully medium, and the quantity very nearly an average.

#### BUCKWHEAT.

This crop is comparatively a poor one, the average condition being low in nearly all the States. In Maine the growth was large, and blossoms abundant, but they did not fill. In all the States north of Virginia and Kentucky it was injured by the frosts of September 21 and 22, and in Southern Indiana and Ohio by the frosts of the 29th and 30th September. In Des Moines County, Iowa, it was "all killed by frost September 21." In Dakota killing frosts came as early as the 12th of September. Drought has also reduced the yield.

#### POTATOES.

The potato crop is somewhat above an average in the New England and Middle States, Vermont and Delaware constituting the only exceptions; below an average in nearly all the States of the South; a poor yield in Kentucky, Missouri, Illinois, and Indiana, and a fine product in the Northwestern and Trans-Missouri States. Taken together, the product of the country must fall below an average. A few notes of correspondence are appended:

*Ulster County, N. Y.*—Vines killed by frost September 21.

*St. Lawrence County, N. Y.*—Enormous yield.

*Kings County, N. Y.*—An unusually good crop. The Peerless has been grown in small quantities and yields rather better than the Rose.

*Albany County, N. Y.*—Not more than half a crop, and rotting badly at that.

*Kings County, N. Y.*—Yield larger than usual. Quality fine. Hardly any rot.

*Gloucester County, N. J.*—Early varieties, large crop; late ones, medium. Sweet-potatoes, light crop.

*Warren County, N. J.*—Good yield, but considerable complaint of rot among those taken out of the ground after the heavy rain of the 20th September.

*Burlington County, N. J.*—Many report the Peach Blow as not yielding so well as earlier varieties.

*Indiana County, Pa.*—At least three-fifths below last year, owing to drought and bugs.

*Elk County, Pa.*—Very good in quantity and quality; Early Rose the favorite.

*Tioga County, Pa.*—Harvested earlier and in better condition than usual.

*Kent County, Del.*—Sweet-potatoes injured by drought and frost.

*Howard County, Md.*—Vines injured by frost of September 21 and 22.

*Orange County, Va.*—Root crops generally poor, from dry season.

*Surry County, Va.*—Above average crop; quality excellent. Irish potatoes very scarce; rotted badly.

*Beaufort County, N. C.*—The early crop, planted in February or first of March, was very fine. I raised at the rate of 400 bushels to the acre of the Early Rose; many of the tubers weighed one pound each, and some of the largest 1½ pounds each. The late crop, planted in June and July, is an entire failure.

- Craven County, N. C.*—Sweet-potatoes have suffered from drought and cold.
- Union County, S. C.*—Sweet-potatoes small, owing to drought.
- Suwanee County, Fla.*—Whole fields destroyed by overflow.
- Jackson County, Fla.*—The sweet-potato crop has failed comparatively in some places, while in other places it is abundant.
- Montgomery County, Ala.*—Sweet-potatoes greatly benefited by favorable weather of September. Fall turnips promising.
- Lauderdale County, Miss.*—Very short crop of potatoes.
- Richland Parish, La.*—Sweet-potatoes injured by drought.
- Washington Parish, La.*—Sweet-potatoes promise an abundant crop.
- Rapides Parish, La.*—Large patches of sweet-potatoes planted, but they promise poorly. Quality inferior.
- Hardin County, Texas.*—Sweet-potatoes good, with prospect of a heavy crop.
- Upshur County, Texas.*—Much injured by dry weather.
- Austin County, Texas.*—Sweet-potatoes almost an entire failure.
- Sebastian County, Ark.*—Irish potatoes full crop; sweet-potatoes not more than two-thirds of a crop and of inferior quality.
- Humphreys County, Tenn.*—Crop very short, particularly the late crop.
- Tyler County, W. Va.*—Crop remarkably good; Early Rose largely cultivated and very prolific.
- Webster County, Mo.*—Potato crop not so good as anticipated; latter part of the season very dry.
- St. Louis County, Mo.*—Early potatoes an average crop; late ones injured by drought.
- Greene County, Mo.*—Early potatoes nearly a failure, in consequence of dry weather.
- Cass County, Mo.*—Early potatoes and Neshannocks good yield; late ones and Peach Blows not so good.
- Callaway County, Mo.*—Cut short by drought; sweet-potatoes very fine and cheap.
- Lec County, Ill.*—Potatoes totally destroyed in some localities by the Colorado potato-beetle; in others, an average crop; quality good.
- De Witt County, Ill.*—Early potatoes for winter, fine; late-planted an entire failure, owing to severe drought.
- Perry County, Ill.*—Severe drought has very much diminished the potato crop.
- Pope County, Ill.*—Much injured by the Colorado potato-beetle and drought.
- Pulnam County, Ill.*—Potatoes less than half a crop, on account of the Colorado potato-beetle and drought.
- Champaign County, Ill.*—Scarcely any potatoes will be raised.
- De Kalb County, Ill.*—Potatoes are a failure, owing to the ravages of the Colorado potato-beetle; not half enough for home consumption.
- Boone County, Ill.*—Potatoes not enough to mention; destroyed by the bugs. Few sweet-potatoes raised; quality excellent.
- Massac County, Ill.*—Potatoes will not be more than half a crop.
- Fayette County, Ill.*—Potatoes very much injured by the great drought.
- La Grange County, Ind.*—Potato crop considerably injured since our last report by drought. Sweet-potatoes are cultivated by some farmers this year; are doing well.
- Madison County, Ind.*—Late potatoes considerably injured by frosts during the last week of September; also, sweet-potatoes.
- Decatur County, Ind.*—Potatoes good, but saved from the Colorado potato-beetle only by the unremitting efforts of the farmers.
- Clark County, Ind.*—Late potatoes slightly injured by frosts September 30.
- Dubois County, Ind.*—Potatoes much injured by Colorado potato-beetle.
- Switzerland County, Ind.*—Late potatoes about half an average crop, owing to extreme dry weather and recent frosts.
- Adams County, Ind.*—Crop never better.
- Loraine County, Ohio.*—Late-planted potatoes injured by heavy frost September 20.
- Washington County, Ohio.*—The severe drought during September has diminished the crop of late potatoes and injured their quality.
- Geauga County, Ohio.*—The potato crop was never better.
- Athens County, Ohio.*—Potatoes have been much injured by severe drought; late ones by frost.
- Crawford County, Ohio.*—Potato crop is unusually large and fine.
- Union County, Ohio.*—Late potatoes killed by frost September 19.
- Mason County, Mich.*—Late potatoes injured by early frosts.
- Van Buren County, Mich.*—Potatoes will not average more than half a crop; injured by potato-beetle and drought.
- Lapeer County, Mich.*—Potatoes not more than half a crop, occasioned by drought.
- Muskegon County, Mich.*—Potatoes have suffered from the ravages of grasshoppers.
- Grant County, Wis.*—Potato crop fair; injured considerably by Colorado potato-beetle.
- Brown County, Wis.*—Potatoes better than for the last three years.
- Buffalo County, Wis.*—The potato crop the best for several years; not much damaged by the potato-beetle.

*Ozaukee County, Wis.*—Potatoes uninjured by potato-beetle this year; all the beetles have disappeared.

*Faribault County, Minn.*—The potato crop good this year; Colorado potato-beetle, so destructive for the past five years, has disappeared.

*Fillmore County, Minn.*—Potato crop mostly harvested.

*Marshall County, Iowa.*—Potatoes well ripened and of good quality.

*Tama County, Iowa.*—Late potatoes injured by the dry weather during the last two months.

*Harrison County, Iowa.*—A large crop; digging commenced: Sweet-potatoes cultivated extensively; have succeeded well; present price \$1 per bushel.

*Douglas County, Kans.*—Crop of sweet-potatoes large; yield heavy. Irish potatoes injured by drought; crop less than last year.

*Labelle County, Kans.*—The potato crop has been diminished by the drought.

*Norris County, Kans.*—A better potato crop has never been known.

*Sedgwick County, Kans.*—Potato crop extra good.

*Kearney County, Nebr.*—The potato crop is larger and of better quality than last year.

*Humboldt County, Cal.*—Fifteen per cent. better than last year in quantity and quality.

*Grant County, Oreg.*—Irish potatoes considerably injured by frost 7th and 8th of September.

*Marion County, Oreg.*—Potatoes are good; selling at 75 cents per bushel.

*Morgan County, Utah.*—Only half a crop, owing to June frost and excessive drought.

*Summit County, Utah.*—Small potato crop; injured by frost and excessive drought.

#### COTTON.

The cotton returns of October are no more favorable than those of the preceding month. In no State is the average of September fully sustained. The general average of condition in the first week of the present month is 76 per cent. against 80 per cent. in September. In some sections in the Mississippi Valley and in Texas improved prospects are reported, while the preponderance of testimony in the southwest, as well as on the Atlantic coast, favors a further reduction of the expected yield. The percentage of the condition of the several States is as follows: North Carolina, 80; South Carolina, 75; Georgia, 72; Florida, 73; Alabama, 75; Mississippi, 76; Louisiana, 73; Texas, 72; Arkansas, 82; Tennessee, 94.

The injuries reported are from rust, shedding of bolls prematurely, sufficiently low temperature to check the development of bolls in more northern latitudes, floods and inundations in Florida and Georgia; sprouting or rotting of bolls from rains, drought in some sections of Georgia, and the boll and army worms in portions of Mississippi and more western States. It does not appear that the losses from insects are general or very serious, with a few isolated exceptions. Drought should be credited with a larger proportion of the depreciation than any other assigned cause, notwithstanding the fact that cotton endures lack of moisture better than any other crop.

The present indications do not point to a crop of more than three millions of bales, and if the remaining season should be unfavorable for the development and gathering of the fiber, a smaller result must be accepted.

*Sampson County, N. C.*—Some say half a crop, others two-thirds, while others say three-fourths. My own opinion is that there will be fully three-fourths of an average crop, as many now say the crops pick out better than they expected.

*Bladen County, N. C.*—The early cold fall has stopped all growth; the bolls are nearly all open; much immature; crop one-third short of a full average yield.

*Chowan County, N. C.*—Reduced at least one-third by rust, which is general.

*Camden County, N. C.*—The drought and rust have changed the condition within a few days. The yield will be below average, but the quality will be fair.

*Mecklenburg County, N. C.*—About half gathered. No late bolls to mature. Drought destroyed the bright prospect up to July 1.

*Gaston County, N. C.*—Nearly all picked; short crop.

*Anson County, N. C.*—All crops have failed. Drought from 27th June to 22d September. Cotton crop will not exceed one-third of an average yield.

*Beaufort County, N. C.*—Picking commenced two weeks earlier than usual, and is now fully half done. The crop will be at least 20 per cent. less than last year.

*Craven County, N. C.*—Suffered greatly within the past forty days: first, from rust, causing premature opening; then from frost. Cotton has never before been so forward in opening in this county. The staple is short, light, and of inferior quality.

*Onslow County, N. C.*—I fear I have overestimated the cotton crop—(estimate 80 per cent.)

*Edgecombe County, N. C.*—Yielding a little better than was anticipated five weeks ago. The season could not have been better for picking. More than half the crop now in the gin-house or baled.

*Hertford County, N. C.*—Opening rapidly and yield of lint very good. Scarcity of labor, however, and farmers are fearful they will be unable to gather the crop before it falls from the bolls.

*York County, S. C.*—No improvement. Crop somewhat damaged by rain since opening.

*Clarendon County, S. C.*—Decrease in acreage 30 per cent.; in yield, 40 per cent. Three-fourths of the crop now open. Continuous rains have retarded the gathering.

*Lexington County, S. C.*—Falling short of anticipations, and many planters say that only half a crop can be made.

*Marlborough County, S. C.*—Fields are now as clear of cotton as is usual December 1. The entire crop has been made between 10th June and 23th July. Cannot exceed three-fifths of a crop.

*Spartanburgh, S. C.*—For the first time within my knowledge the summer drought injured cotton more than corn. There are now many squares on the top, but too late to mature.

*Fairfield County, S. C.*—Not more than three-fifths of a crop. No late fruit.

*Newberry County, S. C.*—Not improved since last report. Yield reduced nearly one-half by drought.

*Union County, S. C.*—The best crops in the county will not be more than half an average. The sandy and poorer parts of the county will give a very small yield. Picking will be finished by November 15.

*Schley County, Ga.*—Wet weather continues. Open cotton is sprouting in the bolls; bolls not open are rotting. With plenty of sunshine there cannot be over half a crop.

*Lincoln County, Ga.*—Crop of county 33 per cent. below that of 1870. Excessive rain the past month has seriously damaged the bolls, causing those full-grown to rot.

*Walton County, Ga.*—Likely to turn out worse than was anticipated six weeks ago. Recent continuous rains have, in many instances, seriously injured the crop. Many planters represent the most promising portions of their crop as likely to prove least productive, in consequence of rot in all cotton of rank growth, induced by excessive wet.

*Butts County, Ga.*—Materially damaged by drought and by storms.

*Clayton County, Ga.*—Injured in quality and quantity by excessive rain in spring and summer, and by severe storm in August.

*Marion County, Ga.*—Deteriorated considerably since last report. I have not seen so poor a crop in forty years' experience.

*Clay County, Ga.*—Very short crop. Seasons have been unfavorable, and the caterpillars have eaten the leaves and destroyed many of the young bolls by eating the husks.

*Brooks County, Ga.*—Poorest crop since 1860. By October 1st last year 1,000 bales had been shipped from Quitman depot. This year not 100 have been received.

*Spalding County, Ga.*—Yield one-fourth short of last year.

*Houston County, Ga.*—One of the most unfavorable seasons in twenty-five years.

*Pike County, Ga.*—Recent rains have greatly reduced the prospect. Sprouting in the boll.

*Crawford County, Ga.*—Floods have destroyed nearly all the cotton upon the river and large creek bottoms. No fruiting since 20th of August, which equals a loss of one-third.

*Coweta County, Ga.*—Three weeks of present favorable weather will open most all the cotton. Not over seven-tenths of a crop. Some rich patches will not make half of last year's yield. Late planting seems to be best, except when cut by frost.

*Johnson County, Ga.*—Cotton has rust, from which there is no recovery.

*Liberty County, Ga.*—Crop in this section will not average more than one-third.

*Pulaski County, Ga.*—Crop reduced one-third by unfavorable seasons.

*Wilcox County, Ga.*—Not maturing properly.

*Randolph County, Ga.*—Not over half a crop. Quality an average.

*Putnam County, Ga.*—Season very unfavorable.

*Madison County, Ga.*—Crop ten per cent. lower than on 1st of September.

*Liberty County, Fla.*—Crop almost ruined by excessive rains.

*Leon County, Fla.*—Continued rains have beaten out much cotton, prevented it from opening well, rotted many bolls, and stained and sanded it badly.

*Suwanee County, Fla.*—The Suwanee River is now six feet higher than ever known before, destroying whole fields of cotton.

*Jackson County, Fla.*—The top crop will fail on a majority of farms. Not more than three-fifths of a crop.

*Clay County, Fla.*—Injured by wet weather.

*Levy County, Fla.*—Short crop. Seriously damaged by storms of August. The best fields were ruined, and the poor fields are now the most promising.

*Greene County, Ala.*—Cut short by drought.

*Crenshaw County, Ala.*—Worms and rust have seriously injured cotton since last report.

*Calhoun County, Ala.*—Late growth entirely too late to mature.

*Montgomery County, Ala.*—Cotton being past redemption, remains in *statu quo*. Favorable weather has greatly benefited other crops.

*Autauga County, Ala.*—The crop will be picked out much sooner than usual; owing to the dry summer little cotton has been made since August 1.

*Shelby County, Ala.*—Not more than half a crop, but the staple is much better than last year.

*Chambers County, Ala.*—Farmers are unwilling to put the crop at more than one-half, but I have been over the county, and think it will reach three-fifths of an average.

*Macon County, Ala.*—The recent rains have caused the farms to fall, and the stalk to throw off much of its fruit. Not over two-fifths of a crop.

*Marengo County, Ala.*—Not over half the yield of last year.

*Hale County, Ala.*—Very short crop. I shall make about 350 bales on the land that made 600 last year. I think I am fully up to the average.

*Perry County, Ala.*—Cannot exceed half of last year's crop.

*Lawrence County, Ala.*—I think the crop will not fall short more than 25 per cent., though the impression is that the reduction will reach 50 per cent.; the late rains have been very beneficial to the crop.

*Dallas County, Ala.*—Two-thirds of an average crop. Quality inferior.

*Clarke County, Ala.*—In many neighborhoods nearly all gathered. Yield on fertilized lands 300 to 500 pounds seed-cotton per acre.

*Sumter County, Ala.*—Short crop; will all be gathered by the 15th of November.

*Newton County, Miss.*—Not more than half a crop.

*Tippah County, Miss.*—Since last report the second and third crops of cotton have proved entire failures, leaving only the first setting of bolls to be picked. The falling off is equally heavy throughout North Mississippi. The crop in this county will not exceed one-half the estimate of forty days since.

*Leake County, Miss.*—Season unusually dry. Crop will fall short of that of last year one-half.

*Hancock County, Miss.*—Cotton of the sea-island variety, fully equal to the best Georgia sea-island, is turning out well. The salt air of the ocean seems to prevent the visits of worms.

*Rankin County, Miss.*—The general opinion is that cotton will fall short one-half.

*Grenada County, Miss.*—In no event can the crop exceed three-fourths of that of last season.

*Winston County, Miss.*—Injured by drought; persons in different parts of the county say they will not make over half a crop; others say three-fourths, and a few report an average product.

*Lauderdale County, Miss.*—Drought destroyed the top crop; many planters have already gathered two-thirds of the crop.

*Coahoma County, Miss.*—The crop cannot exceed three-fourths of that of last year.

*De Soto County, Miss.*—Weather very fine; cotton nearly all open; crop 15 per cent. short. My assistants estimate the crop lower than I have put it.

*Jefferson County, Miss.*—Crop failing daily; worms destroying what is left.

*Falabusha County, Miss.*—Drought has caused cotton to shed and to fail rapidly. Planters have lowered their estimates considerably.

*Atala County, Miss.*—Three weeks of dry weather have seriously injured the crop.

*Wilkinson County, Miss.*—Many fields have not a leaf; destroyed by the caterpillar. The boll-worm has also done very serious damage, and the shed has been unprecedented.

*Marshall County, Miss.*—The shortest crop I have ever seen in the county; have been here thirty-five years.

*Washington County, Miss.*—No rain since the last of July; consequently cotton has shed badly, and there is no top crop. The boll-worms were bad. Many put the crop at half an average yield.

*Issaquena County, Miss.*—The army-worm and drought have reduced the crop to three-fifths of an average.

*Ouachita Parish, La.*—The crop is poor, but it has improved since the appearance of the worms, which are few in numbers and not destructive.

*Madison Parish, La.*—Few or no worms. Crop has improved wonderfully. Within five per cent. of that of last year.

*Aroyelles Parish, La.*—The worms have entirely eaten the cotton.

*West Feliciana Parish, La.*—Unfavorable weather has checked the growth, causing the forms to shed and the leaves to turn yellow. The weed is large, but there is less fruit than there ought to be. The caterpillar has done considerable damage. The boll-worm is also complained of. Picking rather small up to date. Late cotton just beginning to open.

*Washington Parish, La.*—At least one-fourth of the crop of the parish cut off by worms.

*Caddo Parish, La.*—Short, from drought. Worms now seriously damaging the crop.

*Winn Parish, La.*—Three-fourths of an average crop. The plants have shed a great many young bolls, caused by drought.

*Iberia Parish, La.*—Cut short 45 per cent. by wet weather and the worms.

*St. Landry Parish, La.*—The army-worm destroyed cotton generally in this parish by the 10th of September.

*Richland Parish, La.*—Cotton-worm at work. In some cases the leaves have been eaten; in others but little damage has been done. Rust and the boll-worm have also done much damage.

*Rapides Parish, La.*—Not more than one-fifth of a crop.

*Franklin Parish, La.*—Good judges estimate half a crop.

*Matagorda County, Texas.*—With favorable weather half a crop will be gathered.

*Grimes County, Texas.*—Fully 35 per cent. short, and should wet weather set in it will be further reduced. Staple short.

*McClellan County, Texas.*—Last year this county made 7,500 bales. This year the product cannot exceed 2,000.

*DeWitt County, Texas.*—The drought from May to September cut short both cotton and corn, though some persons have harvested better crops than usual. Some have already realized \$40, coin, per acre for their cotton, with good prospect for a late top crop.

*Austin County, Texas.*—Weather favorable to picking. About half an average crop, three-fourths of which has been gathered.

*Milam County, Texas.*—Much better than anticipated two months ago. Farmers in good spirits.

*Hardin County, Texas.*—Less acreage than last year. Fair prospect.

*Rusk County, Texas.*—The rain of the last of August caused a new growth, throwing off the few remaining squares, but making a luxuriant top crop, which might mature with a late fall as last year, but the real army worm (*Anomis xyliana*) has appeared and will destroy it, even if the frost should spare it.

*Upshur County, Texas.*—Thirty per cent. below last year.

*Smith County, Texas.*—No changes since last report. Rains came too late to add another matured boll.

*Red River County, Texas.*—Full average crop; season favorable for picking.

*Henderson County, Texas.*—Crop will be all gathered by November.

*Lamar County, Texas.*—Not over one-third of a crop. Some fields will make half a crop; others almost entire failures.

*Cherokee County, Texas.*—Some fields on bottom lands will make 1,600 to 2,000 pounds seed cotton to the acre. Upland crops are cut off 50 to 75 per cent., and staple short.

*Bexar County, Texas.*—Since our fine rains of August, cotton is again in full bloom. A late fall and no worms must give us a half a crop. A few worms in some localities.

*Williamson County, Texas.*—Shortened by a four months' drought.

*Johnson County, Arkansas.*—On dry uplands 60 per cent. of an average; sandy river and creek lands 75 per cent.; stiff, waxy river and creek bottoms, 10 per cent. above average. General average about 80 per cent.

*Fulaski County, Ark.*—Three-fourths of a crop.

*Drew County, Ark.*—Seriously damaged by the unfavorable seasons, and also by the caterpillar in portions of the county.

*Jackson County, Ark.*—No rain for five weeks. Rust and the boll-worm are injuring cotton.

*Monroe County, Ark.*—Materially injured by drought. Late bolls and squares shedding. Acreage 15 per cent. less than last year.

*Sebastian County, Ark.*—Beautifully white, but not more than half a crop, owing to the drought.

*Cross County, Ark.*—Drought has reduced the crop below the anticipations of early summer; still I think an average crop will be gathered.

*Prairie County, Ark.*—Worst year for cotton since the war. Frost on 25th, 28th, and 29th September hard enough to kill cotton. Cotton is nearly all open, and the crop will be out by the middle of November.

*Independence County, Ark.*—Crop lighter than anticipated in August. The cool, dry weather has caused the plant to shed nearly all the top squares, so that one-third of the plant is almost without bolls.

*Columbia County, Ark.*—Much shorter than last year.



*Giles County, Tenn.*—Opened early, and promises to be a full average crop, in proportion to acreage.

*Decatur County, Tenn.*—Reduced at least 20 per cent. by drought and rust.

*Fayette County, Tenn.*—One-tenth less acreage, and one-third less yield per acre, than last year, is the general opinion. I have allowed for "croaking," and put it at three-fourths of a crop. In West Tennessee the crop will average less than three bales to four of last year. Old and worn-out lands will not average one bale to two of last year. Freshly cleared land is not so bad.

*Hardeman County, Tenn.*—In July, and as late as August, cotton promised an unusual yield; but a drought in the latter part of August and the early part of September, accompanied by three or four cold nights, has materially damaged the crop, leaving the yield per acre about as last year, with decrease in acreage of about 10 per cent.

*Weakley County, Tenn.*—Not more than three-fifths of last year's crop.

*Lauderdale County, Tenn.*—Turning out cotton better than was anticipated a month ago; will probably make two-thirds of a crop. Lint good.

#### SUGAR-CANE.

*Jackson County, Fla.*—The cane is better than last year, and the season is propitious for its maturing well.

*Suwanee County, Fla.*—Whole fields destroyed by overflow.

*Levy County, Fla.*—Badly injured by being blown down, and by falling trees. It is sprouting at every eye, which injures it for sugar and ruins it for seed; with a long fall season, it may make up much of the loss.

*Putnam County, Fla.*—Sugar-cane has so far recovered from the effects of the cyclone, as to promise a fair average crop.

*Ascension Parish, La.*—Cane is ripening very fast, but it is short in length, compared with last year.

*Iberia Parish, La.*—Cane ripening rapidly, and grinding will commence the middle of the month.

*Terrebonne Parish, La.*—The storm of the 2d and 3d September improved the cane, by loosening the roots, and laying it open to the sun. The product of sugar will be far in excess of last year.

#### SORGHUM.

*Doddridge County, W. Va.*—Sorghum very much injured by rust.

*Braxton County, W. Va.*—The black bushy variety of sorghum has been diseased this year; other varieties have done well.

*Butler County, Ky.*—The black seed, tall sorghum is all destroyed by rust.

*Lawrence County, Mo.*—Sorghum crop is excellent, 75 per cent. above an average.

*La Grange County, Ind.*—Sorghum crop good; yield of sirup large and of good quality.

*Floyd County, Ind.*—Sorghum nearly ruined in some localities by "black blight."

*Pike County, Ind.*—The crop of sorghum is reduced one-half, but the quality is good.

*Shelby County, Iowa.*—Sorghum not ripened, all destroyed by heavy frost September 28th and 29th.

*Marshall County, Iowa.*—Sorghum well ripened and in good condition.

#### FATTENING STOCK.

The number of beeves reported is greater than usual in most of the States. Texas reports a reduction of 21 per cent. from last year; Kentucky, 2; Illinois, 2; Indiana, 2; and California, 5 per cent. The following extracts from correspondence are given:

*Piscataquis County, Maine.*—The number of fattening cattle is much in excess of last year, but owing to the short crop of hay, farmers are reducing their stock proportionately. The condition of stock is better than last year at this date, the feed being much better.

*Hillsborough County, N. H.*—Fifteen to twenty per cent. less of beef and pork than last year. Fall feed is good, and the prospect is that we shall have as much feed in our barns the 1st of November as last year.

*Caledonia County, Vt.*—No beef. What would have been beef with an ordinary season for feed, is not in good store order. No sale for cattle.

*Franklin County, Mass.*—Stock reduced in numbers. Hay worth \$25 per ton in barn. Probably as high now as it will be next spring. It is common for farmers to sell hay and buy corn.

*New London County, Conn.*—Owing to the short crop of hay, farmers are reducing their stock by fattening it for beef.

*Hartford County, Conn.*—Looking exceedingly well, but will be sent to the shambles early on account of short crop of hay.

*Franklin County, N. Y.*—No rain; no after-feed; cattle thin.

*Ontario County, N. Y.*—Stock plenty and cheap.

*Erie County, N. Y.*—The number will be small.

*Albany County, N. Y.*—In number about the same as last year. Condition good. Hogs plenty, prices low. Sheep scarce and prices good.

*Warren County, N. J.*—Very plenty and in good condition.

*Butler County, Pa.*—Young cattle are selling at 25 per cent. less than the same could have been sold for last spring. Scarcity of water is felt by cattle; in some parts of the county the springs are drying up.

*Indiana County, Pa.*—Cattle have ruled low this season, and farmers are not fattening so much stock as usual.

*Beaver County, Pa.*—Cattle and sheep in good stock order; cattle fever going down; sheep fever arising.

*Warren County, Pa.*—Not as fat as usual, owing to the dry season; mostly unsold; prices very low.

*Culpeper County, Va.*—Near the mountains cattle are very plentiful and in good condition; prices quite low.

*Orange County, Va.*—Stock generally in good condition.

*Surry County, Va.*—Good condition; more being slaughtered than last year.

*Franklin County, N. C.*—Above an average. There will be a considerable increase in pork.

*Callaway County, Mo.*—Cattle shrinking, owing to the drought. Grass all dried up and water scarce. Many farmers are hauling water two to seven miles, and drive stock to water.

*Liberty County, Fla.*—Above average.

*Williamson County, Texas.*—With an early and severe winter the loss of stock will be large, as grass is poorer than known in 20 years on the 1st of October.

*Austin County, Texas.*—Water scant, pasture poor, and it is feared that a large percentage of the cattle will be lost in consequence.

*Humphreys County, Tenn.*—Beef cattle not in as good condition as usual. Pasture short. Drought.

*Meigs County, Ohio.*—But few cattle, compared with last year, have been shipped, owing to the low prices.

*El Paso County, Colo.*—Cattle in a remarkably fine condition notwithstanding the drought; wild grasses are very nutritious.

*Mendocino County, Cal.*—Cattle are decreasing in numbers; sheep are taking their places gradually.

In portions of the South mast is abundant. The following extracts illustrate the importance attached to this spontaneous product:

*Jackson County, N. C.*—An extraordinary crop of acorns. Hogs all fat without corn.

*Alamance County, N. C.*—A fine mast, which will nearly winter the hogs.

*Smith County, Texas.*—Fine prospect for a heavy mast.

*De Witt County, Texas.*—Fine mast; but for a scarcity of hogs pork would be cheap. There will probably be enough for home consumption.

#### HAY AND PASTURES.

*Lincoln County, Ky.*—Grass is now growing well since the rain, September 13.

*Boyle County, Ky.*—Severe drought has dried up the grass very badly, and farmers are obliged to sell stock early and at low prices.

*Mercer County, Ky.*—Recent rains about the 10th of September have revived the parched pastures; they will afford good fall feed.

*Pike County, Mo.*—Pastures completely parched by severe drought; water scarcer than ever before.

*Greene County, Mo.*—Fall feed destroyed by drought; hay crop 50 per cent. better than last year; rains abundant in the early part of the season.

*Maintau County, Mo.*—Pasturage so dried that it would burn; no rain for three months.

*Clay County, Mo.*—Pastures and meadows dry enough to burn if fired; stock water scarce.

*Lee County, Ill.*—Pastures short and dry; water scarce.

*Clinton County, Ill.*—Pastures dried up; farmers feeding all their stock.

*Perry County, Ill.*—Meadows and pastures are entirely dried up; no heavy rain since March.

*Lawrence County, Ill.*—Pastures are entirely dried up; are compelled to feed stock to keep them in living condition.

*Jersey County, Ill.*—Meadows are dried up; want of feed and water for stock is severely felt.

*Sangamon County, Ill.*—Pastures very short, owing to continued drought.

*Winnebago County, Ill.*—Fall feed and all fall crops nearly a failure, owing to severe drought.

*Putnam County, Ill.*—Pastures dried up; water on the prairies very scarce.

*Boone County, Ill.*—Pastures very short; cattle being fed on hay.

*Carroll County, Ill.*—Pasture feed failing; must soon be fed from barn.

*Williamson County, Ill.*—Pasturage dried up; cattle not fed becoming thinner every day.

*Iroquois County, Ill.*—Pastures very much shortened by severe drought; feeding stock will commence a month earlier than usual.

*Fayette County, Ill.*—Pastures suffering severely from protracted drought.

*Greene County, Ind.*—Pastures are dried up, and stock must soon be fed; hay very scarce.

*Wayne County, Ind.*—Pastures fine; cattle looking well.

*Wells County, Ind.*—Pastures drying up; weather very dry.

*Cass County, Ind.*—Our pastures are dried up; many find difficulty in procuring water for stock.

*Lawrence County, Ind.*—Fall pasturage an entire failure.

*Delaware County, Ohio.*—Pastures drying up badly; stock not doing well; farmers selling at low prices.

*Athens County, Ohio.*—Pastures are almost entirely dried up; many farmers are feeding their stock on hay and other fodder.

*Cranford County, Ohio.*—Pastures are becoming short, owing to dry weather.

*Logan County, Ohio.*—Fall pasturage is very fine.

*Vinton County, Ohio.*—Driest fall ever known here; pastures dried up; water for stock very scarce.

*Montgomery County, Ohio.*—Hay crop larger and of better quality than usual.

*Montcalm County, Mich.*—Pastures dried up; commenced feeding stock.

*Van Buren County, Mich.*—Hay light, owing to drought.

*Portage County, Wis.*—Great drought; grass as dry as hay.

*Outagamie County, Wis.*—Pastures are all dried up.

*La Fayette County, Wis.*—Pasturage very much dried up; cattle are being fed.

*St. Croix County, Wis.*—Fall pasturage has suffered severely from drought.

*Clinton County, Iowa.*—Pastures short; grass stopped growing; water scarce.

*Howard County, Iowa.*—Pastures drying up from severe drought.

*Mahaska County, Iowa.*—Drought has made pastures very short.

*Keokuk County, Iowa.*—Pastures very short, owing to drought; cattle rather thin.

*Meeker County, Kans.*—Large quantities of hay destroyed by prairie fire.

*Fillmore County, Kans.*—No fall feed, owing to great drought.

*Butler County, Kans.*—Large crop of the very best hay cut. A great number of Texas cattle will be wintered in this county.

*Douglas County, Kans.*—Haying on the prairie just closing; crop large and of the best quality.

*Jefferson County, Kans.*—Fall feed very good; cattle very fat.

*Sedgwick County, Kans.*—Much of the prairie grass land has been burned over by accidental fire.

*Davis County, Kans.*—Heavy crop of prairie hay; range good, but prairie fires consuming it.

*Umatilla County, Oreg.*—Much damage done the native grass-range by fire.

*Douglas County, Oreg.*—Feed short; stock will suffer unless there is rain soon.

*El Paso County, Colo.*—Season has been remarkably dry, but late rains have improved the pastures.



## EXTRACTS FROM REGULAR CORRESPONDENCE.

## TRIALS OF DEPARTMENT SEEDS.

*Stanley County, N. C.*—The Egyptian cotton seed received from the Department has had a fair trial. It fails to come up to the high promise of its early growth. The weed grew thriftily, forming a large high bush, full of yellow blossoms and a deeply divided foliage, which remained green when everything else around was withering from heat and drought. At this time, however, when other varieties have yielded nearly all their crop, the abundant bolls of the Egyptian cotton hang green on the stalk. Only a few bolls opened fully ripe amid a large proportion of faulty and decaying ones. Those that were fairly ripe yielded a long snow-white lint, finer than silk, out of which, being picked by hand, the women can spin a very slender thread without much previous preparation. The extreme lateness of maturity will be a serious objection to the introduction of this variety into this part of the country. We will give it another trial with earlier planting. The bolls, though numerous, are smaller than those of the other varieties, averaging but three partitions to the boll, and the contents of 100 bolls are one-fourth lighter.

*Chowan County, N. C.*—The Egyptian cotton will not suit our climate. It grows beautifully, but does not bear more than one-third as much as the Peeler cotton.

*Randolph County, N. C.*—The Egyptian cotton seed was planted on mulatto clay soil, about 1,200 feet above the level of the sea, a table-spoonful of guano to the hill. The plant is three to six feet high; average number of bolls; the bloom is yellow; boll smaller than common cotton, inclined to be long and tapering; the lint has rather a yellow tint, but very fine and large. If planted earlier it will do better.

*Walton County, Ga.*—The Egyptian cotton seed received from the Department is likely to be of little value here. It fruits well, and resists drought, but the fruit is entirely too small and too late in maturing.

*Clark County, Miss.*—The Egyptian cotton seed sent from the Department will not answer for this climate. The summers are not long enough for it; it stands dry weather well. The plant is still green and blooming, while the common cotton of the country, where the leaves have not been destroyed by worms, are yellow and almost entirely shed off.

*Kemper County, Miss.*—The Egyptian cotton seed was planted as other cotton. The leaf is large and the bloom yellow; too stalky and very little fruit; does not lint out well; unless it does better after acclimation it is worthless.

*Culpeper County, Va.*—From three quarts of the Touzelle wheat, received from the Department, sown on one-tenth of an acre, I harvested five bushels, weighing 66 pounds per bushel. It ripened June 1, about eight days earlier than other varieties.

*Cumberland County, Va.*—The Touzelle wheat received from the Department last year has proved very prolific. From one quart I saved one bushel and seven gallons.

*Dixon County, Neb.*—The Arnautka spring wheat received from the Department yielded four bushels per acre more than other wheat cultivated here. Its growth is vigorous, and it appears to be well adapted to this part of the country. If it has any fault it is that

the kernel is a little more flinty than some other varieties. The asparagus seed has done exceedingly well; so also the blood-red beet.

*Shawnee County, Kansas.*—Tappahannock wheat received from the Department has yielded 30 bushels per acre; quality equal to the seed received.

*Auglaize County, Ohio.*—Tappahannock wheat partially failed this season, on account of rust; previously it has had a good reputation.

*Carroll County, Ill.*—The Tappahannock wheat failed from not being hardy enough to endure the severity of our winters. The Polish winter wheat was sufficiently hardy, but matured too late to escape rust. The Schonen oats were destroyed by the rust. They were sown late, and the failure may be owing to this.

#### CRANBERRIES.

*Ocean County, N. J.*—Cranberries, which are an important crop in this county, are a partial failure. Many of the parks are affected by scald, worms, grasshoppers, or a stunted growth, so that there will be not more than two-thirds of a crop.

*Atlantic County, N. J.*—Cranberries have been badly scalded on most three year-old meadows; on old meadows the crop is very fine.

*Norfolk County, Mass.*—Heavy frosts. Cranberries have suffered; more than half the crop destroyed.

*Tyrell County, N. C.*—The cranberries growing wild in the swamps and marshes of this county are very fine, the berries large and full.

*Portage County, Wis.*—Cranberry lands are advancing greatly in price; the profits of the business are said to be very large.

#### HOPS.

*Madison County, N. Y.*—Very few of first quality raised, lice having destroyed the vines. First quality are selling at 50 to 60 cents per pound.

*Oneida County, N. Y.*—Crop harvested about one-third as large as last year, and quality very poor. Some of the best cultivated yards not harvested, while others have yielded not more than 300 to 400 pounds to the acre. Causes, lice and mold. Prices range from 30 to 60 cents per pound, according to quality.

*Franklin County, N. Y.*—Crop reported too high in September. It will not exceed two-fifths of a crop.

*Outagamie County, Wis.*—The cultivation of hops has very much decreased; three-fourths of the yards have been plowed up for other crops.

#### SAFFRON.

*Madison County, N. Y.*—Saffron is raised here in small quantities for commercial purposes. Last year it sold at \$4 to \$6 per pound. Present price \$1 to \$1 50 per pound, offered by speculators.

#### MUSTARD.

*Monterey County, Cal.*—In Castroville, in this county, this year, Mr. J. J. Heating raised 83,173 pounds of mustard-seed on sixty acres of land.

#### SERICULTURE.

*Tooele County, Utah.*—Our mulberry plantations are doing finely; we expect to raise quite a number of silk-worms this season.

## HAY IN LOUISIANA.

*Rapides Parish, La.*—More hay is being gathered than for many years, probably 100 per cent. more. The mode of cutting is quite primitive—the instrument the hoe, chiefly.

## ALFALFA CLOVER.

*Colusa County, Cal.*—Farmers are beginning to sow alfalfa, (Chili clover,) which produces about three tons of hay per acre, at each cutting, twice a year; if irrigated, three tons three times a year.

## GRAPES AND WINE.

*Albemarle County, Va.*—There are several good vineyards in this county which are producing very abundantly. The grapes have been converted into wine this season, as the market price was too low to warrant their sale. We look forward to the day when many of our now barren hills will be clothed in this beautiful and remunerative crop.

*Orangeburg County, S. C.*—There are a number of vineyards in this county, and a good deal of very fine wine has been made. The Scuppernon grape is the favorite.

*Williamson County, Texas.*—In this county 10,000 gallons of wine have been made from the mustang grape. The first pressing of the grape makes a superior wine, similar to brown sherry; the second pressing is quite like good claret. The mustang grows wild over the greater portion of the State, and if all the grapes were made into wine it would be worth more than the cotton crop of the State.

## ORANGES.

*Putnam County, Fla.*—The orange crop will be diminished about one-fourth, but what is lost in quantity will be principally made up in the improved quality of the fruit.

## INFERIOR. COTTON SEED IN FLORIDA.

*Wellborn, Suwanee County, Fla.*—We greatly need reliable seed in Florida, especially of the sea island cotton and improved varieties of sugar cane. The seed of our sea island cotton is poor, old, mixed, degenerated, and unreliable. I planted six acres and spent two days in picking, and know the foregoing to be true. The seed was the best I could find; the bolls are of all kinds; some passably good, other bolls almost entirely seed without staple. From some bolls the cotton falls as soon as ripe; others have to be opened with force. The entire yield of staple is small, and the seed large. Frequently seven pounds of seed cotton are required to make one of lint.

## PRODUCTS OF PRINCESS ANNE COUNTY, VIRGINIA.

*Princess Anne County, Va.*—Fish, oysters, crabs, and wild fowl constitute an important industry in this county. Large quantities of spots, a fish noted for its rich, delicious flavor, are now being taken on our coast. The celebrated Lynn Haven bivalves are in demand at \$3 per bushel. Wild ducks are beginning to appear, but the “ducking season” proper begins in October.

## IRRIGATION IN CALIFORNIA.

*Colusa County, Cal.*—Our farmers are beginning to irrigate on a small scale, and are making flood-gates out of wrought-iron instead of wood. Where there is no rain for six months wooden gates shrink, and are apt to break the next season. We are now making round tubes, one to six feet in diameter, with the gate in the upper end.

## HOGS IN NORTHUMBERLAND, PENNSYLVANIA.

*Northumberland County, Pa.*—Hogs have become so numerous, and the corn crop is so large and good, that fresh pork will, it is thought, by the holidays, sell for six cents per pound by the hundred-weight. Small pigs, four to five weeks old, can now be purchased for fifty cents per head. In fact hogs are more plenty now than before the war. Our breeds have also been improved, being mostly a cross between the old country hogs and the large and famous Chester County white hogs.

## DISEASES OF STOCK.

*Gloucester County, Va.*—Horned cattle have been attacked with "murrain," and large numbers have died. One farmer lost two-thirds of his herd, embracing nine out of eleven milch cows. The mortality has been far beyond that of any previous year for the last twenty-five years, and it still continues.

*Knox County, Tenn.*—Cattle, especially milch cows, are still dying near where the Texas cattle were fed as they were shipped through to Virginia. Cholera is again making its ravages among the hogs and chickens in different parts of the county.

*Woodson County, Kans.*—Many cattle have died of Spanish fever in the southeastern portion of the county during the last two weeks. A drove of Texas cattle were driven through that part of the county in August, and in about two weeks the disease broke out among the native cattle. Several horses died of the same disease. The symptoms of the horses were the same as of the cattle.

*Labette County, Kans.*—Spanish fever is prevailing among cattle; has proved fatal to many herds.

*Lebanon County, Pa.*—A disease among chickens (said to be worms in the throat) has in many instances destroyed nearly whole flocks. Tobacco-smoke, turpentine, and drawing out the worms with small pinchers, are remedies used with more or less effect.

*Graves County, Ky.*—Hog cholera is raging to considerable extent, and chickens are affected by a similar disease.

*Spencer County, Ky.*—Hog cholera is prevailing in isolated cases.

*Lucas County, Iowa.*—Many hogs have died of cholera; some farmers have lost all; no remedy found.

*Newton County, Ark.*—Number of hogs reduced 60 per cent. the past summer by cholera. "Murrain" is making sad havoc among the cattle of this county.

## SOUTHERN AGRICULTURE.

The Department of Agriculture has omitted no opportunity to aid in organizing anew the rural industry of the South, prostrated by civil war, and limited by traditional usage to a few specialties, while its variety in climate and soil actually adapts it to the widest range of possibilities,



which combine all the capabilities of the temperate and many of the tropical zone. To this end, ramie, jute, tropical fruits, and various promising grasses, and many other plants hitherto unknown on this continent, have been introduced, and valuable seeds of cereals and garden vegetables have been distributed, greatly to the advantage of southern agriculture. During the past two months large quantities of seeds of cereals and grasses have thus been distributed, and a choice selection of vegetable seeds is now in process of distribution, all in ample time for early planting of field and garden.

The following letter of the Commissioner, addressed to the president and members of the Agricultural Congress recently convened in Nashville, Tennessee, expresses his views concerning some of the means to be used for the improvement of the agriculture of the South :

DEPARTMENT OF AGRICULTURE,  
Washington, D. C., September 28, 1871.

*To the President of the Agricultural Congress, Nashville, Tennessee :*

SIR: I congratulate you upon the assembling of your convention. The meeting of northern farmers and southern planters in a southern city, upon the invitation of southern gentlemen, for the purpose of discussing mutual interests, is auspicious of a better understanding between the people of both sections, and indicates a disposition to bestow upon questions affecting the material welfare of the country some portion of that attention which has of late been directed to questions chiefly political. Surely there exists no good reason why those who live upon the same soil, speak the same language, and share the same heritage of blessed privileges should not agree to join hands in the common cause of material advancement, although they may not be of one mind in the consideration of other questions. Such conventions as yours make such agreement possible, and give assurance of its permanency. Your meeting accords with the various industrial and agricultural meetings of the year which have had a national scope and purpose, and I trust that it may be followed by others of like character which will bring in their train prosperity to all sections and increased development of our national wealth. It is the South that to-day most needs this prosperity, and it is in the South that the sources of national wealth have been most neglected. The sittings of your convention may, therefore, well be devoted in large degree to an inquiry into the best means of fostering the industries adapted to the South, especially agriculture.

Official intercourse and correspondence with southern gentlemen and the tone of southern journals convince me that the whole people of the South fully realize that their industrial methods have not heretofore been conducive to their best interests, and that enduring prosperity can only come with the introduction of new methods. What these new methods shall be is a problem which a glance at the present wants of the South may help to solve.

With the complete restoration of order and tranquillity in the South, which it is the hope of all good men may not longer be delayed, an opportunity will be afforded for capital to take fresh courage, for labor to assume more settled conditions, and for emigrants from the Northern States and from Europe to push into every Southern State with the same sturdy enterprise that now leads them into the shadows of the Rocky Mountains and upon the far-off line of the Northern Pacific Railway. These are the three great wants of the South to-day: Capital that shall be active, labor that shall be judiciously employed, and population that

shall possess the waste places and make them vocal with the hum of busy industry. The time is near at hand when all these elements of material greatness may be possessed by the South if it will but learn a lesson from the example of those communities and nations which have become rich while it has become poor.

Undoubtedly, the first of the new methods essential to the new life of the South is a diversification of industry. The example of Germany conclusively shows that the nation which utilizes all its forces and encourages the employment of every human faculty is the one which takes deepest root and offers the greatest resistance to storms, while the example of Persia and Turkey and Portugal shows that nations which engage in one pursuit to the comparative neglect of all others do not have a flourishing growth, and are not capable of resisting adversity. The people of the South should so direct their future that success will not be contingent upon a bountiful harvest from a single crop. They should establish new manufactures and stimulate those already established; open new mines and develop those already opened; build railroads and spread wider the wings of foreign commerce; and, most important of all, divide their thousands of exhausted acres into small farms and farm them well.

The South has abundant water-power, extensive coal-fields, and cheap labor. If it will but put forth its hand it can successfully compete with either New England or Old England in the manufacture of many articles to procure which it now sends its money abroad. Especially can it manufacture the coarser grades of cotton fabrics and shoes for its working classes. In more than half of the States lying south of the Ohio may be found iron ore of the best quality, and other valuable minerals. The example of Pennsylvania shows how prosperous a people may become who will manufacture iron. Tennessee may become another Pennsylvania if it will. By employing its laboring population in manufacturing enterprises, the South will not only retain within its own borders the money of which it is now depleted, but it will have more to sell to other countries. And the more it has to sell the more miles of railroad will be built, the more certain and remunerative will be the home markets of its farmers, and the greater will be the ability of all its people to possess themselves of comforts and luxuries drawn from every quarter of the globe.

But the South needs most to diversify its agriculture. By devoting its capital and energies mainly to the cultivation of cotton, it has produced two disastrous results: its soil has been exhausted, and it has been compelled to rely upon the West for its bread and meat. To remedy the first error will require time and the exercise of the best brain of the South; but the concentration upon small areas of the efforts now bestowed upon large plantations will be a necessary accompaniment of all remedial agencies. The second error of looking to the West for the necessaries of life can easily be corrected by growing all those food-producing crops suited to the South. There are few States in the South in which wheat and corn will not do well; fewer yet in which some of the grasses and the various edible roots will not grow. Cattle and hogs may be raised with profit where these conditions exist, and not the least of the profit will be the fertilizing elements which they will return to the soil if confined to close quarters. An improvement of the breeds now in general use would increase the income from these sources. The South also produces many kinds of fruit and a long list of the choicest vegetables. Indeed, there is scarcely a limit to its food-producing capabilities. A southern journal has recently stated that, with the exception

of coffee, there is not a product of the soil pertaining to the tropical or temperate zones, and which is of real use to man as food, which cannot be grown in the South.

In the efforts which southern people may make to improve their agricultural methods they shall receive my hearty sympathy and earnest co-operation. The Department over which I have been called to preside was established for the benefit of the *whole* country, and I invite southern men to look to it as to a friend, and to make free use of the facilities it offers.

I am, sir, very respectfully,

FREDERICK WATTS,  
*Commissioner of Agriculture.*

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### DROUGHT AND FIRE IN THE NORTHWEST.

Our correspondents in the Northwestern States send us distressing details of the effects of the two months' drought throughout the most of that region, and of the terrible fires which have, in a great measure, resulted therefrom. The earth is dried to such a depth that it acts as a conductor, and living trees are falling from the action of the fire which undermines them. Streams and wells are unprecedentedly low, or entirely dry; vegetation is dried up; fields are so parched that there is little succulent food for stock. The fire-fiend has followed with appalling fury, causing fearful destruction of life and property. For several weeks great fires have been raging in the woods, in the dried marshes, and along the lines of railways, consuming buildings, fences, crops, and destroying live stock, desolating hundreds of square miles, and rendering homeless and without food or employment thousands of men, women, and children, just at the opening of winter. The loss of life is of frightful magnitude, and rarely in the history of the world have these fires been equaled in the destruction of human life and of property and in the desolation of whole communities. Towns and villages have been swept out of existence in the space of a few hours, and thousands of human beings have been burned, drowned, or have fallen victims to other violent forms of death. Not less than fifty villages, in the States of Wisconsin and Michigan, have been wholly or in part destroyed. The town of Peshtigo, Wisconsin, with a population of 1,500 to 2,000, has been entirely consumed, not a vestige of its habitations remaining, and those only of its population escaped who threw themselves into the river and reached the opposite shore. Hundreds were burned, suffocated, and drowned. This fire, driven by the high winds, swept over an area of eight miles square, destroying houses, barns, fences, &c., and the loss of life will number over a thousand. The Belgian settlement of Brussels was almost entirely consumed, many persons are missing, and the survivors are left destitute amid the ashes of their ruined homes. The whole coast, from Green Bay to Menomonee, has been devastated, many villages consumed and their population made houseless wanderers, dependent upon charity for the necessaries of life. On the east shore of Green Bay the loss of life is placed as high as at Peshtigo, and the destruction of buildings, fences, stock, &c., is complete. More than a dozen towns along the eastern shore of Michigan have been swept away, and many hundreds of people left without food or shelter. A large district, including several towns, has been devastated

on the western coast. The town of Manistee, with a population of 4,000, has suffered severely by the flames, and the loss of property is stated at not less than one million of dollars. In the counties of Huron and Sanilac, with a total population of 24,000, ten thousand must commence life anew, having lost everything but their lives. Besides the frightful loss of life reported, hundreds have been disabled, many partially roasted, causing additional suffering and destitution throughout the region devastated. Detroit, Port Huron, Milwaukee, and other cities have converted all available space into hospitals, and the citizens have become nurses.

Destructive fires are also raging in the forests and on the prairies of Minnesota, Iowa, Missouri, Indiana, Ohio, Kansas, Colorado, Wyoming, Dakota, and in Ontario, Canada, involving immense losses of property, of live stock, and of human life. In Minnesota the fire swept over the prairie into the forests of Glencoe, Le Sueur, Mankato, and New Ulm. The fire is said to have reached nearly as far south as the Iowa border, and east to the Minnesota River. Many small towns have been completely destroyed, and the farms in the track of the flames have been almost invariably swept of buildings, fences, crops, &c. Northern Minnesota is also the field of similar disasters. Nemaha and other counties in Kansas have suffered from these prairie fires; also various sections of Missouri and the other States named. In California fires are said to be raging in the mountains the whole length of the State. Copious rains in the regions of the Northwest, which have been the most fearfully scourged, have diminished the ravages and may soon exhaust the destructive power of the flames; but the devastation already accomplished is sickening to contemplate, and the sufferings of the people must be great the ensuing winter, and the agricultural interests of the burned districts will be crippled for some time to come.

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### THE JUTE PLANT.

Mr. E. H. Derby, of Boston, Massachusetts, who has taken much interest in the introduction of the jute plant into the United States, forwards to the Department for publication the following letter from Mr. R. Macallister, Calcutta, India, in reference to the cultivation and gathering of the plant and the separation and curing of the fiber:

The seeds are sown in the months of March and April, broadcast, on plowed land, preference being given to moist high ground, situated if possible on the bank of a river, and somewhat sandy. As a general rule manure is not used, but animal dung has been employed to advantage; nor is it necessary to irrigate the ground, as no more water is required than is sufficient to keep the roots moist, for which the ordinary showers of this country generally suffice. It is allowed to grow three to four months, and is cut in the months of June, July, and August, when it has attained a height of  $7\frac{1}{2}$  to 12 feet, the size depending of course on the fertility of the soil and the season.

The time chosen for cutting is just after the flowers have turned to seed and before the seeds begin to ripen, for it is found when cut thus early to be of better color and to have less root. When the seeds are allowed to ripen it appears that the fiber becomes stiff and hard, and the inferior portion of the stem changes color, becoming blackish or reddish.

When cut the stalks are tied in bundles and thrown into tanks of dirty water and allowed to remain there five to eight days to rot, (the dirtier the water the faster, I believe, the rotting process takes place,) at the expiration of which time they are taken out and the fiber falls from the stick. The fiber is then hung up to dry and when dry is assorted, packed in round bundles called drums, and sent off.

The finer qualities of jute sometimes attain a height of 15 feet. The smaller the plant the lower the quality. The seeds are used for cultivation only. They contain very

little oil, and no one has ever thought it worth while to crush them, neither have they ever been tried for feeding poultry or cattle. Small plants yield more seeds than the larger ones, and supposing all the plants on an acre to be allowed to ripen, the yield of seed would be about one hundred and twenty pounds, as I am informed.

To encourage the general cultivation of this valuable fiber-plant in the Southern States, the Commissioner of Agriculture has ordered a large quantity of the seed for distribution. The seed heretofore distributed by the Department is reported to have succeeded admirably. It is stated that on the banks of the Lower Mississippi, with little or no cultivation, in the course of three months it grew 8 to 12 feet high, maturing an abundance of seed. It can probably be raised as easily as hemp throughout the South, and in a large part of the Mississippi Valley, and possibly as far north as Virginia and Tennessee.

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### CUNDURANGO.

The Secretary of State, Hon. Hamilton Fish, has transmitted to this Department a package containing specimens of the fruit and seed-bearing capsules of the "cundurango" plant or vine, received from Charles Weile, United States consul at Guayaquil, together with the following extract from the official letter of the consul:

I have just returned from a visit to the cundurango region, in the province of Loja, where I spent a month in collecting the different species of the plant. Dr. Destrugé, of this city, an excellent botanist, has classified the vine as belonging to the order *asclepiadiæ*. The word "cundurango" is a compound of "*cundur*," eagle, and "*ango*," a vine. The aborigines probably applied this name owing to the winding growth of the vine, and because it seeks the highest trees for its support. Its growth is most vigorous in moist places, on the banks of rivers and creeks, where the body often attains a diameter of two to three inches, diminishing gradually to tendrils at the top. The family is a numerous one. Leaves, vines, fruit, and flowers of the species differ materially, but all contain—some in a greater degree than others—a liquid that resembles milk, and which, exposed to heat, or coming in contact with other bodies, coagulates and forms an aromatic resinous substance.

Inclosed was a list of the specimens and a piece of the balsam which the milk produces. The list names the following varieties, all found at Zaruma: No. 1, *Cundurango Pepino*; No. 2, *C. Tumbo Grande*; No. 3, *C. Tumbo chico*; No. 4, variety of *C. Tumbo Grande*; No. 5, *C. Paloma Grande*; No. 6, *C. Batea Grande*.

The seeds received by this Department will be propagated, with the design of testing the practicability of the cultivation of the plant in some section of this country, should its production be found to be desirable.

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### ENTOMOLOGICAL RECORD.

[The "Entomological Record" of the monthly report, to be a permanent feature hereafter, is prepared by Prof. Townsend Glover, entomologist of the Department.—ED. REP.]

As the Department of Agriculture has lately received several communications inquiring about the natural history and habits of the grape-vine hopper, improperly called the vine-thrips, a very small insect which, for several years past, has been extremely injurious to the foliage

of the cultivated grape-vines by puncturing the leaves and sucking out the sap, it may be well to give a short history of the insect, from the egg to the full-grown imago, and the various remedies already proposed to destroy them.

The grape-vine hopper, *Erythronera* (*Tettigonia*) *vitis*, is a very small insect, about 0.13 inch in length, of a pale yellow color, with two blood-red bands, and a third dusky band across the wing-covers. It is supposed by most entomologists that these insects pass the winter in the perfect state, hibernating under bark, dead leaves, and rubbish; but during the last winter a thorough search was made in the neighborhood of some grape-vines which had been very much injured by the leaf-hoppers the previous season, and no mature insects could be discovered, either under the loose bark of the grape-vine, the supporting posts, or under the leaves and loose rubbish near the vines. It therefore appears probable that some of the early broods may be produced from eggs laid by the parent insect the previous autumn, either on the stem of the vine itself, or on foliage. The first perfect grape-leaf hopper this season was found in April, and had probably hibernated on the stem of the vine, under the bark, as before mentioned. The insects, as soon as hatched, commence to suck the sap of the plant, and change their skin several times before attaining their full size; and these cast-off white skins may be seen in the autumn in multitudes, adhering to the under side of the leaves, each of them with a slit down the back, through which the perfect insect has escaped.

As larvæ, or when very young, they do not possess any wings, and it is only in the adult state that the perfect wings are acquired. The leaves injured by these insects appear at first flecked and spotted with whitish marks, showing where the sap has been drawn out by the leaf-hopper. They then assume a sickly appearance, and if the insects are very numerous the foliage will finally turn brown and fall to the ground. Some varieties of vines suffer more from this pest than others, and the Clinton, Delaware, and other thin-leaved grapes are said to suffer the most

from their attacks. There are several other species of vine-hoppers beside the *Erythronera*, mentioned by Harris, which injure the foliage of the grape-vine, and we have found a species of *Typhlocyba* as destructive in Maryland and Virginia, puncturing the leaves and sucking the sap in a similar manner.

The remedies already proposed for the destruction of these insects are syringing the vines with strong tobacco-water or soap-suds. A very weak mixture of carbolic acid and water has also been recommended, but when made too strong the leaves are apt to be injured. Dusting the vines with lime, wood-ashes, lime and sulphur, is said to be beneficial, and fumigation with strong tobacco when under glass will destroy many of them. Mr. Saunders, of Canada, states that a lighted torch carried through a vineyard at night will destroy multitudes, as they fly to the light and are burnt. This should be repeated several times at short intervals. He also says that constant stirring the earth in the immediate vicinity of the vines in spring and autumn will probably operate by disturbing the perfect insect (and eggs) by exposing them to the frost. As lights also attract these insects at night, if a lantern were placed immediately over a pail or tub nearly filled with water, on the surface of which a little oil or turpentine had been poured, whenever the vines were disturbed the insects would immediately fly toward the light and fall into the vessel below and perish by hundreds. The same plan



would also answer if lights were placed before or on boards painted with a thick sirup, or any adhesive substance like the celebrated fly-paper. In the former part of this article, it was mentioned that the common name of thrips is misapplied when used to designate the grape-leaf hopper, the true thrips being a very different insect and belonging to an entirely different family. The true thrips is very minute in size, and has a long and slender body; the wings are long, narrow, and fringed with fine hairs; they live on leaves, flowers, buds, and also infest grape-leaves. And although almost all European authorities are unanimous in saying that they are injurious to grains, foliage, &c., Mr. Walsh states that although hitherto considered as vegetable-feeders, they are generally, if not universally, insectivorous, and feed on the eggs of the wheat-midge and other insects. Mr. Riley also states that a species of thrips destroys the eggs of the curculio. Notwithstanding these proofs of the "cannibal" propensities of the true thrips, we are also convinced that it causes injury to several kinds of plants by draining the sap from them; as some grape-leaves, infested by the true thrips, and with no other insect on them whatever, when subjected to examination under a powerful microscope were found to have the sap exuding in minute drops or globules from numerous small punctures or holes made in the leaves, and which had evidently been made by the thrips, as some of these insects were actually employed in boring the leaves at the time, and no eggs or any other insects could be discovered. It is true the thrips may possibly destroy the eggs of the vine-hopper, and of other insects also, but no doubt they also injure foliage by draining them of sap. This fact may be more plainly demonstrated by examining the plants in any green house infested with the true thrips, where there are no vine-hoppers whatever, and the thrips-infested plants may readily be recognized by their spotted and unhealthy appearance. Some of the same remedies already proposed for the destruction of the vine-hoppers, as syringing with soap-suds, &c., would probably also answer, if applied, to destroy the true thrips.



#### SCIENTIFIC NOTES.

**VOELCKER ON SOILS.**—Mr. Voelcker, an eminent agricultural chemist, lately delivered a lecture before the Chemical Society of London upon the productive power of soils in relation to the loss of plant-food by drainage, in which he took occasion to refer to the inutility, for most purposes, of the analysis of soils, as ordinarily conducted. He states that there are many apparently similar soils—that is, soils in which analysis shows like quantities of the same constituents—which differ widely in their productive powers, owing to the fact that the indications are of ultimate composition instead of showing states of combination in which the ingredients exist in the soil.

Another consideration of importance is that soil analyses throw no light upon the physical or mechanical conditions which affect the fertility of land. The productiveness of land is much influenced, too, by the character of the sub-soil and its composition in relation to the surface-soil, of which a soil analysis conveys no information. Again, meteorological conditions, such as the aspect of the field, the prevailing wind, the amount of rain, and the distribution of the rain-fall in the year, are

all of the utmost importance in farming, and are, of course, not indicated by any analysis.

Dr. Voelcker, however, would not be considered as regarding such analyses as of no value, since in many cases quite the contrary is the fact. For instance, it is easy to determine whether a soil is deficient in lime or not, and thus ascertain whether it is proper to impart a dressing of this mineral. It is also known that potash salts may be applied with great advantage on some soils, while on others their fertilizing effects are scarcely perceptible; and the determination of the question whether there be enough potash in the soil will enable us to decide upon the proper action in this respect.

Again, it is possible to ascertain, by finding whether there is potash in clay, as to its being benefited by burning; burnt clay being an excellent fertilizer if the clay contains undecomposed silicates of potash; but the expense of this process would be entirely wasted if the clay be naturally poor in alkaline silicates. Again, peaty soils are often completely barren, this condition being due, in most cases, to the presence of sulphate of iron and finely divided iron pyrites, so small an amount as  $\frac{1}{4}$  per cent. of the former being quite sufficient to render a soil entirely unproductive.

We can also ascertain by analysis whether a soil contains an excessive portion of one or more matters otherwise useful to vegetation, such as nitrate of potash, chloride of sodium, &c. It appears to be the fact that all soils which contain readily soluble salts, in quantities admitting of precise determination, are more or less unproductive, although the salt may be a very effective fertilizer when applied in a weaker solution. Thus, a soil containing  $\frac{1}{10}$  per cent., or even less, of common salt hardly grows any crop; this being the case with land inundated by the sea. Such a proportion, indeed, of any substance is much greater than could at any time be applied with safety, while very minute quantities are frequently of the utmost efficiency; for so small a quantity as 50 pounds of nitrate of soda, applied to an acre of grass land, or to wheat or barley, and thoroughly washed into the soil, will produce a most marked effect in the darker green color and greater luxuriance of the herbage compared with the portion not so treated. One hundred pounds of ammonia applied to an acre of land, in the shape of sulphate or of chloride of ammonium, has been known to raise the average produce of wheat 20 bushels, with a corresponding increase of wheat straw; and 300 pounds of superphosphate of lime, of good quality, has been found to increase the turnip crop in favorable seasons from six to ten tons per acre.

If a man wishes to make a living by farming, Dr. Voelcker thinks that at least from three to five times as much of all the more important fertilizers must be put annually upon the land as is removed from it in the crops, a depreciation in the crop resulting when a materially less amount is applied.

**EFFECT OF KEEPING FLOUR IN BARRELS.**—As is well known, flour kept in barrels for a long time often acquires a peculiar odor, supposed to be derived from the barrel. Professor Poleck, of Silesia, has lately made a careful examination of such flour, and has ascertained that this smell actually indicates an incipient decomposition prejudicial to bread-making, the gluten of the flour having in part become changed into a soluble body. Thus, while sound flour preserved in sacks contained 11.06 per cent. of gluten and 1.44 per cent. of soluble albuminous matter, four other specimens of flour taken from different barrels were severally composed of 8.37 per cent. gluten to 2.14 per cent. soluble albu-



men; 7.40 per cent. to 6.90 per cent.; 7.23 per cent. to 4.44 per cent.; and 6.54 per cent. to 6.46 per cent. Two samples with more than 6 per cent. of soluble matter had an acid reaction, while the others were neutral. Professor Poleck believes this chemical change of the flour to be induced by the fact that the barrel prevents communication with the atmospheric air and the equalization of temperature. This view is confirmed by the oft-repeated observation that flour in sacks keeps fresh for a much longer time, and that the mustiness in barrels always develops first, and exists in the highest degree in the center, viz, that portion most remote from the outer air.

**EFFECT OF THE FOOD OF COWS ON THE COMPOSITION OF THE MILK.**—A series of experiments prosecuted not long since in Germany led to the conclusion that, contrary to the usual impression on the subject, very considerable changes in the composition of food may be made without inducing corresponding changes in the relative constituents of the milk of the cow; the only effect being in the amount of the concentration of the milk. To determine these results with accuracy, Dr. Kuhn has repeated the experiments, with the general result of showing that an increase in the albumen and fatty elements of a moderate diet produces an increase in the milky yield, which gradually rises (along with bodily condition) to a certain maximum, corresponding in each case with the maximum increase of the above elements. Sooner or later, however, the natural diminution depending on the duration of lactation occurs, and no increase can be produced by increasing the food. Diminution of the above elements of the food causes a diminution in the milk yield. The addition of fat increases the ingredients of milk generally, and has no special influence on the amount of fat in the milk. The absolute production of the individual elements of the milk agrees generally with the relative production of the milk as a whole, (most regularly in the case of sugar.) The variations from this are different for the different ingredients.

In the percentage numbers, sugar does not seem to be affected by the diet. The variations in the amount of albumen are so small as not to be capable of determination. No influence on the amount of caseine could be traced to the food. The influence of food on the amount of fat is seen to be very small. When it appeared to be altered it was after increase of the albuminoids of the food. Increase of the fatty elements of the food did not specially affect the amount of butter; the variations in the percentage amount of caseine and fat are to be attributed to irregularities in the fat production in the gland. The farmer must therefore not hope by variations in the food to produce a "butter-cow" or a "cheese-cow." The differences in this respect are differences of stock and individuals.

**PITH OF WOODY MATTER.**—Mr. A. Grès, in a recent memoir upon the pith of woody plants, endeavors to show that this pith, in the dicotyledonous species, is not simple and uniform in its organization, as has been supposed, but that it is capable of furnishing appreciable characteristics for a natural classification. He finds that it preserves its vitality for many years, sometimes even to a very advanced age, and that it contains in one part or other of its cellules a supply of nutritive material in the form of starch and tannin, which is taken up again at the moment of the development of the new verdure in spring. He thinks, also, that it participates with some of the tissues of the wood itself in the nutrition of the plant, and that it fills an important physiological place

being far from drying up after the second year, and thus becoming subsequently only a dead tissue.

**INFLUENCE OF HEAT OF SOIL ON GROWTH OF PLANTS.**—The result of a recent investigation by Bialoblocki, in regard to the influence of the warmth of soil upon the development of certain cultivated plants, is summed up by him in the following words: The influence of warmth of the soil is made manifest in two directions; in the shortening or lengthening of the period of vegetation, and in affecting the external form of the plant; the acceleration of growth of vegetation occurring principally in the earlier periods. With an ascending temperature of the soil, vegetation is forwarded up to a certain point. From the moment, however, when this point is reached, an increase of temperature in the soil actually retards growth. The maximum point of favorable temperature of the soil varies for different plants; but the maintenance of a constant temperature has for its result a more vigorous growth of the plant experimented on. The extreme limit of a constant temperature of the soil at which a growth of the roots can still take place, we may assume to be below, but very near  $104^{\circ}$  F. A ground temperature of  $50^{\circ}$  F. barely allows plants to fulfill completely all their functions of life and conditions of development. An increased ground temperature has no special influence upon the absorption of nutritious matter through the roots; and the accelerated growth resulting from an increase of heat is usually accompanied by a greater percentage of water in the plant.

**MAKING SUGAR FROM FALLEN CANE.**—At a late meeting of the Academy of Medical, Physical, and Natural Sciences of Havana, Mr. de Castro presented a communication of important practical moment, bearing upon the feasibility of obtaining sugar from cane that has fallen to the ground and thrown out roots into the earth from its joints. It has generally been supposed that the development of these roots takes place at the expense of the crystallizable sugar; but a critical comparative analysis, made by Dr. Koehl at the plantation Las Cañas, of juice extracted from the normal cane, and from that which had thrown out the roots in question, shows that the development of the latter does not interfere appreciably with the amount of sugar in the cane; or, at least, to so slight an extent as not to affect the saccharine richness of the plant. For this reason fallen cane, and cane which has been thrown down by hurricanes, can be turned to almost as good account as if it had remained erect.

**LACTARIN.**—Lactarin is a substance which has been lately introduced as a substitute for albumen, for manufacturing purposes; and it is said to have great advantages on the score of cheapness and convenience of preparation. It is essentially a form of caseine, rendered impure by a little fat and the salts of milk. For use it is diluted with water, dissolved in ammonia, and then added to the coloring matter.

**DETERMINING TANNIN IN OAK BARK.**—A method lately introduced by Loewenthal for determining the amount of tannin in oak bark is based upon the fact that tannin, in the presence of indigo, is decomposed by permanganate of potash in such a manner that, with the final disappearance of the blue color, the last trace of the tannin is also decomposed. For this inquiry the following liquids are needed: First, a solution of indigo carmine; second, a solution of tannin; third, a solution of the chameleon mineral or permanganate of potash; and fourth, a solution of oxalic acid.

**APPLICATION OF POTASH TO PLANTS.**—Professor Nobbe, of Tharand,

has lately published the result of certain experiments made by him upon potash as a nutrient of plants, the method adopted being one to which we have already referred, and known as the "water culture." The plants experimented upon were buckwheat and rye, although the conclusions arrived at had reference more particularly to the former. The solutions used were divided into those in which the potash was completely excluded, or in certain cases replaced by bodies of similar chemical properties, and into those in which potash is present, but in different chemical combinations. The general conclusions reached were that, in solutions free from potash, otherwise nutrient, the plants vegetated as if in pure water. They were unable to assimilate, and exhibited no increase in weight, for the reason that without the co-operation of the potash in the chlorophyl grains no starch was developed. The chloride of potassium was found to be the most effective form of combination under which the potash could be offered to the buckwheat plants; next to this came the nitrate of potash. With sulphate or phosphate of potash, a disease was developed sooner or later, which, starting with a positive heaping up of the starch, ended in preventing the starch from being taken into the chlorophyl grains, and rendered useful in vegetation. Soda and lithia were found incapable of replacing potash in a physiological point of view; furthermore, while soda was found to be perfectly useless to the plant, lithia, when introduced, proved to be positively destructive to the vegetable tissues.

**INFLUENCE OF AMMONIA ON THE COLOR OF FLOWERS.**—An experiment was lately made by Vogel upon the influence of ammonia upon the colors of flowers, in which eighty-six species and varieties were exposed, under a glass bell, to a mixture of sal-ammoniac and lime-water, the fresh flowers being placed at the same height in all the experiments. As a general result a difference was appreciable between the action of the gas upon the colored matter deposited in granules, and that forming a solution, the effect being much less in the former than in the latter. In most cases the changes produced agreed closely with those which the coloring matter of the flowers passed through in the course of withering; and even in natural withering and fading there is the same difference to be observed between the soluble colors and the granules.

**ORANGE FUNGUS OF BREAD.**—At a late meeting of the Academy of Sciences of Paris, specimens of bread, baked for the use of the army, were exhibited, which had been rendered entirely unfit for food by the development of a yellowish-white substance, changing gradually to an orange-red color, and emitting a nauseous odor. Considerable agglomerations of this substance were formed, so as to fill all the cavities of the loaf. When examined by the microscope, this appearance was found to be due to the presence of a cryptogamic plant, already described as *Oidium aurantiacum*, and which was observed in the bread in Paris in the summer of 1843, and at a later period at Marseilles and in Algeria. The sporules of the *Oidium* were found to adhere to the husk of the wheat, and were probably abundant in proportion as this was in a humid state, badly cleansed, and had undergone alteration from the larvæ of the weevil, as it never occurs in bread of the best quality, carefully prepared.

**WHEAT vs. FLOUR.**—In Dr. Moffat's paper on "Geological Systems and Endemic Disease," before the British Association, after pointing out that anæmia, goitre, and phthisis were more prevalent among the inhabitants of the carboniferous districts than among those living on

the new red sandstone, he stated that analysis showed that the wheat grown upon the carboniferous system was deficient in phosphates or nutritive salts; and that a man who consumed a pound of Cheshire wheat per day took in nine grains more of phosphoric acid than one who took a pound of wheat grown upon the carboniferous system. The deficiency also of the nutritive salts in the bread compared with those in the wheat was very remarkable; and it was no doubt owing to the removal of the bran from the flour with which the bread was made. Medical men, he said, could not too much impress upon the minds of the public the importance of using flour made from the whole of the wheat or "whole grain." Professor Church, of Cirencester, has lately found in entire wheat 2.12 per cent. of nitrogen, equivalent to 13.40 per cent. of albuminoids, or flesh formers.

**ANALYSIS OF SACCHARINE MATTERS.**—During the late meeting of the British Association, Dr. Apjohn gave a brief sketch of the methods of analysis usually applied to different varieties of saccharine matters, stating that they were three in number, namely: The optical method, the chemical method, and that in which both these methods are combined. He then explained the principle on which the saccharometer of Edhil is based, and how, with the aid of this instrument, and a double observation with it, one before and the other after inversion of the sirup, the amount of cane-sugar in the saccharine material is determined. He considers the information thus obtained of the highest value, the cane-sugar being by far the most valuable constituent of crude saccharine matter. But the analysis is imperfect, since it gives no information as to the amount of the inverted sugar and the grape-sugar, which are invariably associated with the cane element, and does not even make it possible to assign the aggregate quantity of these varieties of sugar. The analysis, however, may be completed in a very simple way, namely, by acting with the sirup, after its inversion, upon Barrossmill's solution of copper, by means of which a third equation is obtained, which, as there are only three unknown quantities, conducts at once to a complete solution of the problem. The object of this paper, as stated by Dr. Apjohn, was principally to call the attention of chemists to the present imperfect state of saccharine analysis.

**APPLICATION OF THE GERM THEORY TO MAKING PRESERVES.**—Miss Lydia Becker, although best known as a writer on political economy and social science, gave a valuable hint during a recent discussion of the British Association upon the "Germ Theory," in which she showed its bearing upon the making of preserves, and keeping mold from settling on the jam. According to the old practice of leaving the pots uncovered for several days' time was allowed for the germs in the atmosphere to descend and settle on the jam, which was a capital soil, and the result was a plentiful crop of mold. She therefore advised the ladies in the section, when making preserves, to cover up the pots while the sweetmeats were in a heated condition.

**ALBUMEN CHARCOAL.**—A preparation called albumen charcoal has been devised for the purpose of clarifying sugar sirups, and for which it is said to answer an excellent purpose, a very small quantity only being required. Its application in clarifying wines has been suggested, although it is not stated whether it is exactly suitable. To prepare this substance, finely powdered and purified animal charcoal is to be mixed to a stiff dough with white of egg, and torn apart into small pieces, dusted with the charcoal, dried, and pulverized, and again kneaded with egg albumen to a dough, which is to be dried and powdered anew.

**MATERIAL FOR BLEACHING WOOL.**—According to a patent lately taken out in Melbourne, by Lande, one-sixteenth part of soap and one part of cyanide of potassium in eighteen parts of water, constitute an excellent material for bleaching wool or cotton. When used it is to be diluted with fifty times its bulk of water.

**SPEEDY GROWTH OF RADISHES.**—In the publications of the Acclimatization Society of Palermo, we are informed that radishes may be obtained at any season, and very quickly, in the following manner: The seeds are to be first soaked for twenty-four hours and then placed in bags and exposed to the sun. They will begin to germinate in about twenty-four hours, and are then to be set in a box filled with well-manured earth, and moistened from time to time with lukewarm water. In five or six days the radishes will attain the size of a small onion. To grow radishes in winter the box is to be placed in a warm cellar, covered with a top, and the earth moistened from day to day with lukewarm water.

**LA PLATA OR CARNO GUANO.**—The residuum of the flesh used in the establishments of Buenos Ayres for the purpose of preparing Liebig's extract of meat, is now to be met with in commerce under the name of La Plata, or Carno guano, and is recommended very highly as a manure. Analysis shows that this contains nine parts in one hundred of water, forty-one of organic matter, nineteen of lime, magnesia, oxide of iron, &c., ten of phosphoric acid, from one-half to one part of potash, and the rest of insoluble matter, such as sand, clay, &c. The nitrogen amounts to nearly 6 per cent.

**LIQUID SOAP FOR CLEANING WOOL.**—An excellent liquid soap, for cleaning and washing raw wool, according to Moser, may be prepared by using a kettle in which the mass can be heated, by means of a steam tube opening directly into it. The kettle (holding 150 gallons) is first to be half filled with water, which is then to be heated, and 68 pounds of caustic soda of 42 B, and 125 pounds of oleine added to it. This soap is to be boiled thoroughly for twenty to thirty minutes with continued stirring, and is then ready for use, forming a very homogeneous, so-called, soap-glue, of a sirupy consistency, and especially adapted for washing wool. Should the soap be required for fulling, an addition of some ammoniacal salt will be of advantage, to be introduced immediately before using. Instead of caustic soda, which it is sometimes difficult to obtain, we may use ordinary soda salt, which is to be rendered caustic by leaching through freshly burned and slightly moistened lime. Even ordinary potash lye, obtained from ashes, mixed with fresh quicklime, can be employed in this preparation.

**RAISING APPLES AND PEARS IN DRY SEASONS.**—An eminent pomologist in Brussels, De Johnghé, has succeeded in obtaining well-grown apples and pears in dry seasons by watering the trees from time to time, and by making holes in the ground underneath them and occasionally introducing some liquid, but not very highly concentrated, manure. This application is stated to be particularly important at the time when the fruit is setting.

**REGIANINE.**—According to Dr. Phipson, the English walnut, (*Juglans regia*.) and probably the American species also, contain, among other substances, one which he calls *regianine*, (obtained by treating the green husk of the fruit with benzole,) which appears in the form of a yellowish substance crystallizing in groups of feather-like crystals. These are

easily decomposed, and when treated with alkalis or ammonia, yield a splendid and durable red solution which, by a subsequent treatment, becomes the jet black, amorphous, pure geranic acid.

**VOHL ON EXTRACTION OF FATS.**—Much difficulty is experienced in keeping lard and other animal fats for any considerable length of time, without their becoming rancid or acquiring some accessory taste which renders them less fit for use. This rancidity results from several general causes, in most cases in consequence of the presence of water, or from a mixture of some nitrogenous substance. These fats are generally obtained in two different ways: In one, the raw fat is boiled with water, the clear, melted fat skimmed off, and the remaining water removed by adding pulverized salt, or otherwise. In the other the fat is cut into pieces after it has been washed with water, and heated, without water, at an elevated temperature, either with or without the addition of salt. In the first instance there is usually a considerable percentage of animal matter, especially of gelatine and fibrin, mixed with a certain percentage of water, which speedily pass into decomposition. In the second case, although this difficulty is less troublesome, there is almost always a burnt taste and more or less of color, while rancidity is less common.

In a late article, Dr. Vohl, of Cologne, presents what he considers a greatly improved method for the extraction of animal oils, so as to have them entirely free from the foreign substances referred to, and consequently not liable to change. For this purpose the fresh, raw fat is to be freed as completely as possible from the adherent particles of flesh and skin, and cut up into thin slices or small cubes. These are then to be washed with cold water (as free as possible from lime) until this runs off entirely colorless and no particles of blood remain in the fat. When properly drained off this washed fat is to be placed in a cylindrical tub-shaped stoneware vessel of about four feet in height and a foot and a half in diameter, which is inserted in a water-bath, which can be heated by steam to the melting point of the fat. At the bottom of the vessel is a cock of wood, earthenware, or porcelain, so attached that the vessel can be emptied while in the bath. After the vessel is filled to about three-fourths of its capacity with raw fat, a sieve-like perforated disk of stoneware is to be laid upon the surface of the pot, and 10 per cent. of extremely diluted and chemically pure hydrochloric acid added, in a proportion of 3 pounds of the acid (of 1.12 specific gravity) to 100 pounds of water. The vessel is then to be covered with a well-ground and tightly fitting stoneware top. By heating, the fat is melted in the cells, the membranous walls of which are dissolved by the diluted acid, allowing the fat to escape, which rises above the disk, this at the same time gradually sinking toward the bottom. All the membranous, unmelted portions are carried down under it and accumulate at the bottom with the dilute acid.

When all the fat is melted and all the membranous portions destroyed, the acid liquid is to be let off and the fat washed two or three times with hot water. (This acid gelatinous solution can be converted into an excellent manure by the addition of a powdered phosphorite.) A small quantity of carbonate of magnesia is to be added in the last washing, so as to completely remove the acid. The fat, thus washed, is now to be dissolved in its volume, or less, of canadol, in the course of which the water and nitrogenous animal substances are removed, and may be separated, by decanting. The clean fatty solution is now to be introduced into a tinned copper distilling apparatus, and the solvent again

recovered by distillation. The resulting fat will be completely free from smell, taste, and color, and is absolutely neutral, containing no trace of water or nitrogenous substances, on which account it can be kept without change for years. Although this method is somewhat tedious, it is yet effective; and taking into consideration the much greater quantity of fat extracted and its greater purity, its economy will be amply vindicated.

**UTILIZATION OF SURPLUS POTATOES.**—In cases where the potato crop is so large as not to be readily marketable, and more or less in danger of decaying through the winter, the surplus can be so treated as to furnish a valuable article of food, capable of preservation for a long time. For this purpose the potatoes are to be washed clean, steamed, peeled while still hot, and finally pressed through a fine sieve. The potatoes thus compressed are then to be laid, while still hot, upon gratings and dried as quickly as possible, say in ten or twelve hours, in order to avoid any souring or putrefaction; this being generally the result of drying too slowly, or with an insufficient heat. The potatoes dried in this way are of an excellent flavor, and can be packed and kept for years in a dry place, and are serviceable for provisioning ships, armies in the field, &c. About 1,000 pounds of fresh potatoes will make 100 pounds of the dry article, which, when properly prepared, will have precisely the flavor and appearance of freshly boiled potatoes.

**PRIZE OF BEET SUGAR ASSOCIATION.**—The German Association for beet-root industry, at Berlin, has lately offered a prize of a thousand thalers for the solution of the following problem: The yield of crystallized white sugar from the different crude beet sugars is not in a direct ratio to their polarization. What investigations and calculations can be suggested in order to determine, theoretically, beforehand, the yield, in refined white sugar, which any beet-root sugar will furnish?

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## FACTS FROM VARIOUS SOURCES.

**AGRICULTURE IN EGYPT.**—A paper was recently read before the Ayrshire (Scotland) Farmers' Club, on the condition of agriculture in Egypt, from which we glean some interesting facts. Although the methods of agriculture are yet primitive, the tenure of lands uncertain, and a system of forced labor obtaining to a considerable extent, Egypt produces considerable crops of grain, cotton, sugar, corn, and clover. Thousands of tons of sugar are yearly exported from Alexandria; while it is stated that the cereals and clover return crops as heavy as those of Scotland, even under what is called in that country high farming. As is well known, this great fertility is promoted by the rich deposits of the Nile in its annual overflows. The water of this stream is brownish in color, and leaves a sediment on the land in the shape of a crust, which prevents evaporation and consequent drought. When it is necessary to overflow lands on a higher than ordinary level, or still further to enrich them, three modes of raising the water are practiced. The first is by manual labor, the second by animal labor, and the third by steam-power. A very common mode of manual labor is to use a leathern basin slung from a pole, which is mounted on pivots and balanced by a large stone as a counterpoise at the other end. The basin end is depressed by the laborer until it dips into the water below; on being freed it is raised by

the counterpoise until the leathern basin comes to the level. The animal labor is sometimes done by donkeys, but generally by oxen, in connection with pumps. The apparatus consists of a wheel turning on a horizontal axis and carrying an endless rope, upon which are placed earthen pots or jars. As the wheel is turned the pots and jars are carried round and fill themselves with water at the bottom, and empty themselves at the top. Steam-power is used in connection with hydraulic pumps.

In the system of rotation of crops, cotton planted in March is cleared from the ground in November; clover follows and matures in February; wheat, beans, or barley are then sown, and reaped in May or June; Indian corn follows, and is reaped in September. Sometimes two crops of clover can be raised up to February, when cotton may follow in rotation. The land is only stirred up by a wooden implement somewhat similar to a plow, but without mold-board. Reaping is done by pulling, or cutting with small hooks; carrying is all done on the backs of camels or donkeys; thrashing, by the treading of oxen; winnowing, by casting the grain into the air to be cleansed of chaff by the wind.

The most serious hinderances to progress in methods of agricultural production lie in the matter of land tenure, and arbitrary and oppressive taxation. If an owner of land is unable to pay a tax levied his property is confiscated, and the tax is discretionary with the Viceroy or with local governors. It is stated that the Viceroy holds about one-third of all the lands of Egypt, the profits of which accrue to him. But this ruler encourages Europeans engaged in commerce, relieving them of taxation and the operation of the laws of the country, every nationality being allowed to set up its own legal tribunal.

The paper concludes with the hopeful statement that there are indications of an important change, and if it would bring about security in the tenure of land, combined with moderate taxation, the agriculture of Egypt might yet become a field for British capital and enterprise.

**CAROLINA RICE IN INDIA.**—The Agricultural Gazette of India reports five experiments with Carolina and native rice, made under the auspices of the government in the districts of Nagpur, Chanda, Bhandara, and Rajpur, of the central provinces, and the Upper Godavery district, Madras presidency. The reports from the four districts first named represent the Carolina rice as superior to the native in strength and stiffness of stalk, and those from Bhandara and Chanda state that the grain of the Carolina is more firmly set than that of the native, and therefore less liable to be shaken off by high winds, &c. While the report from Bhandara speaks favorably of the productiveness of the Carolina rice under proper cultivation, and commends the large size of its grain, and that from the Rajpur district indicates large results under careful irrigation and manuring, the general expression is that under the ordinary methods of the country the product is no larger than that of the native seed.

In the Upper Godavery district fields of a similar character were selected, the soil being rich, loamy, "approaching cotton-soil in character, but containing a pretty large admixture of sand," and well supplied with water. The field allotted to the Carolina rice was thoroughly plowed 18 inches deep, manured with cow-dung incorporated with the soil, then watered and replowed. The seed was sown July 1; transplanted August 17; crop harvested November 22. On a field having like advantages of manure, water, &c., the native rice was sown broadcast July 20; crop harvested November 15. The chief point of difference in the management of the two fields consisted in the transplanting



of the Carolina rice instead of growing from broadcast seed. Results: Carolina rice—area planted, 3,334 square yards; manure, 5 maunds of cow-dung; seed, 6 pounds 6 ounces; yield, 2,464 pounds of grain, and 896 pounds of straw. Native rice—area, 5,277 square yards; manure, 6 maunds of cow-dung; seed, 308 pounds; yield, 2,480 pounds of grain, and 906 pounds of straw. The rain-fall in the first case amounted to 30.31 inches; in the second to 20.24 inches.

The conductors of this experiment regard it as indicative of great advantage in the introduction of the Carolina rice. The cultivators were quite desirous to obtain the Carolina seed, and directions for its culture are to be distributed throughout the district.

**COTTON EXPERIMENTS IN INDIA.**—An experiment in growing cotton was made in the season of 1869-70, on the Khandeish model farm, India. The Hingunghat seed was used, and the crop was neither manured nor irrigated, but was carefully cultivated according to the native method of shallow plowing. The first half of the season was very favorable, but subsequent heavy and prolonged rains seriously injured the crop by beating the cotton from the plant; further loss was caused by scarcity of laborers at the time of picking. The areas of experiment amounted to 152 acres, which gave an average yield of  $72\frac{3}{8}$  pounds of cleaned cotton per acre. The fields varied greatly in product, the largest yield being on four acres of rich soil, the debris of a deserted village, which returned  $229\frac{1}{5}$  pounds of cleaned cotton per acre.

The superintendent of cotton experiments in Sind details experiments with sea-island, Egyptian, and American seed at the Halla farm, thirty-four miles north of Hyderabad. The farm is watered by two canals, which seldom fail to give an abundant supply of water during nine months in the year. The soil used is represented as fit for any purpose, from brick-making to the producing of good mangoes. The sea-island, the first in time of planting, failed entirely. The Egyptian, next in order of planting, germinated well, and flourished until the plants were about nine inches high, when they assumed a sickly appearance. After a prolonged struggle they had, at the time of report, attained a fine, healthy appearance, but had not yielded any cotton. The American is favorably reported, both in respect to the condition of the plants and the yield.

Mr. Strachan is continuing experiments with crossed and hybridized seed, and by the introduction of suitable implements and improved cultivation of the soil.

**FIBER FROM COTTON STALKS.**—B. F. Thompson, civil surgeon, in a recent letter to prominent officials in India, recommended the utilization of the fiber of the stalks of the cotton plant in the manufacture of gunny-cloth and other textiles. He claimed that the fiber offered an excellent and cheap substitute for jute, and forwarded for examination specimens of the fiber, and of a gunny-cloth made therefrom, which he thought equal to the best cloth manufactured from fine jute. He also referred to papers bearing on the subject in the United States Agricultural Reports for 1854 and 1859. The letter and accompanying specimens were referred to the fiber committee of the Agricultural Society. Mr. Knowles, of that committee, reported that he had examined the fiber and considers it equal to a middling quality of jute, and that it has neither the color nor the strength of fine jute. Mr. Robinson ranked the fiber with a very low quality of jute, as it seems very deficient in strength and color, but that the fiber might be useful for some of the purposes to which inferior jute is applied.

**CASSIA CHAMECHRISTI.**—Mr. E. J. Peck, of Lindon, New Jersey, writes as follows in reference to this plant:

The "partridge-pea" seed received from the Department was sown on a dry loam soil, nearly all the seed vegetating and producing thrifty plants twenty inches in height. It commenced blooming about August 1, and continued to throw out an abundance of flowers until September 15, and ceased by the 25th. During the time it was in blossom the humble-bee was very attentive, but during the entire time I never saw a honey-bee on the plant, although it was in bloom during the greatest scarcity of honey-yielding plants this section has known for several years. As a plant for bee pasture it has not the least value.

**DAKOTA TERRITORY.**—Lieutenant E. B. Northup, Seventeenth United States Infantry, in a recent communication to this Department, states that at the Indian agency at Fort Berthold, in the northern part of Dakota, large quantities of melons, cabbages, tomatoes, &c., have been grown this year. At Fort Stevenson, about thirty miles south, the garrison have about 20 acres under cultivation, and have raised, this year, about 300 bushels of potatoes, 50 bushels of onions, 30 bushels of beets, 75 bushels of ruta bagas, &c.

**DRAINED LAND AND DROUGHT.**—A correspondent at Milo, New York, says: "Drained land has stood our two-years' drought better than undrained, and a free use of gypsum has helped out the crops very much."

**SUGAR CULTURE IN AUSTRALIA.**—In an address delivered at Melbourne upon the practicability and advantages of sugar production in Australia, Rev. Mr. Holland stated that he commenced the culture seventeen years ago, and after much investigation in regard to the variety of cane best suited to his purpose, he had found the "planter's friend" to be the species best adapted to the general requirements of the colony. It produces sugar and rum of the best quality, while all portions of it can be utilized. The seed and cane are excellent fodder for stock, and paper can be made from the leaves. A company has been formed to export what is called the "half stuff" to England, to be made into paper. The trash (crushed cane) supplies fuel for the manufacture of the sugar. The soil best adapted to the growth of this variety is that of a sandy, loamy nature, on a limestone formation. It yields 20 to 25 tons per acre, and matures within six months; other varieties yield 30 tons per acre, but require two years to mature. There were instances where it produced 25 tons 12 cwt. of stalks per acre, sufficient to give 1½ tons of sugar, 60 gallons of spirits, 40 bushels of seed, and 10 tons of fodder. Mr. Holland estimates a net profit of £750 the first year on a farm of 50 acres, after paying all expenses of machinery, buildings, culture, &c.; the second year the profit is much larger, no extra machinery, &c., being requisite. He urged the formation of a company to engage in the business on a large scale, and expressed the opinion that eventually it would become the back-bone industry of the colony.

**GRINDING WHEAT WITHOUT MILLSTONES.**—A paper was recently read before the British Association of Science, at Edinburgh, upon a new mill for grinding wheat. It is described as reducing the grain by percussion while it is unsupported and projected through the air. When passing through the machine the wheat is struck by a series of bars moving in opposite directions, which reduce the wheat so quickly to a state ready for bolting that no injurious heat is caused; hence the flour is superior to that obtained by the usual process, and produced at less cost. An Edinburgh firm has one of these disintegrating flour-mills in full operation, and its advantages over the millstones that it supersedes are

stated to be that it rarely needs repairs, requires fewer men; is free from loss by scorching, occupies less space, requires less driving-power, and produces a superior quality of flour.

**PREPARATION OF PALMETTO-LEAVES FOR SHIPMENT.**—As there has been considerable inquiry upon this subject, we give the directions given by Alexander McRae, commercial agent, Liverpool, England, for gathering, curing, packing, and shipping these leaves. Mr. McRae states that they should be cut and gathered when fully grown, with six or eight inches of the leaf-stalk left on. They should then be dried in the shade, where the air circulates freely, and be prevented from warping or twisting too much by being occasionally piled one upon another and pressed by a moderately heavy piece of plank or other weight. When fully dried they should be tied, compactly, in bundles of forty to fifty leaves, and these bundles afterward made up into bales like cotton, of suitable size and weight for handling and shipping. A long, open, airy shed, with a tight roof, should be provided for drying and baling the leaves; and this shed should be fitted up with tiers of open racks, from floor to roof, constructed after the manner of houses for drying the brush of broom-corn. These racks, of open slats, one above the other, may be six or eight inches apart and three feet wide, with passages between. In gathering the leaves, handle carefully, piling the fans one upon the other in the cart or wagon, taking care not to split or “fray” the webs. The largest and most perfect leaves are, of course, most valuable, and they should be sized and sorted before baling. The drying process must not be carried forward too fast; nor should the leaves be allowed to get wet while drying, as this will render them brittle and impair their value.

**COTTON CULTURE IN CALIFORNIA.**—A committee of the California Cotton Growers' Association, recently appointed to examine a tract of land near Bakersfield, Kern County, have reported favorably upon its adaptability for the purposes of a cotton plantation, and the association will probably locate their operations there. Upwards of 20,000 acres will be included in the purchase, located in a rich and well-watered region. The cotton experiments in Merced County have thus far proved quite successful. Colonel Strong states that the crop was dependent upon the rain-fall for the moisture by which it was sustained. While the average yield of wheat and barley is stated to be only  $2\frac{1}{2}$  bushels, and of corn 15 bushels, the average yield of the cotton will be 375 pounds of ginned cotton to the acre. Colonel Strong thinks that with irrigation the yield would have reached 750 pounds of ginned cotton, and 45 bushels of seed per acre, and that a similar yield would have resulted from the rain-fall of a good season.

**IRRIGATION IN CALIFORNIA.**—Work is progressing on the San Joaquin Irrigating Canal with considerable energy. Thirty miles have already been excavated, and the work is to be pushed rapidly through the winter. The canal is to be two hundred miles long, commencing at King's River, thence sixty miles to Fresno Slough, thence one hundred and fifty miles to a point near Antioch, on the San Joaquin River. The cut is 40 feet wide, 7 feet deep, including height of bank; width of bank at base, 12 feet; top, 6 feet. Tow-boats are to be run along the canal when complete.

**BET-SUGAR IN CALIFORNIA.**—The Alvarado Beet-Sugar Company are now well under way again in the manufacture of sugar. It is stated that the supply of beets this year will reach 800 tons—16 tons to the

acre. The juice yields most satisfactorily. The amount of sugar made last year was 500,000 pounds. This year it is expected to reach 1,125,000 pounds. This will employ the mill about five months. The remainder of the year will be occupied in refining imported sugar. The Sacramento Company will soon be ready for operations. This company expect to realize about 400 tons of beets this year.

**WARM WATER FOR PLANTS.**—Mr. R. G. Williams, of Vermont State Normal School, writes us upon this subject as follows :

I see some remarks in your monthly report upon the benefit of watering house-plants with warm water. Last winter we had about one hundred plants in the house, and usually gave them warm water, and very frequently water that was much too warm for the hand ; some water at or very near the boiling point, has been poured into the saucers of the pots and just on the sides. We have about forty persons in the family, from different parts of the country, and their testimony is that they never saw so fine geraniums, heliotropes, fuchsias, verbenas, passion-flowers, oleanders. These plants show very marked improvement ; others have flourished finely under the treatment.

All house-plants are better for being watered with water several degrees warmer than the atmosphere in which they are grown.

**WHEAT IN TENNESSEE.**—A correspondent at Florence Station, Ruthersford County, Tennessee, says :

Good seed-wheat, adapted to our climate and soil, will be of inestimable value to us. Our State average is only about 7.10 bushels per acre. This year the yield will not average 2½ bushels per acre, owing, I suppose, to peculiarities of the season. My usual average is 22 bushels per acre, but this year I got but 4 bushels per acre from good land, well prepared, well put in, and with good seed. Red Mediterranean produced nearly double the yield of the best white wheats. The straw was absolutely worthless, except for bedding stables.

**PLOWING IN JANUARY.**—In the report of the farm-visiting committee of the Washington County Pennsylvania Agricultural Society, it is stated that Mr. James W. Dickey, of Donegal Township, plows in January for corn, if it can be done, even if snow is on the ground. He once plowed down five inches of snow, and the crop was one-fourth greater than that on the same kind of ground plowed the last of March. Mr. Dickey showed to the committee a field of 35 acres, which he had in corn in 1869, and which yielded 3,200 bushels shelled corn, and 250 bushels buckeye potatoes. This ground was plowed shallow, about four inches deep, and received four strokes of the harrow ; marked one way 3½ feet wide, planted in hills 2½ feet apart, leaving three stalks to the hill ; commenced to work as soon as up with a light cultivator, next used the double-shovel ; worked four times, and hoed every time.

**WINE BY STEAM.**—At the wine-making establishment of Don Mateo Keller, in Los Angeles, California, a 10-horse power steam-engine is being used to drive a grape-stemmer and crusher of sufficient capacity to stem and mash 50 tons of grapes per day. The machine is a Los Angeles invention. The grapes are cleaned, stemmed, and mashed without breaking the seeds, and dropped into a large trough beneath. A press is to be added to the machine next year, which will extract the juice from the grapes as fast as they are mashed.

**BEE-TROOT SUGAR.**—It is stated in Wood's Monthly Scientific List that there existed in Europe, at the close of last year, 1,507 beet-root sugar-works, of which 483 belonged to France, 310 to the German Confederation, 283 to Russia, 228 to Austro-Hungary, 53 to Belgium, 42 to Poland, 20 to the Netherlands, 4 to Sweden, and 1 each to Italy and the United Kingdom of Great Britain and Ireland.

**THE SUNFLOWER.**—The cultivation of the sunflower is likely to become popular in India. An Indian authority says:

The oil extracted from the seed is said to be superior to both almond and olive oil for table use, and to be employed in manufacturing woolen goods, soap, and candles, as well as for lighting purposes. The leaves have been manufactured into cigars, having pectoral qualities, and might perhaps be found more efficacious than stramonium. The blossoms furnish a brilliant yellow dye, which stands well. Each acre will contain from 15,000 to 20,000 plants, and the average quantity of seed will be 50 bushels, each of which will give a gallon of oil. The quantity of seed is much increased by dwarfing the plants, the best manure for which is said to be old mortar broken up. The plants should be kept clean and free from weeds, and the quantity of seed required is about six pounds per acre. They should have sufficient interval between them for exposure to the sun, as under such circumstances they become larger and more fully stored with seed.

**VEGETABLE CARBOLIC ACID.**—Dr. Broughton, the British quinologist, in India, has succeeded in obtaining carbohc acid from a plant (*Andromeda leschenaultii*) which grows in inexhaustible abundance on the Neilgherries. The acid obtained in this way is said to be purer than that obtained from coal-tar, but it is more expensive, for while the latter costs only four shillings a pound in India, the acid prepared from the indigenous plant costs five shillings. Unless, therefore, the process of preparation can be cheapened, the discovery will be of little practical value.

### MARKET PRICES OF FARM PRODUCTS.

Articles.	October.	Articles.	October.
<b>NEW YORK.</b>		<b>BOSTON.</b>	
Flour, State ..... per bbl.	\$6 25 to \$7 50	Flour, western, superfine per bbl.	\$5 25 to \$5 75
western ..... do.	6 20 to 9 25	extra ..... do.	6 50 to 7 00
Wheat, No. 1 spring .per bush.	— to —	choice ..... do.	7 25 to 9 50
No. 2 spring ..... do.	1 57 to 1 61	Corn, yellow, mixed .per bush.	82 to 83
winter, amber, west-		mixed ..... do.	79 to 81
ern ..... per bush.	1 70 to 1 75	Rye ..... do.	75 to 80
Corn, new western, mixed .do.	75 to 78	Barley ..... do.	95 to 1 00
old western, mixed .do.	— to —	Pork, mess ..... per bbl.	14 00 to 14 50
Rye ..... do.	93 to —	prime ..... do.	11 50 to 12 00
Barley ..... do.	90 to 95	Beef, mess ..... do.	8 00 to 12 00
Oats, western, mixed .do.	52 to 54	extra mess ..... do.	12 50 to 16 00
State ..... do.	— to —	Lard ..... per lb.	9½ to 10½
Hay, shipping qualities. per ton.	22 00 to 23 00	Butter, N. Y. and Vt. .... do.	20 to 32
prime ..... do.	25 00 to 33 00	Canada ..... do.	18 to 29
Pork, mess ..... per bbl.	13 45 to 13 62	western ..... do.	12 to 20
prime ..... do.	10 00 to 11 25	Cheese, eastern factory .do.	8 to 14
Beef, mess ..... do.	7 00 to 11 00	Hay, prime ..... per ton.	25 00 to 34 00
extra ..... do.	11 00 to 14 00	Wool, western ..... per lb.	55 to 62
Lard, extra ..... per lb.	9½ to 10½	combing and de laine	
Butter, western ..... do.	10 to 20	fleeces ..... per lb.	68 to 75
State ..... do.	15 to 30	tub ..... do.	— to —
Cheese, dairy ..... do.	11 to 12½	pulled ..... do.	40 to 72½
factory ..... do.	12 to 13½		
Cotton, ordinary ..... do.	17½ to 19	<b>CHICAGO.</b>	
middling ..... do.	19½ to 21½	Flour, winter extras .per bbl.	7 00 to 7 75
Tobacco, sound, lugs, light		spring extras ..... do.	5 62 to 6 75
grades ..... per lb.	7½ to 8	Wheat, No. 1 spring .per bush.	1 25 to 1 30
sound lugs, heavy		No. 2 spring ..... do.	1 21½ to 1 25
grades ..... per lb.	7¾ to 8½	No. 3 spring ..... do.	1 18½ to 1 19½
common leaf, light		Corn, No. 2 ..... do.	46 to 48½
grades ..... per lb.	8¼ to 9½	rejected ..... do.	45 to —
common leaf, heavy		no grade ..... do.	— to —
grades ..... per lb.	8½ to 10	Oats, No 2 ..... do.	30 to 30½
Wool, combing fleece .do.	— to —	rejected ..... do.	27 to 28
extra, pulled ..... do.	61 to 63	Hay, timothy and clover (on	
Texas, common to me-		track) ..... per ton.	13 50 to 14 50
dium ..... per lb.	46 to —	prairie ..... do.	8 00 to 10 00
California common .do.	38 to 41		

## Market prices of farm products.—Continued.

Articles.	October.	Articles.	October.
<b>CHICAGO—Continued.</b>		<b>St. Louis—Continued.</b>	
Pork, mess .....	per bbl. \$13 00 to \$13 25	Rye .....	per bush. \$0 68 to \$0 73
prime mess .....	do. — to —	Barley, winter .....	do. 65 to 90
Beef, mess .....	per bbl. 12 00 to —	spring .....	do. 70 to 90
extra mess .....	do. 13 50 to —	Oats, mixed .....	do. 34 to 40
Lard .....	per lb. 8½ to 9¼	yellow .....	do. — to —
Butter, firkin and tub .....	do. 10 to 20	Hay .....	per ton. 16 00 to 25 00
extra .....	do. 20 to 25	Pork, mess .....	per bbl. 13 00 to 13 25
Cheese, New York factory .....	do. 13 to 14	Lard .....	per lb. 9½ to 10½
western .....	do. 11½ to 12½	Butter, choice .....	do. 25 to 26
western reserve .....	do. — to —	fair to medium .....	do. 18 to 20
Wool, medium fleece .....	do. 55 to 61	Cheese, factory .....	do. 13½ to 14½
unwashed medium .....	do. 37 to 42	Cotton, middling .....	do. 18½ to 19
tub .....	do. 60 to 73	Tobacco, sound leaf .....	per cwt. — to —
<b>CINCINNATI.</b>		common leaf .....	do. 7 00 to 8 75
Flour, family .....	per bbl. 7 00 to 7 25	medium leaf .....	do. 8 75 to 9 00
extra .....	do. 6 85 to 7 00	Wool, tub-washed .....	per lb. 60 to 69
superfine .....	do. 5 75 to 6 25	fleece-washed .....	do. 48 to 56
low grades .....	do. 4 50 to 5 25	combing .....	do. 35 to 44
Wheat, No. 1 white .....	per bush. 1 55 to 1 60	pulled .....	do. — to —
No. 2 white .....	do. 1 50 to 1 60	<b>NEW ORLEANS.</b>	
No. 1 red .....	do. 1 50 to —	Flour, superfine .....	per bbl. 5 00 to 5 75
No. 2 red .....	do. 1 48 to —	extras, (according to	
Corn, No. 1, ear .....	do. 53 to 54	grade) .....	per bbl. 6 50 to 8 50
new ear .....	do. 54 to —	Corn, mixed .....	per bush. 8½ to 84
Rye, No. 1 .....	do. 82 to —	yellow .....	do. 8½ to 85
No. 2 .....	do. 80 to —	white .....	do. 8½ to 85
rejected .....	do. — to —	Oats, prime .....	do. 57 to —
Barley, No. 1 .....	do. 95 to —	Hay, choice .....	per ton. 34 00 to —
No. 1 State .....	do. 90 to —	prime .....	do. 36 00 to 38 00
Oats, No. 1 mixed .....	do. 34 to 36	Pork, mess .....	per bbl. 14 25 to 15 00
No. 2 mixed .....	do. 35 to —	Lard .....	per lb. — to —
Hay, tight-pressed .....	per ton. 16 00 to 17 00	Butter, choice western .....	do. 20 to —
loose .....	do. 17 00 to 24 00	choice northern .....	do. 33 to 34
Pork, mess .....	per bbl. 12 50 to 13 00	common .....	do. 20 to 25
prime mess .....	do. — to —	Cheese, choice factory .....	do. 13 to 14
Lard .....	per lb. 9½ to 12¼	western reserve .....	do. 12½ to —
Butter, choice Ohio .....	do. 18 to 22	Cotton, ordinary .....	do. 15 to 16
fair to good .....	do. 10 to 14	low middling .....	do. 18½ to 19½
Cheese, western reserve .....	do. — to —	middling .....	do. 19½ to 20½
factory .....	do. 14 to 14½	Tobacco, lugs .....	do. — to —
Cotton, ordinary .....	do. 16 to 16½	low leaf .....	do. — to —
middling .....	do. 19½ to 19¾	medium leaf .....	do. — to —
Tobacco, lugs, West Va. .....	do. — to —	<b>SAN FRANCISCO.</b>	
lugs, Kentucky .....	do. 9 to 12½	Flour, superfine .....	per bbl. 6 75 to 7 00
common to medium leaf,		extras .....	do. 7 25 to 7 75
West Va .....	per lb. — to —	Wheat, State .....	per cental. 2 50 to 2 70
common to medium leaf,		Oregon .....	do. 2 60 to 2 70
Kentucky .....	per lb. 13 to 18	Corn, white .....	do. 2 35 to —
Wool, tub-washed .....	do. 65 to 67	yellow .....	do. 2 35 to —
fleece-washed .....	do. 50 to 55	Hay, State .....	per ton. 18 00 to —
unwashed .....	do. 40 to 45	Pork, mess .....	per bbl. 20 00 to 24 00
pulled .....	do. 50 to 52	prime .....	do. 19 00 to 19 50
<b>ST. LOUIS.</b>		Beef, mess .....	do. 14 00 to 24 00
Flour, superfine .....	per bbl. 4 80 to 5 20	Lard .....	per lb. 11½ to 13
extra .....	do. 5 25 to 6 50	Butter, State .....	do. 30 to 45
Wheat, spring .....	per bush. — to —	Oregon .....	do. 15 to 20
winter No. 1 .....	do. 1 60 to 1 75	overland .....	do. 18 to 25
winter No. 2 .....	do. 1 55 to 1 60	Cheese .....	do. 9 to 14
winter No. 3 .....	do. 1 40 to 1 50	Wool, choice .....	do. 25 to 35
Red .....	do. — to —	inferior to medium .....	do. 15 to 20
Corn, mixed .....	do. 47 to 49		
yellow .....	do. 51 to 52		

Quotations, as nearly as practicable, at the beginning of each month.

# METEOROLOGY.

## SEPTEMBER, 1871.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY OBSERVERS OF THE SMITHSONIAN INSTITUTION.]

Table showing the highest and lowest range of the thermometer, the mean temperature, and amount of rain-fall, (in inches,) for September, 1871, as reported by the observers at the stations named. Observations daily at 7 a. m. and 2 and 9 p. m.

State and station.	County.	Observer.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
				Deg.		Deg.	Deg.	In.
<b>MAINE.</b>								
State Ag'l College..	Penobscot .....	M. C. Fernald .....	3	79	15	31	54.4	1.10
Surry .....	Hancock .....	O. H. Tripp .....	3	81	22	39	57.5	.....
Bucksport .....	do .....	Willabe Haskell .....	3	80	15	40	56.2	1.50
West Waterville..	Kennebec .....	B. F. Wilbur .....	3	81	22	40	58.2	1.66
Gardiner .....	do .....	R. H. Gardiner .....	3	77	15, 22	39	56.4	1.84
Lisbon .....	Androscoggin..	Asa P. Moore .....	3	80	22	31	56.3	2.00
Standish .....	Cumberland ..	John P. Moulton .....	5	84	23	36	57.0	1.35
Norway .....	Oxford .....	H. D. Smith .....	3, 5, 16	80	22	32	53.9	1.55
Cornish .....	York .....	Silas West .....	6	81	22	32	55.2	1.70
Cornishville .....	do .....	G. W. Guptill .....	6	83	30	40	58.0	1.90
<b>NEW HAMPSHIRE.</b>								
Stratford .....	Coos .....	Branch Brown .....	5	82	22	26	51.3	1.30
Whitefield .....	do .....	L. D. Kidder .....	6	83	22	25	51.0	1.52
Tamworth .....	Carroll .....	Alfred Brewster .....	6	83	22	26	53.8	1.56
Contoocookville..	Merrimack .....	E. D. Couch .....	6	85	22	30	57.2	1.30
Amoskeag .....	Hillsborough..	Alfred Colby .....	3, 4, 5, 6	82	22	24	54.5	1.55
<b>VERMONT.</b>								
Lunenburg .....	Essex .....	H. A. Cutting .....	6	88	22	30	55.2	2.01
South Troy .....	Orleans .....	J. C. Kennedy .....	5	87	21	30	53.8	1.23
Randolph .....	Orange .....	C. S. Paine .....	6	84	22	27	52.2	1.61
Woodstock .....	Windsor .....	H. Doton & L. A. Miller	5	79	22	28	49.8	1.73
Norwich .....	do .....	S. B. Phelps .....	5	84	22	32	57.2	1.10
Near St. Albans ..	Franklin .....	A. H. I. Gilmour .....	4, 5	80	20	35	53.0	1.60
West Charlotte ..	Chittenden .....	Miss M. E. Wing .....	4, 5	84	22	33	58.7	.....
Panton .....	Addison .....	D. C. and M. E. Barto.	5, 6	82	22	34	56.6	2.12
Castleton .....	Rutland .....	R. G. Williams .....	6	82	22	32	54.7	1.25
Bennington .....	Bennington .....	G. W. Robinson .....	6	78	21, 30	32	52.8	1.50
<b>MASSACHUSETTS.</b>								
Kingston .....	Plymouth .....	G. S. Newcomb .....	5, 6	80	30	40	58.3	1.00
Lawrence .....	Essex .....	John Fallon .....	6	83	21	39	56.5	1.18
Milton .....	Norfolk .....	A. K. Teele .....	6	85	22	36	59.7	0.88
Cambridge .....	Middlesex .....	Mrs. S. H. Perry .....	25	81	22	39	59.0	.....
North Billerica ..	do .....	E. & W. W. Nason .....	6	86	22	32	56.5	.....
New Bedford .....	Bristol .....	Samuel Rodman .....	5	75	22	36	57.4	2.25
Do .....	do .....	E. T. Tucker .....	6	78	22, 23	37	57.7	2.25
Worcester .....	Worcester .....	Merrick Bemis .....	3	77	18	40	58.8	0.90
Lunenburg .....	do .....	G. A. Cunningham .....	6	80	22	39	57.2	1.25
Mendon .....	do .....	J. G. Metcalf .....	3, 5	78	22	35	56.4	.....
Amherst .....	Hampshire .....	E. S. Snell .....	3	78	22	32	54.9	1.30
Williams College ..	Berkshire .....	A. Hopkins .....	6	78	22	30	52.7	1.00
<b>RHODE ISLAND.</b>								
Newport .....	Newport .....	W. A. Barber .....	5	83	22	44	62.0	1.60

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
				Deg.		Deg.	Deg.	In.
CONNECTICUT.								
Columbia	Tolland	W. H. Yeomans	5, 6	84	22	30	58.4	2.12
Middletown	Middlesex	H. D. A. Ward	6	82	22	33	55.9	1.92
Southington	Hartford	Luman Andrews	5, 6	77	21	39	57.4	1.40
Round Hill	Fairfield	Rev. W. P. Alcott	5, 6	78	22	38	58.6	1.06
Colebrook	Litchfield	Charlotte Rockwell	3, 4, 6	80	22	32	55.4	.....
NEW YORK.								
Moriches	Suffolk	E. A. Smith	3	86	22	43	63.2	2.03
Warrensburgh	Warren	J. E. Weld	6	84	22	38	57.9	0.90
South Hartford	Washington	G. M. Ingalsbe	6	82	22	34	58.6	2.00
Garrison's	Putnam	T. B. Arden	5	81	21, 22	40	56.5	1.47
Throg's Neck	West Chester	Miss E. Morris	4, 6, 7	85	30	42	62.3	.....
White Plains	do	O. R. Willis	3, 4	75	30	42	58.1	.....
Cooper Union	New York	O. W. Morse	6	79	21	45	62.6	1.85
Brooklyn	Kings	L. P. Mailler	3, 5, 6	78	21	41	60.5	2.00
Flatbush	do	E. T. Mack	6	80	27	41	61.5	3.50
Glasco	Ulster	D. B. Hendricks	6	84	21, 22	33	55.6	1.38
Minaville	Montgomery	D. S. Busing	6	85	21	34	57.7	.....
Middleburgh	Schoharie	S. W. Roe	6	90	21	32	57.5	0.80
Cooperstown	Otsego	G. P. Keese	6	82	22	26	54.1	1.17
Gouverneur	St. Lawrence	C. H. Russell	5, 6	80	21	27	52.3	1.48
Canton	do	L. A. Lee	5, 6	84	21	31	55.6	.....
North Hammond	do	C. A. Wooster	4, 5	90	21	38	60.7	0.69
Lowville	Lewis	A. J. Barrett	4, 5, 6	82	30	32	53.2	0.94
Cazenovia	Madison	William Soule	5	83	22	32	54.3	.....
Oneida	do	S. Spooner	5, 6	85	21	35	58.0	1.71
Depauville	Jefferson	Henry Haas	4	80	22	31	54.1	3.05
Oswego	do	W. S. Malcolm	5	82	22	34	56.4	1.04
Palermo	do	E. B. Bartlett	6	85	21	31	54.4	1.20
North Volney	do	J. M. Patrick	5	87	21	34	56.4	.....
Waterburgh	Tompkins	David Trowbridge	5	84	22	26	54.5	.....
Nichols	Tioga	Robert Howell	5, 6	86	30	29	66.5	.....
Newark Valley	do	Samuel Johnson	6	94	22	23	33.4	0.50
Himrod's	Yates	G. D. Baker	6	83	21, 22	34	54.7	0.50
Rochester	Monroe	G. P. Hachenberg	5	86	21, 22	42	58.6	0.50
Little Genesee	Allegany	Daniel Edwards	6	85	22	26	54.0	0.50
Angelica	do	C. P. Arnold	4	83	22	27	54.2	0.68
Carlton	Orleans	M. P. Godfrey	5	86	21, 22	36	57.3	1.00
Lockport	Niagara	B. W. Clark	4	84	22	40	57.5	1.40
Buffalo	Erie	William Ives	4	84	21	36	57.9	.....
Jamestown	Chautauqua	S. G. Love	6	83	21	33	54.8	1.30
NEW JERSEY.								
Jersey City	Hudson	T. J. Howard, jr.	6	80	21	39	61.1	2.20
Newark	Essex	W. A. Whitehead	6	78	21	38	60.0	1.99
South Orange	do	W. J. Chandler	6	80	21	33	50.1	2.05
Trenton	Mercer	E. R. Cook	4, 6	80	21	42	63.6	1.57
Rio Grande	Cape May	Mrs. J. R. Palmer	24	82	21, 22	42	61.4	3.62
Moorestown	Burlington	T. J. Beans	2	83	23	40	60.6	1.61
New Germantown	Hunterdon	A. B. Noll	6	82	21, 23	39	58.4	1.93
Readington	do	John Fleming	3	86	21, 22, 23	38	52.8	.....
Greenwich	Cumberland	Miss R. C. Sheppard	6, 7	77	21	42	61.7	1.55
Vineland	do	John Ingram	18	102	21, 23, 30	39	61.5	1.89
PENNSYLVANIA.								
Nyces	Pike	John Grathwohl	3	81	22	31	55.3	1.60
Hamlington	Wayne	J. D. Stocker	3	83	21, 30	38	57.6	0.75
Dyberry	do	Theodore Day	5, 6	80	22	27	52.5	1.18
Fallsington	Bucks	Ebenezer Hance	4	81	30	42	60.6	1.50
Philadelphia	Philadelphia	J. A. Kirkpatrick	4	81	21	43	63.0	1.75
Germantown	do	Thomas Meehan	4, 6	84	21	40	61.0	.....
Plymouth Meeting	Montgomery	M. H. Corson	6	82	22	39	59.9	1.06
Egypt	Lehigh	Edward Kohler	4, 5	87	22	32	60.0	.....
Factoryville	Luzerne	Rodman Sisson	5, 6	84	30	28	54.4	0.80
Reading	Berks	J. H. Raser	6	83	22	42	62.0	2.34
West Chester	Chester	George Martin	4	83	30	40	58.9	2.35
Parkersville	do	F. Darlington	6	83	22	39	61.5	1.99
Ephratah	Lancaster	W. H. Spera	1, 6	82	30	38	59.6	1.88
Carlisle	Cumberland	W. H. Cook	5, 6	82	22	39	61.3	2.65
Mt. Rock	do	Jacob Lefever	6	82	22	35	59.3	2.22



Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum tem- perature.	Date.	Minimum tem- perature.	Mean tempera- ture.	Rain-fall.
PENN.—Cont'd.				Deg.		Deg.	Deg.	In.
York S. Springs	Adams	J. H. Marsden	6, 19	80	21	40	59.0	1.55
Tioga	Tioga	E. T. Bentley	6	80	30	22	50.2	0.50
Grampian Hills	Clearfield	Elisha Fenton	5, 6	81	22	28	54.1	1.27
Johnstown	Cambria	David Peelor	5	84	21, 22, 30	34	47.6	3.70
Franklin	Venango	M. A. Tolman	4	84	22, 30	34	56.1	0.58
Queensburgh	Westmoreland	J. M. L. Stump	6	84	21	34	59.7	1.05
Pittsburgh	Allegheny	George Albree	6	81	30	39	61.0	1.50
Connellsville	Fayette	John Taylor	6	85	21	35	60.5	
Greenville	Mercer	D. B. Packard	6	80	30	33	55.9	0.50
Newcastle	Lawrence	E. M. McConnell	6	82	30	30	60.5	0.09
Beaver	Beaver	R. T. Taylor	6	81	21	39	59.9	
Canonsburg	Washington	William Smith	6	85	30	32	59.0	0.80
DELAWARE.								
Dover	Kent	J. H. Bateman	4	84	22	44	61.1	2.70
Milford	do	R. H. Gilman	13	82	29	39	63.2	2.00
MARYLAND.								
Woodlawn	Cecil	J. O. McCormick	4	82	22	41	61.0	2.55
Fallston	Harford	G. G. Curtis	4	80	21, 29, 30	44	59.3	2.33
Annapolis	Anne Arundel	W. R. Goodman	6	83	27, 30	45	65.2	2.37
St. Inigoes	St. Mary's	James Stephenson	6, 13	80	30	48	66.1	5.08
Woodstock College	Baltimore	A. X. Valente	6	80	22	38	58.8	2.06
Sam's Creek	Carroll	F. J. Devilbiss	6	80	22	35	61.0	1.71
Mt. St. Mary's	Frederick	C. H. Jordan	6	81	21	45	60.4	1.93
Frederick	do	J. K. Hanshaw	6	87	22	45	65.0	1.77
Cumberland	Alleghany	E. T. Shriver	6	81	22	40	61.1	2.40
DIST. COLUMBIA.								
Washington	Washington		13	80	21, 22	45	64.0	1.80
VIRGINIA.								
Johnsontown	Northampton	C. R. Moore	6	82	30	48	66.0	4.70
Caperville	do	Emma C. Townsend	6, 7	82	30	53	70.0	
Hampton	Elizabeth City	E. M. Sherman	7	84	29, 30	47	67.4	2.78
Comorn	King George	E. T. Tayloe	4, 5, 7	81	21, 29	48	66.4	3.69
Mt. Solon	Augusta	James T. Clark	6	84	30	32	60.3	2.85
Vienna	Fairfax	Randolph Robey	6, 13	82	30	34	61.1	2.30
Do	do	G. A. Bowman	4	86	30	34	65.4	2.30
Accotink	do	Chalkley Gillingham	4	85	30	43	64.1	2.52
Waterford	Loudoun	Mrs. S. E. Chamberlin	4, 5	85	22	35	63.6	0.40
Piedmont Station	Fauquier	W. A. Martin	6, 13	82	22	36	64.0	3.25
Keswick Station	Albemarle	D. B. Horn	5	90	28	42	64.4	2.50
Lynchburgh	Bedford	C. J. Meriwether	7	81	29	46	65.5	4.00
Wytheville	Wythe	J. A. Brown	7	82	30	37	61.4	3.45
WEST VIRGINIA.								
Weston	Lewis	Benjamin Owens	6, 13	84	30	36	62.2	
Cabell Court-House	Cabell	C. L. Roffe	8	89	20	40	65.6	1.00
NORTH CAROLINA.								
Oxford	Granville	W. R. Hicks	13	84	30	50	57.4	4.30
Albemarle	Stanley	F. J. Kron	4, 13	85	29, 30	38	66.2	4.50
Statesville	Iredell	T. A. Alison			30	34	63.6	1.63
Asheville	Buncombe	E. J. Aston	10, 11	77	30	34	61.9	2.40
SOUTH CAROLINA.								
Aiken	Barnwell	John H. Cornish	14	85	30	53	69.8	4.20
Gowdeysville	Union	Charles Petty	6, 11	83	30	51	71.7	3.30
Greenville C. H.	Greenville	Lardner Gibbon	7, 16	86	30	46	70.3	6.70
GEORGIA.								
Berne	Camden	H. L. Hillyer	17	86	29, 30	54	69.3	9.20
St. Mary's	do	Ebenezer Barker	16	86	30	58	75.5	11.98

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum tem- perature.	Date.	Minimum tem- perature.	Mean tempera- ture.	Rain-fall.
GEORGIA—Cont'd.								
Quitman .....	Brooks .....	J. L. Cutler .....	1, 15	Deg. 89	30	Deg. 57	Deg. 75.0	In. 5.65
Atlanta .....	Fulton .....	Charles Deckner .....	3, 15, 18	80	28, 30	49	67.9	2.60
La Fayette .....	Walker .....	A. R. McCutchen .....	2	88	29	43	66.4	1.45
ALABAMA.								
Huntsville .....	Madison .....	E. L. Antony, M. D. ....	8, 10, 11	84	21, 29	52	69.3	3.80
Montlon .....	Lawrence .....	Thos. M. Peters .....	7	82	30	43	69.7	0.43
Selma .....	Dallas .....	Dr. Fahs and Miss R. B. Deans .....	8	91	30	49	75.5	0.50
Carlowville .....	do .....	H. L. Alison .....	1, 8	88	28	50	73.2	2.24
Green Springs .....	Hale .....	H. Tutwiler, LL. D. ....	7, 8	92	30	48	75.0	1.10
Coatopa .....	Sumter .....	S. K. Jennings, M. D. ..	8	94	30	48	73.6	1.80
FLORIDA.								
Near Port Orange ..	Volusia .....	S. W. Chamberlin .....	1, 16, 17	83	9, 27	68	76.8	2.08
Jacksonville .....	Duwall .....	A. S. Baldwin, M. D. ....	16	93	30	62	77.6	7.52
Picolata .....	St. John's .....	C. F. Powell .....	1	90	30	65	78.2	.....
Pilatka .....	Putnam .....	G. D. Robinson .....	16, 17	94	30	61	78.1	9.53
Ocala .....	Marion .....	Edward Barker .....	17	96	30	62	74.4	.....
Welborn .....	Suwannee .....	G. B. Thralls .....	1	90	28, 29	68	77.2	.....
TEXAS.								
Clarksville .....	Red River .....	J. M. Anderson .....	11	102	31	69	91.3	.....
Near Clarksville ..	do .....	Allen Martin .....	9	91	30	50	73.9	1.68
Houston .....	Harris .....	Miss E. H. Baxter .....	11	96	30	60	79.5	.....
Clear Creek .....	Galveston .....	George N. Leoni .....	10	96	30	63	79.8	3.60
Greenville .....	Hunt .....	Samuel Davis .....	7	93	29	54	77.2	2.75
Sand Fly .....	Burleson .....	F. S. Wade .....	6	94	30	54	77.8	2.80
Bluff .....	Fayette .....	Joseph Fietsom .....	18	92	29, 30	62	80.4	2.50
Clinton .....	DeWitt .....	A. C. White .....	6	95	30	57	77.2	5.65
Austin .....	Travis .....	J. Van Nostrand .....	6	94	30	54	76.9	2.61
San Antonio .....	Bexar .....	Fred. Pettersen .....	6	99	30	57	77.7	6.34
LOUISIANA.								
New Orleans .....	Orleans .....	Robert W. Foster .....	8	89	29	56	74.8	7.30
Shreveport .....	Caddo .....	J. H. Carter .....	8, 10, 15	89	29	57	76.7	.....
Ponchatoula .....	Livingston .....	H. Collins .....	8	95	28	55	78.7	6.10
MISSISSIPPI.								
Marion Station .....	Lauderdale .....	Thos. W. Storer, M. D. ....	8, 10	96	28	40	71.4	0.30
Grenada .....	Grenada .....	J. S. Payne .....	7, 8, 9	90	28	46	71.2	1.55
Brookhaven .....	Lawrence .....	Mrs. W. E. Keenan .....	8	92	27	53	74.7	2.30
Holly Springs .....	Marshall .....	Thomas B. Coleman .....						0.69
ARKANSAS.								
Clarksville .....	Johnson .....	E. Greene .....	10	94	29	43	71.8	0.30
Mineral Spring .....	Hempstead .....	Harmon Bishop .....	3, 9, 12	90	30	38	70.4	0.75
TENNESSEE.								
Elizabethton .....	Carter .....	C. H. Lewis .....	12	90	29	34	66.3	1.02
Lookout Mountain ..	Greene .....	C. F. P. Bancroft .....	7	85	30	45	70.0	1.84
Clearmont .....	Warren .....	T. P. Wright .....	8	84	29	39	66.3	1.10
Austin .....	Wilson .....	P. B. Calhoun .....	10, 11, 12	88	30	36	69.4	3.15
Clarksville .....	Montgomery .....	W. M. Stewart .....	10	88	29	38	65.6	2.55
Trenton .....	Gibson .....	W. T. Grigsby .....	6, 9	92	28, 29	40	69.0	1.70
La Grange .....	Fayette .....	W. E. Franklin, M. D. ....	{ 3, 10, } { 11, 12 }	{ 88 } { 88 }	29	46	69.8	1.70
Knoxville .....	Knox .....	J. K. Payne .....	7	86	29	40	68.9	3.42
KENTUCKY.								
Pine Grove .....	Clark .....	Sam'l D. Martin, M. D. ....	9	89	30	36	65.8	3.97
Louisville .....	Jefferson .....	Mrs. Lawrence Young .....	6	90	29, 30	31	65.2	2.23
Shelby City .....	Boyle .....	Howard Shriver .....	5, 6, 11	88	30	38	67.1	5.22

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
OHIO.								
Salem	Columbiana	J. E. Pollock	3	Deg. 88	22	Deg. 36	Deg. 59.6	In. 0.25
Painesville	Lake	E. J. Ferris	5, 6	80	15, 21, 22	44	59.3	1.20
Baldwin University	Cuyahoga	J. McK. Pittenger	5, 6	85	30	40	60.5	1.50
Adams's Mills.	Muskingum	Charles A. Stilwell.	6	85	30	34	59.7	0.85
Pennsville	Morgan	T. J. Bingham	5, 6	96	21	38	63.6	0.80
Oberlin	Lorain	S. Herrick	5	88	29	36	59.0	0.30
Sandusky	Erie	Thomas Neill	5	84	30	37	58.5	2.17
Carson	Huron	Mrs. M. M. Marsh	5	86	30	39	61.0	0.05
North Fairfield	do	O. Burrass	3, 4, 5	84	30	37	60.1	0.29
Westerville	Franklin	Prof. John Haywood	6	86	30	32	61.0	0.25
North Bass Island	Ottawa	Geo. R. Morton, M. D.	5	89	29	46	63.4	0.27
Marion	Marion	H. A. True, M. D.	5	87	30	34	58.9	0.18
Hillsborough	Highland	J. McD. Mathews	6	80	29	39	61.3	0.69
Kenton	Hardin	C. H. Smith, M. D.	5	94	27	42	63.8	.....
Bellefontaine	Logan	William Barringer.	4	90	29	34	60.5	0.25
Urbana University	Champaign	M. G. Williams	6	87	30	34	61.5	1.25
Bethel	Clermont	G. W. Crane	4, 5, 6, 9	84	30	33	61.9	0.25
Carthage	Mercer	Prof. W. R. Mueller	5	85	30	32	61.1	0.49
Farmer	Defiance	A. C. Irwin	5	88	30	31	61.1	0.40
Jacksonburgh	Butler	J. B. Owsley, M. D.	6	87	29	40	63.8	0.50
Oxford	do	R. W. McFarland	6	88	30	31	61.5	0.39
Mount Auburn Ins.	Hamilton	Prof. I. H. White	6	84	30	40	64.4	0.69
Cumminsville	do	J. H. Shields	4, 5, 6	77	30	36	60.6	0.90
Cincinnati	do	G. W. Harper	6	88	30	38	64.5	1.08
College Hill.	do	J. W. Hammitt	6	90	30	36	65.8	1.00
MICHIGAN.								
Detroit	Wayne	F. W. Higgins	3	87	30	32	58.6	1.04
Monroe City	Monroe	Miss H. I. Whelpley	5	89	29	48	66.4	0.25
Ann Arbor	Washtenaw	Mrs. N. H. Winchell	4	86	29	36	60.3	1.11
Alpena	Alpena	J. W. Paxton	23	75	21	38	55.7	2.00
State Agr. College	Ingham	Prof. R. C. Kedzie	5	96	21	31	58.0	0.79
Olivet College	Eaton	Prof. A. F. Kemp	4	86	29	31	56.8	1.85
Litchfield	Hillsdale	R. Bullard	4, 5	86	29	29	57.9	0.90
Grand Rapids	Kent	E. S. Holmes, D. D. S.	5	92	29	31	59.3	1.94
Do.	do	L. H. Strong	5	86	29	31	57.4	0.76
Northport	Leelenaw	Rev. Geo. N. Smith	4	88	29	38	57.0	2.25
Benzonia	Benzie	William Wilson	4, 5	83	21	31	56.2	2.40
Copper Falls	Keweenaw	S. H. Whittlesey, M. D.	1	75	21	31	51.4	1.62
Ontonagon	Ontonagon	Edwin Ellis, M. D.	3	72	19	41	56.9	1.00
INDIANA.								
Fort Wayne	Allen	R. S. Robertson	5	90	29, 30	34	62.3	0.50
Aurora	Dearborn	George Sutton	6	92	30	36	64.1	2.65
Rising Sun	Ohio	Thomas E. Alden	4, 6	83	30	36	63.5	1.75
Vevay	Switzerland	Chas. G. Boerner	6	88	30	37	63.9	0.47
Mt. Carmel	Franklin	J. A. Applegate	6	88	29	47	65.6	2.00
Spiceland	Henry	William Dawson	4, 5	91	30	32	60.0	0.28
Laconia	Harrison	Adam Crozier	9	89	30	38	40.9	2.05
Knightstown	Rush	D. Deem	4	89	29	33	63.3	0.60
Beech Grove	do	William S. Clark	6	84	29	35	61.9	0.45
Bloomington	Monroe	Mallow & Kirkpatrick.	6	86	30	33	61.7	0.35
New Harmony	Posey	John Chappellsmith	5	89	30	39	65.7	1.36
Merom	Sullivan	Thomas Holmes	5	87	30	30	70.6	.....
ILLINOIS.								
Near Chicago	Cook	Samuel Brookes	5	95	29	34	62.0	.....
Evanston	do	Oliver Marcy	5	89	29	37	60.8	0.66
Marengo	McHenry	J. W. James	5	89	29	29	57.8	0.68
Mattoon	Coles	W. E. Heury	5	97	29	38	66.4	1.25
Sandwich	De Kalb	N. E. Ballou	3	90	29	32	60.5	0.40
Decatur	Macon	Timothy Dudley	9	95	28	34	64.6	0.25
Peoria	Peoria	Fred. Brendel	5	93	29	34	63.9	0.65
Waterloo	Monroe	Chas. Jozef	4, 9	88	29, 30	39	63.4	0.55
Dubois	Washington	W. C. Spencer	6	93	29	38	68.8	0.23
Galesburgh	Knox	W. Livingston	4, 5	85	21	40	62.5	0.90
Manchester	Scott	J. & C. W. Grant	5	92	27, 28, 29	42	66.2	0.08
Mt. Sterling	Brown	A. Duncan	5	86	21, 30	45	64.7	1.20
Andalusia	Rock Island	M. B. Bowman	3	87	29	31	61.9	0.21

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum tem- perature.	Date.	Minimum tem- perature.	Mean tempera- ture.	Rain-fall.
ILLINOIS—Cont'd.								
Augusta	Hancock	S. B. Mead	5	Deg. 87	29	Deg. 36	Deg. 62.5	In. 1.55
Warsaw	do	B. Whitaker	5	93	21, 26, 28, 29, 30	44	64.9	1.00
Quincy	Adams	Frank J. Heance	4	92	26	38	64.6	2.60
WISCONSIN.								
Sturgeon Bay	Door	R. M. Wright	5	85	20	35	57.6	0.25
Hingham	Sheboygan	John de Lyser	5	87	29	33	58.7	-----
Milwaukee	Milwaukee	J. A. Lapham	4	91	29	34	58.9	0.60
Geneva	Walworth	W. H. Whiting	4, 5	93	29, 30	34	58.5	0.45
Waupaca	Waupaca	H. C. Mead	2	87	29	32	58.0	-----
Embarrass	do	E. E. Breed	2, 5	86	29	30	58.1	0.37
Madison	Dane	W. W. Daniels	4	88	28	40	59.8	0.47
Edgerton	Rock	H. J. Shints	5	94	29	34	61.3	0.70
Baraboo	Sauk	M. C. Waite	5	90	29	30	59.1	1.50
New Lisbon	Juneau	J. L. Dungan	2	89	29	28	57.7	-----
Bayfield	Bayfield	Andrew Tate	4	86	-----	-----	-----	-----
Mosinee	Marathon	John O'Donoghue	3	83	29	22	54.1	4.90
MINNESOTA.								
Beaver Bay	Lake	C. Wyland	2	81	29	36	55.4	1.29
Beaver	Winona	J. K. C. Winters	2, 3	82	29	32	56.6	2.30
St. Paul	Ramsey	A. B. Peterson	3	87	29	33	58.9	2.02
Afton	Washington	A. L. Roe	-----	-----	29	36	60.5	1.25
Minneapolis	Hennepin	William Cheney	3	88	29	30	57.4	2.25
Sibley	Sibley	C. W. & C. E. Woodbury	8	89	28	25	57.9	0.85
Litchfield	Meeker	H. L. Wadsworth	1	84	28	27	56.4	0.50
New Ulm	Brown	Charles Roos	8	92	29	34	61.8	0.62
IOWA.								
Dubuque	Dubuque	Asa Horr	4	88	29	31	60.5	-----
Monticello	Jones	R. P. Smith	3	92	21	34	64.2	0.50
West Branch	Cedar	A. M. Russell	4	93	29	29	60.7	-----
Bowen's Prairie	Jones	S. Woodworth	3, 4, 5	90	19, 21, 29	40	58.4	-----
Guttenberg	Clayton	J. P. Dickinson	3, 4, 5	90	28, 29	26	58.4	-----
Mount Vernon	Linn	Alonzo Collins	4, 5	89	28	33	62.4	-----
Iowa City	Johnson	T. S. Parvin	2, 4	86	29	30	60.0	-----
Fort Madison	Lee	D. McCready	4, 5	86	29	33	62.5	0.50
Independence	Buchanan	George Warne	4	93	29	27	62.5	0.10
Near Independence	do	Mrs. D. B. Wheaton	5	93	29	30	61.1	-----
Rockford	Floyd	H. Wadey	4	85	29	33	56.9	-----
Ames	Story	Ernest Adams	5	92	20	34	61.2	1.68
Afton	Union	M. V. Ahsby	5	87	26, 29	34	57.0	1.85
Fontanelle	Adair	A. F. & Julia A. Bryant	4	91	27	35	60.1	3.75
Sac City	Sac	D. B. Nelson	4, 8	90	28	30	56.4	2.50
Council Bluffs	Pottawatomie	Benjamin Talbot	5	88	28	35	61.1	1.92
Logan	Harrison	J. T. Stern	2	88	28	28	61.2	3.10
Woodbine	do	D. R. Witter	8	94	28	32	61.1	2.60
Algona	Kossuth	J. H. Warren	4	94	28	32	59.1	-----
MISSOURI.								
St. Louis University	St. Louis	F. H. Stuntebeck	9	89	29	44	67.4	0.26
Hematite	Jefferson	J. M. Smith	9	97	29	32	66.4	0.48
Rolla	Phelps	Homer Ruggles	9, 17	90	29	26	61.6	0.05
Cave Spring	Greene	T. W. Coltrane	4, 8, 9, 25	90	29	32	65.1	0.10
North Springfield	do	R. H. McCord	4, 8	90	27	38	65.7	0.60
Mount Vernon	Lawrence	Wyatt Harris	5	88	27	42	67.4	0.35
Oregon	Holt	William Kaucher	5	91	28	34	64.2	1.13
Corning	do	Horace Martin	4	92	28	33	64.5	0.95
Nevada	Vernon	P. J. Bond	4	90	27	36	67.9	0.40
KANSAS.								
Atchison	Atchison	Dr. H. B. & Miss Horn	8	92	28, 29	36	65.3	1.10
Williamstown	Jefferson	John M. Cotton	2	98	27	34	66.5	2.42
Paola	Miami	L. D. Walrad	4, 5	92	27	35	66.1	0.25
Baxter Springs	Cherokee	In Graham & Hayland	5, 7, 8	88	27	46	71.2	0.30
Lawrence	Douglass	F. H. Snow	5	91	27	38	67.4	1.49

Table showing the highest and lowest range of the thermometer, &amp;c.—Continued.

State and station.	County.	Observer.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
<b>KANSAS—Cont'd.</b>								
Holton .....	Jackson .....	James Walters .....	4	Deg. 96	28	Deg. 32	Deg. 66.6	In. 1.00
Le Roy .....	Coffey .....	J. G. Shoemaker .....	4, 5	96	27	36	70.0	0.60
State Agr'l College.	Riley .....	B. F. Mudge .....	5	91	27	39	67.2	1.92
Council Grove .....	Morris .....	A. Woodworth .....	5	92	27	38	62.2	1.10
Douglas .....	Butler .....	W. M. Lamb .....	5	95	27	40	68.5	0.60
Holden .....	Sedgwick .....	A. G. Richardson .....	4, 5, 6	90	27	47	67.5	0.20
Burlingame .....	Osage .....	R. M. Hoskinson .....	4, 5	90	27	36	64.5	0.96
<b>NEBRASKA.</b>								
De Soto .....	Washington ..	Charles Seltz .....	5	93	28	34	61.4	3.41
Bellevue .....	Sarpy .....	Mrs. E. E. Caldwell .....	5	91	29	34	63.6	1.30
Omaha Agency .....	Blackbird .....	William Hamilton .....	8	95	{ 20, 27, } { 22, 29 }	40	62.9	0.90
Santee Agency .....	L'Eau qui Court	G. S. Truman .....	4	97	28	28	62.4	0.70
<b>CALIFORNIA.</b>								
Monterey .....	Monterey .....	C. A. Canfield .....	13	80	18	52	60.7	.....
Mendocino City .....	Mendocino .....	A. W. Thornton .....	6	76	10	50	62.9	0.03
Taylorsville .....	Plumas .....	Mary E. P. Ames .....	4	82	18, 29	42	64.1	.....
San Diego .....	San Diego .....	G. W. Barnes .....	23	87	29, 30	58	67.7	.....
<b>MONTANA.</b>								
Missoula .....	Missoula .....	J. M. Minnesinger .....	2	89	9, 21	40	63.4	.....
<b>WASHINGTON.</b>								
Cathlamet .....	Wahkiacum ..	Charles McCall .....	10	88	9	42	57.9	.....
<b>OREGON.</b>								
Eola .....	Polk .....	Thomas Pearce .....	10	81	7	44	57.9	1.00
Astoria .....	Clatsop .....	Louis Wilson .....	9	76	8	47	56.0	2.36

## NOTES OF THE WEATHER.

SEPTEMBER, 1871.

*Mt. Desert, Me.*—Frost 9th, 21st, and 22d.

*West Waterville, Me.*—Frost 14th and 22d; mean temperature 1.69 colder than the average of seven years; rain-fall 1.35 inches less than the average of seven years.

*Gardiner, Me.*—Killing frost 15th; month cold and dry.

*Tamworth, N. H.*—Frost 9th and 12th; ice 15th; mornings and nights unusually cold.

*Strafford, N. H.*—Hard frost 15th; snow on the mountains 30th; drought continues.

*Amoskeag, N. H.*—Month cold and calm; severe frost 22d and 23d.

*Lunenburg, Vt.*—Frequent frosts; severe 14th and 23d.

*Near St. Albans, Vt.*—First frost 14th.

*Castleton, Vt.*—Frost 8th, 14th, 21st, 22d, 23d, and 30th.

*Kingston, Mass.*—A very dry and cold month.

*Worcester, Mass.*—Squall of hail 29th.

*Lunenburg, Mass.*—Killing frost 22d; coldest September since 1849.

*Williamstown, Mass.*—Severe frost 22d.

*Southington, Ct.*—The month has been very dry, and the coldest in eighteen years; 7° colder than last year, and 11° colder than in 1865.

*Glasco, N. Y.*—First frost 21st and 22d.

*Middleburgh, N. Y.*—Severe frost 18th, 20th, and 21st; the month has been cold and dry.

*Cooperstown, N. Y.*—The coldest September in six years; mean temperature 7° lower than in September, 1870; hard frost 21st, 22d, and 30th.

*North Hammond, N. Y.*—First frost 8th; hard frost 11th, 18th, 20th, 21st, and 22d.

*Cazenovia, N. Y.*—Frost 8th, 11th, 14th, 18th, 21st, 22d, (severe,) 27th, and 30th.

*Depauville, N. Y.*—Lowest mean temperature in seven years.

*Little Genesee, N. Y.*—Very dry; springs have failed "for the first time since the pale-faces have lived here."

*Newark, N. J.*—Month remarkably cool, its mean temperature being 4° below the average of the month for the last twenty-eight years; only seven of the preceding twenty-eight Septembers had so little rain.

*Trenton, N. J.*—Frosts 21st, 22d, and 30th.

*Rio Grande, N. J.*—Slight frost 29th.

*Vineland, N. J.*—Light frost 22d, 23d, and 30th.

*Fallsington, Pa.*—Frost 21st, 22d, and 23d; the coldest September in twenty-two years.

*Ephratah, Pa.*—Heavy frost 22d and 30th.

*Carlisle, Pa.*—Frost 21st and 22d; "a cool and dry month."

*Tioga, Pa.*—Heavy frost 15th and 18th; month very dry and quite cool.

*Connellsville, Pa.*—Frost 21st, 22d, and 30th.

*Beaver, Pa.*—Frost much earlier than last year; month has been dry, and 3° colder than last year.

*Dover, Del.*—Frost 21st and 22d.

*Woodlawn, Md.*—Frost 21st, 22d, 23d, 27th, 28th, 29th, and 30th.

*Emmitsburgh, Md.*—Frost 21st and 22d; month very dry.

*Accotink, Va.*—Month very dry and smoky; springs low; an unusual amount of sickness.

*Mount Solon, Va.*—First frost 22d; first ice 30th.

*Albemarle, N. C.*—First white frost 30th.

*Statesville, N. C.*—Frost 27th, 28th, 29th, and 30th—three weeks earlier than usual.

*Gowdeysville, S. C.*—Frost 29th and 30th.

*Moulton, Ala.*—White frost 30th.

*Picolata, Fla.*—Rains frequent during the month.

*Welborn, Fla.*—Rain on sixteen days; 17th, ground covered with water; cattle "miring in the woods;" the Suwanee River reported 6 feet higher than ever known by the oldest residents.

*Blue Branch, Texas.*—Rain the 13th—the first since the 8th of June sufficient to lay the dust. "The water-courses were dry." Wells held out.

*Ponchatoula, La.*—Very hard rain, 18th.

*Marion Station, Miss.*—Frost 28th; crops have suffered seriously from the limited rain-fall.

*Clarksville, Ark.*—Slight frost 30th.

*Knoxville, Tenn.*—First frost 30th.

*Elizabethton, Tenn.*—Very little rain; streams running dry.

*Shelby City, Ky.*—Drought excessive to the 12th; vegetation dried up; forest trees suffered; 12th, 13th, and 14th, copious rain; frost 28th, 29th, and 30th.

*Adams Mills, Ohio.*—First frost 21st—several weeks earlier than usual.

*North Bass Island, Ohio.*—Earth completely parched; crops suffering from cold and drought.

*Westerville, Ohio.*—Frosts 21st, 22d, 29th, and 30th.

*Urbana, Ohio.*—Rain less than for any month for the last twenty years.

*Oxford, Ohio.*—Smoky from 8th to 30th; frost from 22d to 30th.

*Grand Rapids, Mich.*—Heavy shower 2d; first frost 6th; hard frost 29th and 30th.

*Ann Arbor, Mich.*—Frost, 18th, 20th, and 21st.

*Grand Rapids, Mich.*—Fine weather most of the month.

*Litchfield, Mich.*—Heavy frost 20th and 21st; springs very low; ground unusually dry; muck in several marshes on fire.

*Rising Sun, Ind.*—Month very dry; Ohio lowest this year 24th.

*Mount Carmel, Ind.*—Greatest rain in same time in two years 4th; smoky 13th and 14th; first frost, 21st.

*Vevay, Ind.*—Twelve mornings foggy; month extremely dry; Ohio River so low that steamers run with great irregularity.

*Beech Grove, Ind.*—Very smoky 5th to 18th; frost 21st and 22d.

*Fort Wayne, Ind.*—First frost 8th; heavy frost 21st, 22d, 26th, 28th, 29th, and 30th.

*Mount Sterling, Ill.*—Month remarkable for drought; pastures dried up and farmers obliged to feed stock; many wells dry.

*Sandwich, Ill.*—Frost 21st and 29th; the drought exceeds any ever known here.

*Chicago, Ill.*—Weather fine and cool.

*Embarrass, Wis.*—Light frosts from 7th to 14th; hard frosts late in the month.

*Sibley, Minn.*—First hard frost 28th.

*Minneapolis, Minn.*—"The coolest September in three years, and the driest in five."

*Algona, Iowa.*—Rain 5th, 9th, 13th, and 15th; frost 28th and 30th.

*Independence, Iowa.*—"No rains this month; streams very low; wells dry."

*Council Bluff, Iowa.*—Frost 26th, 27th, and 28th.

*Hematite, Mo.*—Very smoky 16th, 25th, and 26th; month remarkably dry.

*Nevada, Mo.*—Month dry and hot; an early frost 27th.

*Oregon, Mo.*—Sprinkling showers 10th, 11th, and 13th; heavy frost 27th and 28th.

*Atchison, Kans.*—Very smoky 24th, 25th, and 26th; white frost 27th.

*Williamstown, Kans.*—Dense haze 26th; heavy frost 27th.

*LeRoy, Kans.*—“Month dry; ground dry and hard; streams low; but little plowing;” frost 27th.

*Bellevue, Neb.*—Hard frost 26th.

*Harrisburgh, Utah.*—“A very dry month.”







MONTHLY REPORT



OF THE

DEPARTMENT OF AGRICULTURE

FOR

NOVEMBER AND DECEMBER.

1871.



WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1871.



# MONTHLY REPORT.

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DEPARTMENT OF AGRICULTURE,  
STATISTICAL DIVISION,

December 16, 1871.

SIR: I present herewith, for publication, a digest of the reports of statistical correspondents upon the quantity and condition of the later crops of the season, with occasional extracts from such correspondence; also articles on wheat deterioration, value of corn-fodder, agricultural societies and farmers' clubs, notices of recent stock sales, notes from the garden, entomological record, chemical memoranda, scientific notes, a table of market prices of farm products, a meteorological record, and a variety of other matter from the correspondence of this division.

J. R. DODGE,

*Statistician.*

Hon. FREDERICK WATTS,  
*Commissioner.*

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## CONDITION OF THE CROPS.

### CORN.

The corn area was greater in 1871 than in any former year. In June and July the prospect was favorable for a larger aggregate than in the great corn year, 1870, which exceeded the yield of the preceding year by a quantity greater than that which represents the advance made from 1859 to 1869. The corn crop of the latter year being small, while the wheat crop was exceptionally large, a comparison of the figures for the decennial periods will very inadequately represent the average increase of either crop in the past ten years. The first indications of damage to corn were received in June from many points in the West where worms in sod lands were more destructive than usual. Some injury was wrought by frost in northern New England as late as June 24. In July the condition of maize was reported above an average, though chinch-bugs were becoming numerous in the Ohio basin. Growth was slow in moist, cold soils in the Allegheny region till July 1. In August the effect of drought became manifest in different portions of the west, and of the Gulf States. The ravages of the chinch became more severe in the Western States, in some localities proving a scourge. With these exceptions, circumstances were highly favorable to vigorous growth and thorough ripening. In the districts parched with drought, rich soils, deeply plowed and well cultivated, generally yielded heavy crops of sound corn. Neglected and shallow culture, more than poverty of soil, wrought the ruin so frequently reported in such localities.

The high temperature of August advanced maturation rapidly, and when aided by drought caused premature ripening, leaving the kernels shrivelled, loose on the cob, and not filled out to the point. In such cases the harvest disappoints the expectation raised by the appearance of the field. In northern latitudes frost appeared from September 21 to 30, causing complaints of soft corn. As a whole, the crop is about an average, and in view of the increased area occupied, a large one. Compared with that of last year, it is scarcely less in total number of bushels, though somewhat lower in yield per acre. The estimate for 1870 was 1,094,000,000 of bushels, being 220,000,000 more than that of the small crop of 1869, while a calculation of the local estimates of the present gives a total product of 1,092,000,000. The States producing less than last year are Maine, Vermont, New York, Maryland, North Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas, Tennessee, West Virginia, Kentucky, Indiana, Michigan, California, Oregon. The remaining States show an equal or an increased yield. The quality compares favorably with last year in Massachusetts, Rhode Island, Connecticut, Delaware, Virginia, Missouri, Wisconsin, Minnesota, Iowa, Kansas, Nebraska, and Oregon.

*Androscoggin County, Maine.*—Extra in quality and quantity.

*Kennebec County, Maine.*—Grasshoppers destroyed, or nearly so, whole fields of corn, beans, turnips, &c. In a few localities the yield of corn is larger than usual.

*Aroostook County, Maine.*—Most unfavorable season for corn in twelve years. There was more planted than usual. It is not universally cultivated here; wheat, oats, barley, and buckwheat being considered more profitable.

*Coos County, N. H.*—Injured by frost.

*Windsor County, Vt.*—Corn in many instances failed to ripen.

*Orange County, Vt.*—In many localities failed to mature before the frost of 21st; hence the product is smaller and of poorer quality than last year on equal acreage.

*Orleans County, Vt.*—Much soft corn.

*Caledonia County, Vt.*—Injured in some localities by frost of September.

*Addison County, Vt.*—The season has been too cold for corn.

*Norfolk County, Mass.*—The crop would have been large but for depreciation by early frost. The quality of that saved is very good; better than last year's crop.

*New London County, Conn.*—Excellent crop, but the storms and warm weather have tended to mold it a little and to injure the fodder.

*Litchfield County, Conn.*—Seriously injured by worms and grasshoppers; in some towns nearly destroyed.

*Albany County, N. Y.*—Poor crop; ripened badly.

*Madison County, N. Y.*—Injured by frost in September.

*Delaware County, N. Y.*—Extra growth of stalk; ears short and unsound.

*Genesee County, N. Y.*—The drought has injured the crop more than was anticipated, shortening the ears, and leaving the kernel smaller than usual. Corn-fodder is of the finest quality.

*Sullivan County, N. Y.*—Injured by early frost.

*Warren County, N. J.*—Crop somewhat short, but rather better in quality than was anticipated.

*Ocean County, N. J.*—Excellent crop.

*Gloucester County, N. J.*—The summer having been cool and not dry, the crop is very good.

*Burlington County, N. J.*—Hardly an average on light sandy soil.

*Lycoming County, Pa.*—Ripened early; finely eared, and perfectly sound.

*Elk County, Pa.*—Fair crop on increased acreage; quality injured by drought.

*Bucks County, Pa.*—The crop is not meeting expectations either in quantity or quality.

*Beaver County, Pa.*—Quality injured by drought, and in some fields the grain is loose on the cob. Considerable soft corn.

*Kent County, Del.*—A good crop is being gathered in good condition.

*Baltimore County, Md.*—Medium crop; quality good. In fields properly cultivated the crop is excellent; fields that were weedy and slothfully tilled yielded a heavy crop of mullens.

*Cecil County, Md.*—Better yield than last year, but not equal to expectations before husking; many short ears.

*Howard County, Md.*—Crop diminished by drought; but on good land, where a good

sod was turned under for corn, the crop has suffered but little compared with that on light and thin land.

*Goochland County, Va.*—Best crop for many years. Some of the upland corn, which was planted late, was injured by the dry weather of July and August.

*Washington County, Va.*—Crop, light; quality, indifferent; cause, the drought.

*Surry County, Va.*—Best crop in ten years. Farmers are beginning to cultivate fewer acres and to use more manure than formerly. Now that they have to work for themselves they find it profitable to use more brains and to save muscle.

*Highland County, Va.*—Injured by drought and worms. Short crop but well matured.

*Pohatan County, Va.*—Crop 20 per cent. greater than last year, and of good quality.

*King William County, Va.*—Crop unusually heavy.

*King George County, Va.*—Yielding well; best crop since the war.

*Culpeper County, Va.*—Average. Very little unsound corn.

*Prince George County, Va.*—One-third better than last year.

*Fairfax County, Va.*—The supply of fodder will be less than usual, in consequence of the drying up of the early corn crop, and the injury to the late crop by frost.

*Scott County, Va.*—Short crop. Drought.

*Henrico County, Va.*—Unusually large crop. Quality injured by wet weather.

*Gloucester County, Va.*—Season favorable and the crop would have been larger if the cultivation had been even tolerable.

*Rockbridge County, Va.*—Corn has not dried well. It is too soft to crib, and it is feared much will be lost.

*Mathews County, Va.*—Best crop since the war.

*Haywood County, N. C.*—Crop decreased by drought, and quality injured by storms.

*Caldwell County, N. C.*—Reduced 10 per cent. by drought.

*Granville County, N. C.*—Fully 10 per cent. better than in 1870. Turning out much better than anticipated two months ago.

*Transylvania County, N. C.*—Lighter than usual; but about the same number of bushels as last year on an acreage 15 per cent. greater.

*Perquimans County, N. C.*—Not equal to anticipations, but larger crop than last year, on an increased acreage.

*Hertford County, N. C.*—Unusually fine crop, quantity and quality.

*Lincoln County, N. C.*—Far better than expected two months ago, owing to fine weather.

*Rockingham County, N. C.*—Crop much better than supposed a month or two ago.

*Henderson County, N. C.*—With the 10 per cent. increase of acreage the product will be equal to last year's crop, but quality inferior, damaged by being blown down and by continued rains.

*Greene County, N. C.*—Splendid crop in quantity and quality.

*Sampson County, N. C.*—Almost a failure on poor uplands; very good on lowlands.

*Franklin County, N. C.*—Increased product on increased acreage.

*Duplin County, N. C.*—Unusually fine on swamp lands; on uplands not more than half a crop.

*Gaston County, N. C.*—The corn crop of this year admonishes us in forcible terms of the necessity of deep plowing, thorough preparation, and early planting. The few farmers in this county who have observed these rules have made fair crops, notwithstanding the long drought.

*Stanly County, N. C.*—Crop has turned out better in quantity and quality than anticipated. Fewer rotten ears than usual.

*Williamsburgh County, S. C.*—A failure in the northwestern corner of the county; other parts excellent crop.

*Anderson County, S. C.*—Drought reduced upland crop fully 50 per cent.; a full average on bottom-lands.

*Cherokee County, Ga.*—Fine crop on uplands; too wet for lowlands.

*Milton County, Ga.*—Crop has gathered much better than was anticipated; quality very good.

*Greene County, Ga.*—Ruined by high water on the lowlands after maturity.

*Fayette County, Ga.*—Tolerably good on well cultivated uplands.

*Columbia County, Ga.*—Proves less crop than anticipated.

*One-third County, Ga.*—Reduced early by excessive rains.

*Jackson County, Ga.*—Turning out a little better than anticipated, though the crop is poor.

*Worth County, Ga.*—Rotted considerably in the field.

*Clayton County, Ga.*—The wet season reduced the crop on bottom-lands at least 50 per cent., but the loss was made up on the uplands.

*Douglas County, Ga.*—Yield not so good as last year, but more planted.

*Oglethorpe County, Ga.*—Late corn entirely destroyed; crop mostly early.

*Columbia County, Fla.*—About three-fourths of a crop compared with that of last year, 10 per cent. of which is rotten, caused by the incessant rains. During the last

120 days it has rained on my farm 110 days, accompanied by heavy blows on the 17th and 25th of August.

*Alachua County, Fla.*—The storms had a disastrous effect on corn, beating it to the ground and causing it to rot.

*Jackson County, Fla.*—In consequence of the drought of July the ears did not fill out well.

*Orange County, Fla.*—The storms of August broke down a large quantity of corn, and the ground was so saturated that in many places it was impossible to get the corn out of the field; in consequence much of it sprouted; the acreage was much greater than ever before.

*Hamilton County, Fla.*—Much damaged by wet weather.

*St. John's County, Fla.*—Great loss from the storms.

*Levy County, Fla.*—Crop short, but quality good.

*Conecuh County, Ala.*—Yield equal to last year; acreage increased.

*Dallas County, Alabama.*—Poor yield. Deeper plowing and more thorough preparation of the soil might have alleviated in a great measure the injury inflicted by the drought.

*Blount County, Ala.*—Deficient in quantity and quality.

*Yalabusha County, Miss.*—Yield fully 25 per cent. less than last year; quality inferior.

*Jefferson County, Miss.*—Almost a total failure; not sufficient to last us until March.

*Jasper County, Miss.*—Almost a failure on bottom and prairie lands; upland crop good.

*Pike County, Miss.*—Rotting in the fields.

*Lee County, Miss.*—Small, light, and badly worm-eaten.

*Grenada County, Miss.*—Unusually short; in many sections not half a crop.

*Tishomingo County, Miss.*—Late corn affected by drought. Early crop very fine. More corn, more acorns, and more hogs than in any other year since the war.

*Rapides Parish, La.*—Not more than 5 per cent. of an average yield per acre.

*Claiborne Parish, La.*—Nearly ruined by drought.

*St. Mary's Parish, La.*—Even a greater failure than anticipated. In some localities the crop hardly pays for harvesting.

*East Feliciana Parish, La.*—At least 10 per cent. found to be rotten on gathering.

*Red River Parish, La.*—Inferior in quantity and quality, but increased acreage makes up deficiency.

*Grayson County, Texas.*—Materially injured by drought; but the increased acreage will make the product equal to the crop of last year. The best acre of bottom-land entered for premium at our fair yielded 81 bushels; the best prairie, 63 bushels.

*Matagorda County, Texas.*—Injured by being blown down, which caused it to rot on the ground. There will be enough for home consumption.

*Travis County, Texas.*—Acreage increased 40 per cent.

*Fannin County, Texas.*—Larger yield than anticipated. On black land this crop is well matured and sound, almost verifying the opinion that corn can be raised on black land without rain.

*Coryell County, Texas.*—Acreage increased 50 per cent. Product reduced one-half by drought.

*Liberty County, Texas.*—Crop reduced by drought, but the acreage was larger than last year.

*Austin County, Texas.*—Owing to increased acreage the product slightly exceeds that of last year.

*Kendall County, Texas.*—One-third of a crop. Drought.

*Upshur County, Texas.*—Yield lighter than last year, but the grain is sound. Crop about 15 per cent. short of last year.

*Milam County, Texas.*—A considerable surplus of corn.

*Rusk County, Texas.*—Corn does not yield from the field as well as last year.

*Lampasas County, Texas.*—Equal in bushels to the crop of last year, a greater area having been planted, but the quality is inferior. Drought.

*Williamson County, Texas.*—Acreage 25 per cent. larger than last year. Yield about two-thirds as great per acre. Quality only fair.

*Lavaca County, Texas.*—Acreage increased 25 per cent., but yield per acre decreased.

*Hardin County, Texas.*—Crop heavy, except in a few places.

*Johnson County, Ark.*—Acreage increased 25 per cent. The drought has reduced the yield 30 per cent. Quality 10 per cent. above average.

*Washington County, Ark.*—Yield 30 bushels per acre. The husks are thick, ears small and short.

*Jackson County, Ark.*—Very faulty, rotting, and has the heaviest shuck I ever saw.

*Prairie County, Ark.*—Large surplus, very little of which will be needed for fattening purposes, on account of the very heavy mast.

*Carter County, Tenn.*—Reduced crop. Drought.

A correspondent at Pocahontas, Arkansas, writes that in the counties of Fulton, Sharp, Lawrence, Randolph, on the hilly country, and Craighead, Poinsett, Cross, Green,



St. Francis, and Phillips, along Crowley's Ridge, have made more than an average crop of corn. Acreage of corn increased one-third, but less cotton.

*Giles County, Tenn.*—Very good crop—40 bushels to the acre.

*Knox County, Tenn.*—Much better than was thought last month.

*Monroe County, Tenn.*—Quality generally good. Injured in places by grasshoppers eating the blades before the maturity of the crop.

*Gibson County, Tenn.*—Crop increased 20 to 30 per cent. in acreage, product, and quality.

*Obion County, Tenn.*—Drought injured the crop 25 per cent. The prospect was for an increase of 25 per cent. over last year.

*Grainger County, Tenn.*—Crop 50 per cent. short, and quality inferior.

*Fentress County, Tenn.*—Injured by frost and rain in the spring; by drought since, and by lice upon the roots in June and July; yet the yield is an average one. The quantity needed will be less, owing to the abundant mast.

*Dyer County, Tenn.*—Crop unusually heavy and well matured. Quality very fine.

*Sevier County, Tenn.*—Yielding much better than expected. Early corn, on good ground well cultivated, is better than last year. Uncommonly sound.

*Monroe County, W. Va.*—In some neighborhoods a failure; in others a fair average crop of good quality.

*Marion County, W. Va.*—Corn hard and dry, and a good crop gathered.

*Harrison County, W. Va.*—The most favorable season for corn that we have had for several years,

*Tyler County, W. Va.*—Product greater than last year; quality not so good.

*Boone County, W. Va.*—Deficient in quantity; quality excellent.

*Taylor County, Ky.*—Yields better than anticipated in former reports.

*Butler County, Ky.*—Best crop since 1854.

*Laurel County, Ky.*—The early-planted corn only matured; that planted as late as May 11 was very light.

*Davess County, Ky.*—The crop will turn out about 1,000,000 bushels.

*Anderson County, Ky.*—Said to be the best crop since 1855.

*Graves County, Ky.*—The crop turns out better than heretofore reported. Nearly an average.

*Owen County, Ky.*—Better crop than for several years.

*Ohio County, Ky.*—Short in quantity, but quality superior, and with abundant mast; corn is likely to be cheaper than usual.

*Henderson County, Ky.*—Yield on bottom-lands reduced by drought; on uplands, little affected; quality, superior.

*Russell County, Ky.*—Much better than anticipated. In fields planted early on land broken-deep the crop is better than last year. I have gathered half my crop, which turns out 10 per cent. better than last season. Many of my neighbors who plowed shallow will not gather half a crop. Grain sound and good.

*St. Francois County, Mo.*—Fair crop, notwithstanding the drought; on deep-plowed land 50 per cent. better than where the plowing was shallow.

*Clinton County, Mo.*—A late crop; chinch-bugs reduced the yield and injured the quality.

*Harrison County, Mo.*—Yielding well; quality good; worth 20 cents per bushel.

*Carroll County, Mo.*—The drought reduced the crop to about an average; quality a little below that of the crop of last year; the chinch-bug injured the quality.

*Chariton County, Mo.*—Injured by the chinch-bug; otherwise the crop would have been very heavy.

*De Kalb County, Mo.*—Deep-plowed land, well cultivated, has yielded a very heavy crop; shallow-plowed, a very poor crop; grubs in all the fields, but did not injure the crop on the deep-plowed land.

*Nodaway County, Mo.*—Splendid weather for gathering corn. Probably more corn in the cribs now than the whole crop amounted to last year; very dry and sound.

*Holt County, Mo.*—Crop turns out much less than was thought last month; the grub and the chinch-bug have destroyed perhaps one-third.

*Vernon County, Mo.*—Superior crop.

*Marion County, Mo.*—Crop unusually large, but grain light, from drought and chinch-bug.

*Madison County, Ill.*—Nearly an average, but lighter than last year.

*Lawrence County, Ill.*—Reduced by drought and damaged by the chinch-bug.

*Macoupin County, Ill.*—The drought has prevented late corn from filling as well as usual.

*Fairfield County, Ill.*—Drought and chinch-bug have reduced the crop at least one-third.

*Boone County, Ill.*—Product about the same as last year on an increased area. Yield per acre reduced by drought; also by hail, in the north, of the storm of July 30; grain sound and dry. Selling at 28 cents per bushel.

*Winnebago County, Ill.*—Not yielding as well as expected before husking. Late crop uniformly poor.

*Williamson County, Ill.*—Crop 20 per cent. short, but the deficiency will be made up by the abundant mast.

*Carroll County, Ill.*—Harvested unusually early. Yield above average in western part of the county, say 50 bushels to the acre. In the southwest part, it is reported 10 per cent. below the crop of last year.

*Sangamon County, Ill.*—Shortened by drought.

*De Kalb County, Ill.*—Three-fourths of a crop, but quality excellent.

*Champaign County, Ill.*—Half a crop—grub-worm, drought, and chinch-bug.

*Elkhart County, Ind.*—Reduced one-half by drought.

*Noble County, Ind.*—Corn generally matured, yet, from the dry summer, it is not a full set.

*St. Joseph County, Ind.*—Yield reduced 25 per cent., but with the increased acreage the aggregate product will not be more than 10 per cent. short.

*Marion County, Ind.*—Not yielding so well as expected. The grain is found to be loose on the cob, and chaffy in many instances.

*Dubois County, Ind.*—The drought prevented corn from filling to the point of the cob.

*Coles County, Ind.*—Yield reduced considerably by premature ripening.

*Knor County, Ind.*—In the spring the crop bid fair to be the heaviest ever raised in the county, but the terrible drought greatly disappointed the farmers. I am past sixty, and have never known such a drought before.

*Steuben County, Ind.*—Largely in excess of an average in quantity and quality.

*Harrison County, Ind.*—Injured by drought, but improved by favorable fall weather.

*Lake County, Ind.*—Much inferior to the crop of last year in quality, but equal in quantity, owing to increased acreage.

*Fayette County, Ind.*—Not so good in quantity or quality as was anticipated a month ago.

*Hendricks County, Ind.*—Owing to the cut-worm and drought the crop is considerably below that of last year.

*Martin County, Ind.*—Reduced product. Crops on new lands generally satisfactory, but deficient on old, and thin and dry rolling lands.

*Clark County, Ind.*—Not turning out as well as expected; much loose on the cob.

*LaGrange County, Ind.*—Short crop. Owing to drought, ears did not fill out.

*Orange County, Ind.*—Everybody disappointed with the small yield and poor quality.

*Perry County, Ind.*—Corn looks well in the fields, but fails in gathering.

*Franklin County, Ind.*—Not equal in quality to the crop of last year; loose on the cob.

*Darke County, Ohio.*—Larger crop than last year, but not so sound.

*Defiance County, Ohio.*—Dry season reduced the crop on clay lands.

*Morrow County, Ohio.*—Crop better than anticipated.

*Coshocton County, Ohio.*—Best crop for many years.

*Henry County, Ohio.*—Short crop; drought; ripened well; much of it dry enough to shell at time of husking.

*Logan County, Ohio.*—Crop being gathered in the best condition, and, being sound, will add much to the hog product.

*Berrian County, Mich.*—Large crop, but light in consequence of the drought.

*Hillsdale County, Mich.*—Suffered much from drought.

*Cass County, Mich.*—In superb condition.

*Mecosta County, Mich.*—Not so large a yield as expected, but the grain is sound.

*Greene County, Wis.*—Increased acreage will give a greater yield for the county.

*La Fayette County, Wis.*—Some fields have yielded 80 bushels to the acre.

*Goodhue County, Minn.*—Crop increased by increased acreage. Ripened well.

*Meeker County, Minn.*—Crop well matured.

*Steele County, Minn.*—Best crop we have ever had, both in quantity and quality.

*Jones County, Iowa.*—Ripened too quickly to be of good quality.

*Story County, Iowa.*—Yielding much better than expected.

*Muscataine County, Iowa.*—Remarkable season for corn. Yield large in bulk, and the weight is heavier than usual. Yield 100 bushels per acre in some instances on bottom land.

*Woodbury County, Iowa.*—Unusually good crop.

*Chickasaw County, Iowa.*—A fine crop.

*Floyd County, Iowa.*—Unusually sound and dry.

*Henry County, Iowa.*—Best matured crop I have seen during a residence here of thirteen years.

*Calhoun County, Iowa.*—Injured by hail in some localities.

*Adams County, Iowa.*—Cheaper than at any time within fifteen years.

*Dallas County, Iowa.*—Less smut than usual.

*Atamakee County, Iowa.*—Stalks are larger, but the ears are smaller than last year.

*Shelby County, Iowa.*—Not so good as expected; ears short, and not well filled out.

*Johnson County, Iowa.*—Largest crop for many years; 60 to 80 bushels per acre.

*Mitchell County, Iowa.*—An excellent crop.

*Washington County, Iowa.*—Such crops, for quantity and quality, never known here before.

*Crawford County, Kans.*—Average yield 25 per cent. better than last year; average largely increased.

*Clay County, Kans.*—Crop remarkably heavy; ripened up well; yield 15 or 20 bushels per acre above an average.

*Douglas County, Kans.*—Much injured by chinch-bug; now selling corn at 20 to 30 cents per bushel.

*Franklin County, Kans.*—Yield not equaling expectations; chinch-bug.

*Washington County, Kans.*—Yield not so good as anticipated, though better than in years past; the chinch-bug injured the crop.

*Atchison County, Kans.*—Some very good, some very poor, in consequence of the chinch-bug, especially when planted near small grains.

*Labette County, Kans.*—In quantity and quality above the average of any that I have seen this season in any of the Western States.

*Butler County, Kans.*—Better than ever before in this part of Kansas.

*Cowley County, Kans.*—In quantity and quality No. 1.

*Osage County, Kans.*—Very light; caused by chinch-bug and white grub. Chinch-bug still alive by the million.

*Cloud County, Kans.*—Almost an entire failure, owing to drought.

*Anderson County, Kans.*—Largest acreage and largest yield per acre ever grown in the county.

*Dixon County, Nebr.*—Temperature higher the past season than ever before known by white men here. Hence corn did remarkably well. Potatoes not so well.

*Cuming County, Nebr.*—Very heavy crop, dry enough to shell as soon as gathered. The trouble of farmers seems to be to find places to put their corn.

*Cass County, Nebr.*—Considerably above the average where not cut up by the hail-storm of July. More than an average the county over.

*Lancaster County, Nebr.*—A perfect success; ripening perfectly before frost.

*Lake County, Cal.*—Crops all matured well.

*Fresno County, Cal.*—Acreage double that of 1870. Quality of crop better also.

*Box Elder County, Utah.*—Attacked by grasshoppers in many localities just at the time of silking, reducing the yield to not over 60 per cent. of that of 1870. Acreage increased about 50 per cent.

*Haos County, N. Mex.*—Far above average. Matured unusually well in this valley.

*San Miguel County, N. Mex.*—Far below average, owing to the drought.

*Yuma County, Arizona.*—A failure, owing to the drought. No overflow in the Colorado River in three years.

#### COTTON.

The November returns relative to the condition and yield of the cotton crop indicated a larger product than was expected in October, promising fully to make good the moderate expectations of July and August. There were no killing frosts up to the date of these reports. In rich and well-cultivated soils of the lower tier of States the plant was as green and as vigorous as in summer. In some places the top crop was maturing, though complaints of the immaturity or loss of the later growth are quite general. In the latitude of Middle Georgia, the squares formed between August 25 and September 25, under favorable circumstances, made good cotton.

The principal cause of the reduction of the yield in Texas is drought; in Louisiana, drought, insects, and black rot; in Mississippi, wet weather in spring, drought in summer, and in isolated sections the caterpillar or boll-worm; in Florida, driving winds and floods, which occasioned nearly total destruction of considerable areas; and drought has wrought more or less injury in Alabama, Georgia, and South Carolina. The yield per acre, as indicated by the November returns, is largest in Arkansas, decreasing in the following order: Texas, Tennessee, Mississippi, Louisiana, North Carolina, Alabama, Georgia, South Carolina, Florida. The more northern belt of the cotton States shows the least reduction from their usual averages.

The tabulations for November are estimates for each county of the total product of the year, expressed as percentages of the actual crop

of last year. These averages, adjusted with regard to the relative production of the counties reported, give the following results for each State: North Carolina, 80 per cent.; South Carolina, 68; Georgia, 67; Florida, 58; Alabama, 73; Mississippi, 72; Louisiana, 65; Texas, 68; Arkansas, 85; Tennessee, 90. A few counties in Virginia, Kentucky, and Missouri make reports of much the same tenor as the returns from North Carolina and Tennessee.

The quality of the fiber is reported good in all sections. A very small proportion of discolored or trashy cotton has been gathered. Some attention has been paid to improvement in quality by the use of the Peeler and other improved varieties.

Many correspondents note the superiority in yield and comparative exemption from disease under careful culture and judicious fertilization.

The cotton returns received in December are similar in tenor to the November reports, fully sustaining the moderate promise of improvement upon the somewhat gloomy views presented in October. Yet the change in condition is not so marked as to modify materially the prospect foreshadowed in the monthly reports for July and September, except that the growing season has been from 7 to 10 days longer than the average of seasons, increasing the crop prospect at least 200,000 bales. The latest returns would indicate an estimate almost identical with that of the September report, for a favoring autumn, which "could scarcely bring a crop exceeding three and one-third millions of bales." Frosts have been delayed till late in November, in some localities till the 20th, and the weather has been generally favorable for picking without waste or discoloring of fiber. A fair rendering of the recent local estimates, which have been unusually numerous and complete, gives a total aggregate of 3,400,000 bales as the present expectation of the cotton yield of 1871.

*Surry County, Va.*—Small acreage. Red rust and cool weather have caused the bolls to fall off.

*Prince George County, Va.*—The area in cotton in this county has been extended this year. The first planting was much injured by heavy rains early in May and much had to be replanted, but the favorable season later, with the increased acreage, will bring the product fully up to that of last year. The staple is very good.

*Perquimans County, N. C.*—Short of expectations; drought caused shedding and rust. The latter is our greatest drawback. An application of 30 to 40 bushels of good wood-ashes, applied in the bottom of the furrow at the time of planting, comes nearer to a specific than anything else I have tried.

*Beaufort County, N. C.*—Picking out better than expected. The season has been very favorable, and most of the crop has been ginned and sent to market. I increase my estimate 10 per cent. on the October report, attributable to the favorable weather. Good farmers will average 300 to 400 pounds of lint per acre; general average, 200 pounds.

*Bertie County, N. C.*—Product 25 per cent. less than last year; 200 pounds of lint to the acre; quality fine.

*Hertford County, N. C.*—Crop not so heavy as last year, but the staple is better and saved in fine condition. Increased interest has been taken in testing improved varieties. The Peeler and the Dickson Prolific take the lead in productiveness and staple. Improved plows have enabled farmers to cultivate this crop with much more ease than formerly, and the general spirit of improvement is greater. Many farmers in this county will produce 1,000 pounds seed-cotton per acre.

*Pitt County, N. C.*—A great falling off from the product anticipated early in the season, yet we have made an average crop.

*Lenoir County, N. C.*—Much better than was expected in July and August.

*Franklin County, N. C.*—Favorable fall for cotton, and the yield will exceed the anticipations of two months ago.

*Craven County, N. C.*—Better in quantity and quality than was anticipated when October report was made.

*Sampson County, N. C.*—Mostly picked out. Crop will not vary much from three-fourths of an average. The fall season has been favorable.

*Newberry County, S. C.*—The crop has not improved with the fall season. The fruit is too late to mature. Very little over half crop.

*Kershaw County, S. C.*—The receipts at the depot in this place are 25 per cent. in excess of those for September and October of 1870. The excess falls in September almost entirely, and is due to the early season, caused by the drought, which has so much shortened the total product. Notwithstanding the drought, thorough culture and a liberal (not excessive) use of fertilizers, even on lands most susceptible to the effects of the drought, have secured 400, 500, and even 600 pounds of lint to the acre. Such treatment has been exceptional.

*Williamsburgh County, S. C.*—The early pickings were very good, but there is very little fruit on the center or top of the plants. The harvest is now nearly over; it ordinarily runs into December.

*Marlborough County, S. C.*—No late crop. The stalks are full of forms and small bolls, which will be killed before maturing. Most unfavorable season in thirty years.

*Lexington County, S. C.*—The late fall is adding something to the crop.

*Bennettsville, S. C., November 30.*—The black frost and freeze of the 16th, 17th, and 18th of October killed all the late bolls, entirely destroying all vitality. Plantations in this neighborhood usually making ten to fifteen bales of yellow (from frost,) and late cotton will not turn out a single bale this year.

*Muscogee County, Ga.*—Most unfavorable year since 1866.

*Early County, Ga.*—Reduced one-half by rains in early part of the season and by storms of wind and rain after the crop had matured, beating it out and so mixing it with the soil as to render it unfit for use.

*Calhoun County, Ga.*—Weather favorable since August 25, and most of the squares from that time to the 20th September have matured.

*Columbia County, Ga.*—Very short crop. The continued rains have caused considerable rot in the bolls; much has been beaten out.

*Lee County, Ga.*—Weather favorable, but no material change in the crop can result; about two-thirds of an average.

*Fayette County, Ga.*—When well fertilized and properly cultivated, on ground not too much drenched, has done well for the year. Our county, though behind many others, is manifesting increased interest in improved modes of culture and the use of fertilizers.

*Upson County, Ga.*—The poorest lands have made nearly a full crop, while the best lands have fallen short nearly one-half; average, 70 per cent. of a full crop. The second growth amounts to nearly half a crop, not a pod of which can mature.

*Fulton County, Ga.*—Favorable weather is increasing the yield, and the lint is equal to the crop of last year in quality.

*Gwinnett County, Ga.*—Quality good; no yellow cotton; no top crop.

*Oglethorpe County, Ga.*—A luxuriant "second growth," which is a serious injury, as it makes nothing and impairs the maturing of the old wood of the stalk.

*Chattooga County, Ga.*—The fall has been especially favorable to cotton.

*Stewart County, Ga.*—Quality of lint better than for five years; clear and white; no sand or trash; in quantity about half an average crop.

*Douglas County, Ga.*—Will turn out better than anticipated, owing to the lateness of frost; area planted 25 per cent. less than last year; very little guano used.

*Cherokee County, Ga.*—A few farmers make 400 pounds of lint to the acre, but many acres yield at the rate of 100 to 200 pounds only.

*Milton County, Ga.*—Owing to the late fall, the crop will be nearly an average in quantity, and a full average in quality.

*Harris County, Ga.*—Cotton is not half a crop. For the surrounding counties it may reach five-eighths.

*Orange Mills, St. John's County, Fla.*—The heavy storms have almost to tally destroyed the crops for fifty miles around here.

*Levy County, Fla.*—Much short of an average crop. It is thought the crop of the county will be under 100 bales; some think not over 50; last year 200 bales.

*Santa Rosa County, Fla.*—Sunday night, November 11, clouds came up from the southwest, and the rain literally poured; a box ten inches deep was found to be full, and how much ran over is not known. The wind shifted to the north and cleared up, and on the 14th, 15th, and 16th there were very heavy frosts, the first of the season.

*Hamilton County, Fla.*—Much damaged by storms.

*Orange County, Fla.*—Acreage small; completely destroyed in many places by the storm.

*Gadsden County, Fla.*—I have planted cotton since 1828, and have no recollection of so unpropitious a season as the present one during the entire period. Where the crop escaped the rust it was attacked by the caterpillar.

*Jackson County, Fla.*—Improved five per cent. since last report. The crop will average about 150 pounds of lint per acre.

*Alachua County, Fla.*—A disastrous year for East and South Florida. The prospect for sea-island cotton and corn was hardly ever better up to the time of the storms which swept these sections the latter part of August. The cotton was thrashed out where opened, and the young bolls were destroyed in great part. In some sections of East Florida the failure is almost total, and in no part is there more than half a crop.

*Columbia County, Fla.*—Cotton (sea-island grown here) much injured by the heavy blows and constant rains, which caused it to sucker badly and to throw off much of the immature fruit; while the want of sunshine has caused much of the matured bolls to rot. The cotton gathered is badly stained and can hardly rank above ordinary. The late picking much the best. The yield will not exceed 70 per cent. of the crop of last year.

*Lauderdale County, Ala.*—Drought, poor stand, and, in many instances slovenly cultivation, have reduced the crop to one-half an average. The yield of lint is 100 pounds to 300 pounds seed-cotton.

*Calhoun County, Ala.*—The favorable fall season will not materially increase the product, as the bolls that should be maturing dropped off.

*Dallas County, Ala.*—Five-sixths of the crop gathered.

*Colbert County, Ala.*—Four-fifths of the crop gathered, free from dirt or stain; consequently of superior quality.

*Lowndes County, Ala.*—Crop gathered; opened well; staple good.

*Blount County, Ala.*—The plant is small, with fewer matured bolls than usual. In quality, a full average crop.

*Autauga County, Ala.*—Many of the large farmers have finished gathering their cotton. Owing to the drought the cotton ceased to make after the 15th of July.

*Clarke County, Ala.*—Favorable season will augment the crop to some extent.

*Geneva County, Ala.*—The crop will exceed that of last year. The top crop heavy and of good quality.

*De Soto County, Miss.*—Cotton going to market rapidly, and the good price gives our country quite a prosperous look.

*Jefferson County, Miss.*—Will hardly average two bales to the hand, or about one-fourth of a bale to the acre. The lateness of frost has been of material advantage.

*Rankin County, Miss.*—Average of lint not over 150 pounds to the acre.

*Lauderdale County, Miss.*—No cotton made since September 1.

*Pike County, Miss.*—At least one-fourth less than last year.

*Hancock County, Miss.*—Sea-island cotton grown here. Crop about the same as last year. The yield per acre could be increased by judicious manuring. New varieties of sea-island cotton-seed would be of benefit.

*Grenada County, Miss.*—Short one-half compared with the crop of last year. Bad culture has added to the depreciation.

*Norubee County, Miss.*—Mostly gathered. On sandy land, elevated, and well cultivated, the crop is equal to that of last year; on prairie lands well worked, a good crop; on slough and bottom lands, from bad cultivation and the wet spring, not more than half a crop. Aggregate yield fully three-fourths of last year.

*Jasper County, Miss.*—Cut off by boll-worm and army-worm, after being seriously injured by wet weather and succeeding drought.

*Washington County, Miss.*—The favorable season has improved the prospect at least 10 per cent. No killing frost in October.

*Rapides Parish, La.*—Cotton has pressed out even worse than anticipated. Crop nearly picked and ginned. Not more than one-sixth of an average yield per acre.

*Richland Parish, La.*—Not much, if any, over half a crop. Drought, rust, blight, boll-worm, and army-worm.

*Washington Parish, La.*—Late crop ruined by the worms; fully one-third cut off by them.

*East Baton Rouge Parish, La.*—Favorable fall weather has done much to improve cotton, and much remains to be picked, which will be gathered if laborers can be retained. Many, however, will be taken off to the sugar plantations, where wages are higher. The probability is that much cotton will be left in the fields to waste.

*West Feliciana Parish, La.*—Short crop. In spite of all drawbacks, small patches, highly manured and well cultivated, have produced splendid crops, showing that it pays to cultivate good land well.

*Texas Parish, La.*—Since last report cotton has depreciated. The drought has caused it to shed, the caterpillars have stripped off the leaves, and the black-rot has caused greater destruction than both the other causes in many places. Forty-five per cent. of a crop is a full estimate.

*Claiborne Parish, La.*—The boll-worm reduced this crop one-half.

*Red River Parish, La.*—Damaged by the worm; acreage much decreased.

*Leon County, Texas.*—Not more than one-fourth of an average crop. Drought from May to the middle of September.

*Grayson County, Texas.*—The late fall has added much to the cotton crop.

*Blanco County, Texas.*—Short crop. Some farmers will not make any worth picking. The weed was very small. Some cotton may yet mature, yet the worm has been eating all the tender parts for about a week.

*Cherokee County, Texas.*—Although a light yield in the seed, cotton is turning out more than the usual proportion of lint. The small crop will be beneficial in showing the farmer that he can make more profit from a few acres well cultivated than from

more acres poorly cultivated. Farmers are learning that corn and cotton alone are not so profitable as mixed crops.

*Matagorda County, Texas.*—Greatly injured by wet weather, the average being reduced below the half bale per acre which the worms had left up to October 1.

*Travis County, Texas.*—Acreage decreased about 40 per cent. Average yield not more than thirty pounds of lint to the acre. Have not had a good rain since May.

*Fannin County, Texas.*—Yield light. Staple good; probably the nicest ever gathered in the county.

*Liberty County, Texas.*—Drought and the caterpillars have shortened the crop. The culture of sea-island cotton is assuming some importance here, the contiguity of the county to the Gulf coast rendering the locality favorable. The yield is 20 per cent. greater than last year.

*San Antonio County, Texas.*—Excessive rains, together with the cotton-worm, have nearly finished the crop.

*Falls County, Texas.*—About half a crop, with greatly decreased acreage.

*Kendall County, Texas.*—The desire for planting cotton is fast dying out, and oats are being substituted, which seem to flourish and give a good yield.

*Uphur County, Texas.*—The plant is short, but has a better crop than earlier indications warranted.

*Red River County, Texas.*—Notwithstanding the many disasters to the plant during the season, this county makes a good crop.

*Rusk County, Texas.*—The worms have eaten all the leaves from the plants, destroying the prospect for a top crop.

*Williamson County, Texas.*—Acreage decreased one-third. Yield of lint per acre not over half as much as last year.

*Hardin County, Texas.*—Less acreage than last year, but generally better, and better handled.

*Dallas County, Texas.*—Cotton shed the squares, and did not bloom after July. Drought.

*McLellan County, Texas.*—The crop all gathered, ginned, and eight-tenths sold at 12½ cents, coin, per pound, about two-thirds of the cost of production. We cannot produce cotton, averaging five years, for less than 12 cents per pound, coin; yet McLellan is the best cotton county in the State three years out of five. Worms have never damaged a crop here. The want of more thorough culture and more reliable labor is the difficulty.

*Uvalde County, Texas.*—Crop about 1,000 pounds seed-cotton, or 333 lint, per acre.

*Arkansas County, Ark.*—On bottom lands, fully 33 per cent. short; and on the uplands 50 per cent. short.

*Johnson County, Ark.*—About 30 per cent. less than last year. Yield of lint per acre, about 175 pounds. Cotton picked before October 12 is white and free from trash and sand.

*Craighead County, Ark.*—An average crop. The crop of 1870 was the best in 20 years.

*Prairie County, Ark.*—The September frost cut off all the young bolls. About three-fifths of a crop.

*Monroe County, Ark.*—Poor stand, drought, &c. Top crop almost a failure.

*Lincoln County, Tenn.*—The acreage in cotton has been reduced about one-half, but the yield per acre is nearly double that of last year.

*Dyer County, Tenn.*—The crop consists principally of the July formation of bolls, and will fall one-third short of the crop of last year. The lint is of good quality, and will be handled much better than last year.

*Rutherford County, Tenn.*—Best yield per acre since the war.

*Haywood County, Tenn.*—Owing to the very favorable season for picking, many young bolls which, it was supposed, could not mature, are now open, giving increased product.

*Hardin County, Tenn.*—Reduced yield, but quality above average.

*Giles County, Tenn.*—Owing to the fine weather, cotton is yielding better than anticipated. Every boll has matured. Acreage short 33 per cent.

*Lauderdale County, Tenn.*—Crop better than thought at last report. From 50 to 60 per cent. of an average crop.

*Williamson County, Ill.*—But half a crop, owing to the drought. The usual yield is 200 pounds of lint per acre.

#### POTATOES.

The total product of potatoes is reported larger than last year in all of the Middle States and in Georgia, Ohio, Wisconsin, Minnesota, Iowa, Kansas, and Nebraska. The average reduction in the Southern States is 5 per cent.; the decrease in Illinois, 35 per cent.; Missouri, 20; Kentucky, 20; Indiana, 15; Michigan, 34.

The following extracts from notes of correspondents are appended:

*Aroostook County, Me.*—Good and plenty of them. The Early Rose takes precedence, although Davis's Seedling holds high rank for a general crop. The latter is of good quality, yields well, and is the most hardy variety we cultivate.

*Coos County, N. H.*—Late crop injured by frost.

*Orleans County, Vt.*—Lighter than last year and more disposed to rot. Early Rose most affected.

*Norfolk County, Mass.*—In excess of the crop of last year, and the quality is much better; little affected by rot as yet.

*Suffolk County, Mass.*—Potatoes very small; suffered from drought.

*New London County, Conn.*—Good yield; complaint of rot in some localities, and also of worms.

*Albany County, N. Y.*—Not very good; rotted in some localities.

*Delaware County, N. Y.*—Favorable season for potatoes, and in some parts of the county they are selling at 30 cents per bushel.

*Genesee County, N. Y.*—Much above average in quality.

*Suffolk County, N. Y.*—Better than last year in quantity and quality, although there is some rot.

*Warren County, N. J.*—Extra in quantity and quality; a few show signs of rot, but to small extent.

*Ocean County, N. J.*—Some rot, especially in moist land.

*Gloucester County, N. J.*—The cool weather in August and September caused a deficiency in the crop of sweet-potatoes.

*Camden County, N. J.*—Contrary to expectations sweet-potatoes are a light crop and of indifferent quality.

*Lycoming County, Pa.*—Quality very fine; early crop full; late varieties few in the ground but large and good.

*Delaware County, Pa.*—Rotting to some extent.

*Kent County, Del.*—Late crop much better than anticipated.

*Prince George's County, Md.*—Potatoes a failure.

*Washington County, Va.*—Owing to the excessive dry weather the crop is light and quality inferior.

*Surry County, Va.*—Below average, except in particular fields. A few farmers made excellent second crops. Sweet-potatoes abundant and good; a few failures.

*Prince George County, Va.*—The low prices of 1869 caused a decrease in the area planted in potatoes last year. This year the acreage was increased fully 30 per cent.

*Henrico County, Va.*—Deficiency in the early has been made up by the late crop.

*Highland County, Va.*—Injured by rot and bugs.

*King William County, Va.*—Crop best for years.

*Nansemond County, Va.*—Many farmers replanted, about August 15, a part of their Irish-potato patches with small whole potatoes of the early summer digging, (Early Rose almost invariably.) The result is a heavy crop of late potatoes, fully equal to the spring crop on the same area, without additional manure.

*Chowan County, N. C.*—Sweet-potato crop reduced by cool nights and dry weather.

*Gaston County, N. C.*—Sweet-potatoes have grown beyond all expectation since the rain-fall of September; fully three-fourths of a good crop.

*Stanley County, N. C.*—Early crop good; late varieties are utter failure; in but few instances will the seed be returned.

*Anderson County, S. C.*—Only those potatoes (*Solanum tuberosum*) which are planted in the spring will grow here. I planted six acres of the Pink Eye and the Early Rose in July, and manured with cotton-seed meal and dissolved phosphate—one part of the latter to four of the former—and not one in a thousand sprouted. In August the ground was plowed and sown with Swede turnips, of which a very good crop is now growing. The land was irrigated for the latter crop.

*Butts County, Ga.*—I have my second crop of potatoes (*Solanum tuberosum*) from seed raised this year. The tubers are now ripe, and tops dead or yellow. With proper care in preparation I seldom fail to make a second crop.

*McIntosh County, Ga.*—Badly damaged by heavy rains.

*Liberty County, Texas.*—Sweet-potatoes reduced somewhat by drought.

*Coryell County, Texas.*—Sweet-potatoes almost a failure.

*Falls County, Texas.*—Sweet-potatoes almost a total failure.

*Williamson County, Texas.*—A full average crop of Irish potatoes. They keep in this climate about three months. Now nearly out of market. Seed renewed every year from the North. Not one-half a crop of sweet-potatoes, owing to the drought. A few full crops on irrigated lands.

*Jackson County, Ark.*—Irish potatoes almost a failure; quality poor.

*Monroe County, Tenn.*—Early crop ruined by frost in May; late crop by drought and bugs. Sweet-potatoes greatly improved by seasonable rains and fine fall weather.

*Wilson County, Tenn.*—Seriously injured by late spring frosts, and subsequently by



the bug. Sweet-potatoes were never finer—50 per cent. better than last year in quantity and quality. Turnips far above an average.

*Humphreys County, Tenn.*—Late crop almost a failure. Sweet-potatoes short, but quality good.

*Pocahontas County, W. Va.*—Product and quality affected by drought.

*Tyler County, W. Va.*—Product and quality better than last year; especially the Garnet and the Early Rose, the former yielding 160 bushels to the acre.

*Nicholas County, Ky.*—Injured by drought; the earliest the best. Sweet-potatoes good.

*Anderson County, Ky.*—As good a crop as has been known in many years.

*Owen County, Ky.*—Large crop of sweet-potatoes; single potatoes weighing 6 to 8 pounds.

*Russell County, Ky.*—I have lost more than half my potatoes from rot.

*Harrison County, Mo.*—Very fine; worth 20 cents per bushel.

*Douglas County, Mo.*—Bug has done much damage; the yield much better than expected.

*Cole County, Mo.*—Crop has suffered from the bug, the drought and rot, which latter is rather severe in many fields.

*Dent County, Mo.*—Bug destroyed the crop.

*Sangamon County, Ill.*—Crop shortened by drought. Sweet-potatoes improved by this cause.

*Marshall County, Ill.*—Only half a crop; quality good.

*Champaign County, Ill.*—Nearly an entire failure; drought.

*Dubois County, Ind.*—The bug and the drought reduced the crop materially.

*Coles County, Ind.*—Large fields failed to develop a single tuber. Causes, the bug and the drought. In some instances where Paris green was used on early-planted crops the yield is fair.

*Hancock County, Ind.*—Crop short in quantity; quality as good as last year. Bugs injured the crop.

*Ripley County, Ind.*—Crop a little short, owing to the bug. The bugs came in such force that many farmers made no effort to destroy them, and they destroyed the vines entirely. I made war upon them day after day and subdued them sufficiently to raise a fair crop. I planted for early potatoes the Early Rose, Early Goodrich, and White Sprouts. The Early Rose and the White Sprouts rotted badly after they were dug.

*Steuben County, Ind.*—Poor crop; bug and drought.

*Harrison County, Ind.*—Injured by dry weather and bugs.

*Pulaski County, Ind.*—Late crop good; suffered little from the bug. Early crop injured by the bug. Average, about 100 bushels per acre. By manuring and careful attention, with a fair season, 200 to 300 bushels per acre can be grown.

*Perry County, Ind.*—All that were put in late have failed. The early crop was so fine in quality and quantity as to increase the aggregate product. The acreage was increased also.

*Lagrange County, Ind.*—The Peach Blow, being late, was injured by the bug and by dry weather. Many are raising sweet-potatoes, for which our soil and climate appear to be suited.

*Darke County, Ohio.*—The largest and best crop ever raised here.

*Coshocton County, Ohio.*—Best crop for many years.

*Washington County, Ohio.*—The Early Rose made a good yield in some instances, but the variety is not valued highly, except as an early potato. The Peach Blow, which is our principal crop, was stunted in growth by the drought, and is consequently inferior in quality.

*Berrien County, Mich.*—Good yield, owing to the free use of Paris green. Quality superior.

*Montcalm County, Mich.*—Many farmers have not raised a potato. Selling at \$1 25 per bushel.

*Tuscola County, Mich.*—Injured by the bug. The crop is a failure where the bugs were left unmolested. Hand-picking and Paris green are the remedies principally relied on.

*Ottawa County, Mich.*—Injured by the bug, but what we have are of good quality.

*Cass County, Mich.*—Quality good. We are making encouraging headway against the bugs.

*Waukesha County, Wis.*—Crop a full average, and of good quality. The bugs appeared to have destroyed them, but in three weeks nearly all the bugs disappeared. Some persons insist that they picked and destroyed the bugs, but potatoes that were not so picked over are as good as those that were.

*Rice County, Minn.*—Very large yield, and quality excellent. The first season in a number of years that the crop has escaped the ravages of the bug.

*Goodhue County, Minn.*—Not extensively planted, but the yield is much better than for two or three years past—less damage by bugs.

*Steele County, Minn.*—Good crop; quality fair. Injured less by the bug than for several years.

*Muscatine County, Iowa.*—Good yield; prices making the crop one of the most profitable of the season.

*Buller County, Kans.*—Best crop ever known in the county.

*Lancaster County, Nebr.*—Very fair quality, but not more than average yield.

*Fresno County, Cal.*—Acreage decreased 20 per cent., but quality of potatoes much improved. An increase in quantity and quality of sweet-potatoes, attributable to the dry season and improved irrigation.

*Linn County, Oreg.*—Season unfavorable to all root crops, except potatoes. The improvement in this crop is attributed to better cultivation and improved varieties.

*Tillamook County, Oreg.*—Injured by frost, but we have potatoes weighing upward of four pounds.

*Chehalis County, Wash.*—Drought caused a failure in the potato crop.

*Clallam County, Wash.*—Injured by early frost.

#### BUCKWHEAT.

This crop is a light one in nearly every State. In northern locations it was injured by frost. Failure to fill well is frequently reported, even when a good growth of straw was made. Drought in the season of germination or growth, has been an influential cause of failure. In Marshall County, Illinois, "not an acre of buckwheat was harvested." In Henry County, Ohio, little was sown, because the ground was too dry to plow, and a ripened field was unknown to our correspondent there. In some counties in Iowa it was scarcely worth cutting; in others a good crop was secured.

#### TOBACCO.

The product of the following States is reported above an average: Massachusetts, Connecticut, Pennsylvania, Arkansas, Illinois, Ohio, Wisconsin, Iowa, and Kansas. An average product is reported in Missouri and California; Kentucky, Maryland, Virginia, and North Carolina, the prominent sources of the supply, show a decrease. The following notes are appended:

*Tolland County, Conn.*—The tobacco crop is almost unprecedented in quantity, but the quality cannot be fairly determined yet, as it is not fully cured.

*Hartford County, Conn.*—Considering quality and quantity, the crop is 50 per cent. better than last year.

*Bucks County, Pa.*—The tobacco crop is confined to a few townships in the southern end of the county, but the area planted is annually increasing.

*Prince George's County, Md.*—Short in quantity, but quality remarkably fine, owing to the peculiarly favorable season for housing and curing. The crop will bring more money than for years past.

*Goochland County, Va.*—Area planted not over one-third as great as last year; quality of the crop very fine. Scarcity of plants and low prices caused the decrease in acreage.

*Washington County, Va.*—Injured by frost and drought.

*Prince George County, Va.*—Season very favorable, and I think I never saw a better crop, quantity and quality, half-pound plants being common. Some of our best farmers say that, owing to the constant failure of wheat, the cultivation of tobacco and cotton is likely to be much increased.

*Orange County, Va.*—Favorable season for tobacco, though the heavy frost of 22d September damaged to some extent the late crop.

*Henry County, Va.*—Late tobacco considerably injured by frost, especially on low land. The supply of fine bright tobacco from this county will be very light; not more than one-third as large as last year.

*Nelson County, Va.*—Materially damaged by frost of 20th September on low and exposed situations, which caused considerable of that crop to be cut before it was ripe. After September 25th the weather became mild, and tobacco growing on high land and in localities protected by forests and mountains, generally matured.

*Campbell County, Va.*—Extremely bad season. But little over half a crop.

*Cumberland County, Va.*—Crop much shorter than last year, owing to the dry weather in the planting season. In cases where great care was taken (such as to place a clod of

earth or a small stone on each plant after setting out, to protect it from the sun, and removing the same after the plants had taken root,) we secured a stand and a crop above average.

*Floyd County, Va.*—A good average in quantity and quality.

*Granville County, N. C.*—Owing to the scarcity of plants and the early drought not more than half a crop was expected, but the later favorable weather insures fully two-fourths of an average yield. This is one of the largest tobacco growing counties in the State. A much larger proportion than usual has been cool cured, and some of our farmers has already sold and delivered their crops at an average price of 25 to 30 cents per pound.

*Moore County, N. C.*—Injured by frost.

*Gaston County, N. C.*—Tobacco is attracting attention, and is returning flattering results to the few engaged in the culture.

*Geneva County, Alabama.*—Better crop than ever before.—The Connecticut seed-leaf tobacco is a complete success in this section. Product per acre at least one-third more than of our own tobacco.

*Grainger County, Tenn.*—The crop ripened finely.

*Rutherford County, Tenn.*—Acreage decreased 30 per cent. Crop injured in quantity and quality by drought.

*Tyler County, W. Va.*—Finest crop ever raised in the county.

*Butler County, Ky.*—Very fine, but not much grown.

*Nicholas County, Ky.*—But little raised; very good.

*Daviess County, Ky.*—The crop will be near 6,000,000 pounds; somewhat injured by frost in September, and some cut too green for fear of frost. Quality five to ten per cent. inferior to the crop of 1870.

*Graves County, Ky.*—Injured by frost; will not equal the crop of last year in quantity or quality.

*Owen County, Ky.*—Generally very fine, but, owing to the dry weather, does not cure as bright as it should. In some localities the frost injured the crop.

*Henderson County, Ky.*—Acreage decreased forty per cent. Yield per acre twenty-five per cent. less than last year. Quality much inferior, being uneven, small, much of it unripe, and some frosted.

*Vernon County, Mo.*—Very superior.

*Cole County, Mo.*—Less planted than last year, owing to late spring frosts, but quality very good.

*Perry County, Ind.*—Tobacco had a late start, and but little has been cut ripe.

*Noble County, Okio.*—Injured somewhat in quality by frost.

*Medina County, Ohio.*—The cultivation of tobacco is on the increase in the southern tier of townships of this county.

*Bon Homme County, Dak.*—I think tobacco culture will prove a success in this county. Small quantities have been grown for home use, and the report is favorable.

#### SUGAR-CANE.

Reports of the past two months do not sustain the promises held forth in October. The injury from sprouting has been extensive in some districts. An increase in quality as compared with the crop of last year; 145,000 hogsheads are still expected with some confidence from the increase in the area planted.

*Lee County, Ga.*—Sugar-cane fine.

*Columbia County, Fla.*—Cane is now being converted into sugar and sirup by almost every planter in the county. Yield fully as good as last year, though much damaged by the storms of August, which blew it down, causing much of it to sucker and sprout at the joints, materially decreasing the yield.

*Manatee County, Fla.*—Very much injured by heavy rains.

*Jackson County, Fla.*—The cane crop is somewhat better than last year.

*Orange County, Fla.*—Cane much injured, but the acreage is larger than last year.

*Wakulla County, Fla.*—The cane is larger and longer than I ever before saw it. The yield must be abundant.

*St. John's County, Fla.*—Fully an average crop. Not injured by the storm.

*Levy County, Fla.*—Cane is growing well, and in a month, without frost, will make up most of its loss by the storm.

*Conceh County, Fla.*—Full crop; doing well; no frost to kill up to date.

*Hancock County, Miss.*—Raised this year for home consumption only. Ripened finely. Stalks with seventeen to twenty joints may be seen in little patches all along the coast.

*Iberia Parish, La.*—Acreage increased, but the yield per acre is slightly diminished. Small plantations are multiplying, and the disposition is becoming general to introduce

a system of tenantry, under which the proprietors need have nothing to do with the cultivation of the crops, but simply to take them off with the necessary machinery, upon shares. Many small planters are also engaged in growing cane, and being without means to purchase machinery, they have their cane ground at the neighboring mills. A better article of sugar is being made here than formerly. Many new defecators are in use, and some of them are really valuable. The first steamer direct from St. Louis is due here this week, which gives planters promise of a better market for their sugar, and a more direct means of obtaining western supplies—the traditional cause of impoverishment in the South.

*La Fourche Parish, La.*—Weather unpropitiously warm, and many have stopped grinding. From what I can learn planters are disappointed in the yield.

*St. Landry Parish, La.*—Continued warm and wet weather has injured the crop.

*St. Mary's Parish, La.*—Plant cane is above average in quantity and quality, while the stubble cane is far below the average in quantity, due to the severe cold of last December.

*Jefferson Parish, La.*—Plant cane much better than last year; stubble not as good, injured by the cold weather of February last. The storm of October 3d damaged the crop by breaking the roots, and the warm weather has started the roots; no grinding yet.

*Rapides Parish, La.*—Quite unpromising, although the season thus far has been propitious. No frost up to date (November 9) to injure it. Grinding is being delayed as long as possible to give the plant time to improve. December 1, yielding very poorly; 500 pounds or less per acre. Best cane fit to be ground.

*Gonzales County, Texas.*—The culture of sugar cane is on the increase in this county.

*Hardin County, Texas.*—Cane good, but late. Should the frost be late will have a good crop.

*Smith County, Texas.*—Increased attention being paid to the culture of sugar-cane, the "Ribbon cane," so called. Sorghum is not so much grown as heretofore.

#### SORGHUM.

There has been an increase in the sorghum product of the country west of the Mississippi, but Wisconsin is the only State east of that river which does not report a decrease:

*Cherokee County, N. C.*—The cloudy, wet spell in August caused the sorghum to take something like rust or rot. This crop has failed for two years. The yield has been small and poor, and the molasses is dark with bad flavor. The stalks appeared to rot at the joints.

*Kendall County, Texas.*—Sorghum seems to luxuriate in a dry climate, as the yield comes up to an average, notwithstanding the drought.

*Gonzales County, Texas.*—Sorghum is raised in quantities sufficient to supply the home demand for molasses.

*Williamson County, Texas.*—Short, owing to drought.

*Dallas County, Texas.*—Sorghum dried up in the field. Drought.

*Monroe County, Tenn.*—Sorghum, black-seeded variety, utterly worthless; other varieties good for the season.

*Carter County, Tenn.*—Very inferior; little sweetness in it; made very poor molasses.

*Boone County, W. Va.*—Rust, or something of that nature, destroyed at least one-fourth of the sorghum.

*Butler County, Ky.*—All the black-seed sorghum rusted by the 15th of September. Some was worked into molasses; but a poor yield or poor quality is reported. The red-seed variety did not rust, and the yield is good.

*Edmondson County, Ky.*—The black-top sorghum took the rust this year and did not turn out well. Some fields not worth working. The red-top does somewhat better, but does not yield nearly so much molasses as usual.

*Sangamon County, Ill.*—Scarcely any sorghum grown this year.

*Grundy County, Ill.*—The crop has declined more than nine-tenths in the past seven years.

*Lagrange County, Ind.*—Sorghum is being laid aside, owing to the low prices of other sirups. Sorghum is worth only 40 cents.

*Dubois County, Ind.*—Sorghum was infested with a kind of plant louse, which produced rust and reduced the quantity of sap.

*Posey County, Ind.*—Not half a crop, owing to the drought. The juice is stronger than in the cane of last year.

*Medina County, Ohio.*—For some reason, the cultivation of sorghum has nearly ceased, which is to be regretted.

*Floyd County, Iowa.*—Sorghum is losing favor. But little planted now.

*Hancock County, Iowa.*—The sorghum business has been running down for three years past; but there is now more interest, and more will be raised next year.

*Crawford County, Kans.*—Increase in quantity 10 per cent.; in quality, 25 per cent.

*Butler County, Kans.*—Better than ever before.

#### RICE.

*McIntosh County, Ga.*—The rice crop on the Altamaha River will be reduced at least one-half by the freshet and bad weather.

*Georgetown County, S. C.*—Rice is the only crop for market in this county. Acreage in 1868, 12,143; in 1869, 16,100; in 1870, 15,133; and in 1871, 17,439. The crop has been harvested in bad condition; three-fourths of it was wet upon the stubble. The grain is soft and does not pound well, and requires 20 to 25 per cent. more than prime rice to the tierce of 600 pounds. Prime rough takes 19 to 21 bushels to the tierce. The crop of this county thus far requires 23 to 27 bushels to the tierce of clean rice. The aggregate product for market will be less than in 1869-70.

#### APPLES, PEARS, ETC.

*Androscoggin County, Me.*—Apples and pears almost a failure. A good crop of grapes.

*Coos County, N. H.*—Grapes nearly ruined by frost.

*Grafton County, N. H.*—Apple crop almost an entire failure. Not one barrel of cider made this year where four were made last year.

*Orange County, Vt.*—One-fourth less than last, but the quality is good and prices much higher; nice winter apples selling as high as \$4 50 per barrel.

*Addison County, Vt.*—The choice varieties, except the Delaware, did not ripen. Apples almost a failure. Pears never more abundant.

*Norfolk County, Mass.*—Grapes promised a very large crop; but hundreds of bushels have been destroyed by frost. Apples scarcely worth naming. Pears, large product; quality very good, especially near the sea-coast.

*Suffolk County, Mass.*—Apple crop a failure.

*Bristol County, Mass.*—Grapes have been unusually abundant. Apple crop very light.

*Windham County, Conn.*—Few apples and of inferior quality. Many orchards that yielded 150 bushels last year do not yield 10 bushels this year.

*New London County, Conn.*—Very small crop of apples and quality poor.

*Hartford County, Conn.*—Grapes better in quality and quantity than last year.

*Albany County, N. Y.*—Apples poor and rusty. Pears never better.

*Ocean County, N. J.*—The apple crop is a failure.

*Warren County, N. J.*—Generally almost a failure. A few orchards full and quality good.

*Burlington County, N. J.*—Some varieties of grapes did not ripen so well as usual, particularly the Isabella.

*Lancaster County, Pa.*—Apples, small crop; quality good; pears, crop large, quality good; grapes, small crop and inferior.

*Lycoming County, Pa.*—An average crop of grapes, but many were destroyed by early frost.

*Baltimore County, Md.*—Winter apples are rotting. The dry hot summer affected the crop very much. Grapes very good.

*Culpeper County, Va.*—Good crop of apples near the mountains; very poor in the valley.

*Transylvania County, N. C.*—Fruit almost a failure. Late spring frosts.

*Henderson County, N. C.*—Fruit crops, especially apples, which are an important product in this region, were curtailed by the severe frosts of early spring.

*Gilmer County, Ga.*—The apple crop is nearer a failure this year than in the past ten years.

*Jackson County, Fla.*—More attention is given to the culture of grapes; more wine made this year than usual.

*Marion County, Ala.*—The Scuppernong is attracting attention, and experiments in its culture have proved successful.

*Winston County, Miss.*—The apple crop was over an average, but rotted badly—nearly all the winter apples. Early apples only do well here.

*Hancock County, Miss.*—Extraordinary crop of Scuppernong grapes. The country along the Mississippi sea-coast is well adapted to fruit culture.

*Falls County, Texas.*—Great quantities of wild grapes—the Mustang, of which we make a very palatable wine.

*Kendall County, Texas.*—Farmers very busy making a good quality of wine from the native grapes which literally cover the hill-sides and valleys.

*Gonzales County, Texas.*—The culture of the grape and the manufacture of wine are receiving increased attention.

*Laraca County, Texas.*—Wild grapes abundant. A great deal of wine made this year. A large income could be drawn from this industry properly conducted.

*Gibson County, Tenn.*—Apple crop reduced at least one-half.

*Rutherford County, Tenn.*—Grapes an entire failure, owing to late spring frosts, following an early-developed bloom.

*Carter County, Tenn.*—Apples almost an entire failure. Those that matured are of superior quality.

*Brooke County, W. Va.*—Lightest crop in fifteen years. Owing to the mild winter, insects were numerous, and apples dropped off.

*Anderson County, Ky.*—Fruit crop almost an entire failure.

*Owen County, Ky.*—Apple crop very fine.

*Ohio County, Ky.*—Apples are diseased to such an extent that the trees seem scarcely worth the ground they occupy.

*Henderson County, Ky.*—Apple crop large, but those ungathered are falling off; those gathered are rotting rapidly, attributable, probably, to the warm fall.

*Cass County, Mo.*—Grapes abundant. Some rot.

*Platte County, Mo.*—Much of the winter fruit blown off. Apples are becoming quite an item in Northwestern Missouri. Large quantities are being shipped to the far West. Worth \$1 per bushel.

*White County, Ill.*—Apple crop short, owing to late frost.

*Carroll County, Ill.*—Apples have been a drug in the market. Early ripening will impair their keeping qualities.

*Boone County, Ill.*—Apples excellent in quality. A very large quantity made into cider.

*Pulaski County, Ill.*—The drought and heat caused winter apples to drop prematurely. The hardest year on winter apples within the recollection of our people. Scarcely any in the county, it being necessary to dispose of them early.

*Floyd County, Ind.*—Apple crop large, especially winter varieties.

*Elkhart County, Ill.*—Fruit of all kinds, except peaches, never more abundant. The apple crop will make up for the deficiency in peaches.

*Noble County, Ind.*—Apples abundant, but will not keep.

*Dubois County, Ind.*—Winter apples will nearly all rot by Christmas.

*Coles County, Ind.*—A full crop of apples in a portion of the county; in others none at all. A general tendency to rot.

*Harrison County, Ind.*—Apples an entire failure on all lowlands, owing to late spring frost.

*Steuben County, Ind.*—Large amount of fruit; quality unsurpassed; fruit culture fast becoming a specialty.

*Gibson County, Ind.*—Apples rotting badly.

*Lagrange County, Ind.*—A great crop of apples, worth \$1 per barrel (without the barrel) at the railroad station.

*Franklin County, Ind.*—Apple crop on upland excessive; thousands of bushels left to rot; best winter fruit selling at 40 cents per bushel, delivered ten to twenty miles distant; cider \$2 to \$3 at the press, with scarcely any demand.

*Defiance County, Ohio.*—The frost caused winter apples to fall.

*Madina County, Ohio.*—Grapes abundant and cheap; pears never more abundant than during the present season.

*Vinton County, Ohio.*—Apples have rotted badly and fallen prematurely.

*Morrow County, Ohio.*—Grapes a drug in the market.

*Wayne County, Ohio.*—A large crop of grapes, but none except the Concord matured well.

*Berrien County, Mich.*—Grapes, apples, and pears abundant.

*Van Buren County, Mich.*—Grapes, apples, and pears never more abundant; apples rotting extensively; the dry weather has been hard on fruit, a sort of dry-rot prevailing on the inside, while the exterior is fair.

*Cass County, Mich.*—Apples 50 per cent. above any former crop; consequent largely upon growth of orchards; not keeping well; grapes abundant and good.

*Cathonia County, Mich.*—Grapes and pears very fine crops, but the drought materially affected ripening and the keeping properties of the fruit.

*Waaukesha County, Wis.*—Unprecedented yield of apples; quality good.

*Kenosha County, Wis.*—Crop of apples unprecedented.

*Rice County, Minn.*—Apples have justified the most sanguine hopes; pears produced for the first time; all doubt as to the practicability of grape culture has been dissipated; the yield is fully ten times as large as in any former year; new vineyards have averaged 10 pounds to the vine; one vineyard of about 1½ acres, second year in bearing, yielded about 3,000 pounds.

*Goodhue County, Minn.*—Season peculiarly favorable for grapes; many young apple orchards are beginning to bear, and the opinion obtains that Minnesota will yet be able to supply her people with this fruit.

*Steele County, Minn.*—Apples yielded finely on young orchards.

*Muscatine County, Iowa.*—Grapes too plentiful to be appreciated. Concord the leading variety. Apples more abundant than ever before, selling at 30 to 50 cents per bushel in the orchard. Pears more abundant than usual, ranging from \$1 50 to \$3 per bushel.

*Floyd County, Iowa.*—Apple crop fast increasing. Pears cannot be relied on here.

*Harrison County, Iowa.*—Many more grape-vines in bearing this year than last. Quality excellent.

*Calhoun County, Iowa.*—Apple-trees not quite so full as last year, but more trees in bearing.

*Monroe County, Iowa.*—Frost killed most of the apples and all of the pears.

*Adams County, Iowa.*—Apples and other fruit ripened well.

*Mitchell County, Iowa.*—Grapes good. Mostly Concord.

*Crawford County, Kansas.*—Fruit crop 25 per cent. short, and of inferior quality.

*Douglas County, Kansas.*—Grapes have averaged 4 to 5 cents per pound. Crop large.

*Grant County, Oregon.*—Apple crop increased 50 per cent. by young orchards coming into bearing.

*Salt Lake County, Utah.*—Apples almost a total failure. Peaches, apricots, plums, and pears have given fair crops, but quality very inferior. The past has been the driest season since the settlement of the Great Basin.

#### ORANGES.

*Alachua County, Fla.*—The orange crop, getting to be valuable in East and South Florida, was damaged by the excessive cold of last winter, and by the storm thrashing off the fruit.

*Orange Mills, St. John's County, Fla.*—The orange on the St. John's River will not average half a crop, thousands having been thrashed from the trees by high winds.

*Jefferson Parish, La.*—The orange crop will fall ten per cent. below that of last year.

#### BANANAS.

*Manatee County, Fla.*—Banana crop very promising.

#### PECAN-NUTS.

*Jefferson Parish, La.*—The crop of pecans will be 25 per cent. above that of last year.

*Blanco County, Texas.*—Very good crop; but the trees are scarce in this county.

*San Antonio County, Texas.*—The pecan-trees are breaking down with fruit. The crop will bring over \$1,000,000 to this immediate section. The price is \$2 50 per bushel.

#### PEANUTS.

*Surry County, Va.*—An excellent crop. It has become a staple crop here. It pays better than any other we cultivate, but is exhaustive.

*Prince George County, Va.*—With one exception, the best crop since 1865; 40 per cent. better than last year's crop.

*James City County, Va.*—Peanuts were a specialty in 1869 and 1870, but were found to be ruinous, and the crop has totally disappeared.

*Beaufort County, N. J.*—The peanut crop is becoming one of considerable importance in this county. Several hundred acres planted this year. One farmer near me will have 10,000 to 12,000 bushels. Average yield 40 to 50 bushels per acre.

*Carteret County, N. C.*—Good crop.

*New Hanover County, N. J.*—An average crop.

#### CRANBERRIES.

*Hancock County, Me.*—Severe and unusual frost early in September seriously injuring the cranberry crop.

*Norfolk County, Mass.*—A great many destroyed by frost. We have but few cultivated meadows.

*Dukes County, Mass.*—Far better crops than usual. From one acre 125 barrels have been picked, and many other acres have produced nearly as well.

*Bristol County, Mass.*—Injured by frost in September.

*New London County, Conn.*—Much larger crop than usual.

*Camden County, N. J.*—The promise of a full yield was flattering, until near the time for gathering, when the berries were badly scalded.

*Princess Anne County Va.*—Cranberries grow wild in the marshes. A full crop. Sell readily at \$3 50 to \$4 per bushel.

*Pulaski County, Ind.*—Almost an entire failure, owing to a frost in June, when the plants were in blossom.

*Lake County, Ind.*—The crop is larger than for many years, and of fine quality. The season has been particularly favorable.

*Van Buren County, Mich.*—Nearly all destroyed by the drought and the fires, which have been raging in nearly every large marsh.

*Crow Wing County, Minn.*—A marked decrease in the crop.

*Tillamook County, Oregon.*—Cranberries grow wild, but in places difficult to get at. We have a large extent of marsh-land fit for this culture.

## FLAX.

*Elkhart County, Ind.*—Flax raised mostly for seed. Very fine. Lint not so good, being short.

*Hamilton County, Ind.*—Flax only raised for the seed.

*Hancock County, Ind.*—Flax was raised extensively in this county for a number of years, but the acreage is falling off each year. It is not considered very profitable.

*Medina County, Ohio.*—The cultivation of flax is on the increase in the southern tier of townships of this county.

*Morrow County, Ohio.*—A large crop.

*Delaware County, Ohio.*—The crop has exceeded expectations both in seed and straw. The yield will probably reach 50,000 bushels of seed on an acreage of about 4,500.

*Louisia County, Iowa.*—There has been shipped from Morning Sun 4,000 bushels of flax-seed, and there seems to be a lively interest taken in the business.

## “MAST.”

An extraordinary fruitage of forest trees is almost everywhere reported. In many sections this voluntary crop is relied upon for fattening hogs, more than upon any other fattening material, corn only excepted. The following items will illustrate the general abundance:

*Surry County, Va.*—Fine mast; hogs nearly fat without corn; pork will be cheap.

*Hertford County, N. C.*—Fine acorn mast, which, with the large corn crop, will enable farmers to fatten their pork with light expense.

*Rockingham County, N. C.*—The crop of acorns is as great as ever known, and the few hogs we have will fatten upon them.

*Cherokee County, N. C.*—Hogs are now about as fat from the mast as bacon-hogs were last year from corn. The mast will probably keep them till June. One hand has picked up as high as one and a half bushel of chestnuts a day for market.

*Tallapoosa County, Ala.*—Good mast crop; hogs doing well.

*Tishomingo County, Miss.*—More acorns and more hogs in this county this year than in any year since the war.

*Grayson County, Texas.*—Best crop of acorns of the post-oak and of hickory-nuts in twelve years. There will be plenty till spoiled by spring.

*Coryell County, Texas.*—Very fine; most of pecan, bur, and post-oak, and black-jack.

*Falls County, Texas.*—Very fine mast, which will compensate in a measure for the short corn crop.

*Prairie County, Ark.*—Exceedingly heavy mast; sufficient to feed all the cattle and hogs in the State.

*Craighead County, Ark.*—The corn crop will be improved 25 per cent. by the acorn mast.

*Union County, Tenn.*—Heaviest mast ever known in this county; will make up for the deficiency in corn.

*Fentress County, Tenn.*—The quantity of corn needed will be far less than usual, as the hogs are fattening upon acorns.

*Wakeley County, Tenn.*—Hogs tolerably plenty, and getting fat on the mast. Pork-buyers are offering 5 cents per pound.

*Campbell County, Tenn.*—Best mast in forty years. Hogs will get quite fat on the acorns, and stock-hogs will do well without feeding up to next harvest.

*Boone County, W. Va.*—The deficiency in corn crop is fully met by the abundant mast. Hogs are getting fat, and stock-hogs will do well without feeding until June.

*Jackson County, Ky.*—Acorns enough to fatten our winter hogs.

*Clay County, Mo.*—Hogs go off the mast to the fattening pens in good condition.

*Williamson County, Ill.*—Corn is deficient 20 per cent., but it is thought to be more than made up by the abundance of acorns and hickory-nuts.

*Washington County, Iowa.*—Mast abundant. Hogs doing well upon it.

*Owen County, Ind.*—Much corn saved by the heavy mast.





## EXTRACTS FROM REGULAR CORRESPONDENTS.

## THE EGYPTIAN COTTON.

*Stanly County, N. C.*—The bolls of the Egyptian cotton begin to open freely. Up to October 18, we had no killing frost, and the plants kept growing, yet displaying their ample green foliage, yellow blossoms, and profusion of green bolls. The seed was received rather late for planting, the common sorts having already made a fine start. I had seed sufficient for 1,600 hills, three in a hill. Sixteen rows, 100 yards long, one yard apart, were prepared by thorough plowing and right manuring, in rows, with well decomposed stable manure. The whole occupied a fraction over one-third of an acre. The land is sandy loam, on a gentle slope well exposed to the sun. In about 100 hills the seed failed to vegetate, and in most instances but one or two came up. When three came up only one was left for a stand; the one stalk in the hill was universally the thriftiest, some stalks being over an inch in diameter. During the whole season the vegetation was uninterrupted; the foliage remained fresh when everything around was drooping from drought. On the other hand, the middle of September came on and few bolls were opening, while ordinary cotton was nearly all gathered in. The plants are now covered with green bolls from top to bottom. There are no plants under three feet high; some are five to six; all branching so as to meet across the rows. The stalks average not less than 50 bolls, and many stalks have over 150. Estimating one pound to 100 bolls (the common varieties yield more) the 1,500 hills in which the seeds vegetated, if all the bolls were to open, would yield 700 to 800 pounds of seed-cotton, or about 2,400 pounds to the acre. Earlier planting may insure the maturity of a full crop next year. For a further trial seeds from the earliest bolls have been saved.

*Duplin County, N. C.*—The Egyptian cotton has grown to an enormous height, some of the stalks measuring 12 feet, but has failed to produce much cotton, not more than one-fourth the yield of ordinary cotton on the same land. The staple is very beautiful, very long and very fine; far surpassing the Peeler, Moina, or any other of the long-staple upland varieties. I think our seasons are too short for it to succeed here.

*Greene County, N. C.*—The Egyptian seed came up well and grew finely, to almost double the size of common cotton by its side, but bloomed fifteen days later than the latter. The bolls were about one-fourth the usual size; the lint not as white as it should be; the yield about one-third that of the common. The rust or blight did not make its appearance on the Egyptian, while it almost killed the row of the common next to it. It will not suit our climate.

*Craven County, N. C.*—I think the Egyptian cotton will not be profitable here unless it will sell for at least 50 per cent. more than ordinary cotton. The weed grows large; bolls small and scattering; staple short, but fine and glossy.

*Hertford County, N. C.*—The Egyptian cotton bolls well, but the bolls are so small and so late in maturing that it is unsuited to this climate.

*Perquimans County, N. C.*—Too late for this climate; does not mature well and is not productive, though the staple is much longer and finer than that of our common cotton. The bolls have but three lobes, while our cotton has four, and sometimes five.

*Barnwell County, S. C.*—The Egyptian cotton-seed sent me is a black or clean seed variety, which is not adapted to this county, situated in

the "uplands." We are careful to keep all black seed out of our cotton, but they will appear as the pure seed degenerates. I tested the Egyptian on good land and with the best of culture. It will yield 250 to 300 pounds of seed-cotton, while the common Prolific will yield 800 to 1,000, while I think the price would be no more, prepared for market in the ordinary way. The "Moina," an upland long-staple variety, as fine as the Egyptian and twice as prolific, was abandoned because there was so little difference in the price of that and the common Prolific, which yields 50 per cent. more. The bolls of the Egyptian have but three lobes; those of the common Prolific have four, and about one-third will be found with five.

*Georgetown County, S. C.*—The Egyptian cotton-seed was carefully cultivated in the same field with Carolina varieties. It grew well; yellow blossoms, good stalks, but small bolls, and late in maturing. It possesses no advantages for this region.

*Wilkes County, Ga.*—A decided failure thus far; a fine weed is the only product; some fine stalks without a single boll; seed from this year's crop may produce better results. It is becoming an accepted fact that we generally plant too early. When cotton is planted very early the crop is entirely at the mercy of the inevitable summer drought, which has comparatively little effect on later plantings.

*Wilkinson County, Ga.*—Will not answer for this section. Bolls small and scattering; lint good, but not worth bothering with.

*McDuffie County, Ga.*—A failure in this climate. It will not yield 20 pounds of lint per acre on land that would produce 400 pounds of the Prolific.

*Murray County, Ga.*—A fine weed, but few bolls, and they are inferior. Not suitable to this climate.

*Clayton County, Ga.*—Does not suit our climate.

*Bolivar County, Miss.*—I had the Egyptian cotton-seed planted, but did not give it enough space in the drill, which makes it grow too tall, (some growing 12 feet high,) with poor branches. I think if it was checked four feet each way, it would produce well, and not grow so tall, and have more branches. I sent a sample to a few cotton merchants in New Orleans and Memphis. They say it is very fine, but that it cannot be ginned on our common gins, as they cut the lint badly.

*Winston County, Miss.*—I planted the Egyptian cotton about the 15th of April, on the same kind of ground on which our ordinary seed was planted, without manure. The summer and fall have been very dry. The stalks grew very tall and are full of bolls, but it is at least three weeks later than our common cotton. The bolls cannot mature, as they are now quite green, and some of them quite small.

*Washington County, Miss.*—The Egyptian cotton has proved a failure. The stalk is very large, but it has not balled well, and as yet but few of the bolls are open. I think it will not yield over one-twentieth of a good, ordinary crop on the same ground.

*Clark County, Miss.*—Will not answer for this climate; summers not long enough. It stands dry weather well, and is still green and blooming, while the common cotton is yellow and almost entirely shed.

*Coahoma County, Miss.*—A failure here. But few bolls have matured.

*Laurence County, Ala.*—The Egyptian cotton I find to be a vigorous, thrifty plant, free from rust and the boll-worm this season; but it is much later than the green seed-cotton—too late for this climate. The first boll opened 25th September, and the yield is not above second-rate green seed, say 500 pounds seed-cotton to the acre. It may, however, produce some valuable hybrids with the early green seed.

*Clarke County, Ala.*—Not nearly so prolific as our common native cotton.

*Calhoun County, Ala.*—A failure here. Bolls small and few in number. Too late.

*Lafayette County, Ark.*—The Egyptian cotton proves hardy, thrifty, bolls well, resists drought, escapes the worms, and yields an abundant staple, fine, long, and silky.

*Bastrop, La.*—Opinions differ in regard to the *Tumel maki* or Egyptian cotton. It has not been fairly tested yet, and will be tried again next year. Some of the seed was planted too late. The weed or stalk grows large before it commences to make, but it makes rapidly, and grows and makes in the driest season, when other cotton ceases to grow and sheds its bolls. It is also the last to be attacked by the cotton-worm, and the caterpillar did not touch it this year for two weeks after it had riddled the cotton fields. I have seen a small patch which will yield at the rate of  $1\frac{1}{2}$  bales to the acre. If planted early it must make a fine crop. It requires a long season for full maturity, however. There is a stalk of this cotton near here 14 feet high and 22 feet across from tip to tip of limb. This variety would probably succeed better in the more southern part of the State, where the season is longer. As a cotton for hand-spinning it has no equal that we have ever known. It requires no preparation; the spinning goes on without the breaking of a thread, even upon the old-time spinning-wheel.

*Rapides Parish, La.*—The Egyptian cotton-seed, from the one trial, seems to possess no real value. The growth was luxuriant, the leaves a dark, rich green, the flowers yellow or a rich straw-color, but the forms and bolls are too far apart, averaging 6 to 10 inches, whereas on Boyd, Prolific, and Dixon, they are usually two to four inches, with the top branches short, and hence less likely to break under the weight of bolls during a storm.

#### THE CHINESE COTTON.

*Laconia, Harrison County, Ind.*—The quart of the China cotton-seed received was divided with two neighbors, for the purpose of testing its adaptability to different kinds of soil. My own portion was planted May 13, on upland, dry soil, at an elevation of about 150 feet above the Ohio River, and about one-fourth of a mile from it; elevation above the sea, 500 feet; soil, a clay loam, with limestone formation. Only about half the seed germinated, and scarcely a single stalk came to maturity. The season was long enough, and the failure seemed to be due entirely to local causes. I shall repeat the experiment. A neighbor was more successful. His location and soil are similar to mine, though the soil in the spring was not quite so dry. His crop matured fully. Stalks, blossoms, and bolls very small. The yield per acre not one-half that of ordinary Tennessee cotton. The fiber is short and rather inferior. He has had experience in raising cotton in Tennessee, and he is of opinion that this variety could not be made profitable, unless the yield should be much better than given in this trial.

#### OATS.

*Essex County, N. Y.*—From one pound six ounces of Schonen oats, received from the Department, I have raised  $7\frac{3}{4}$  measured bushels on 12 square rods of ground. The land is river bottom, manured, and cultivated last year in corn. No fertilizer this year. Land prepared for wheat in the spring. The ground was raked off with a hand-rake and

the oats sowed in drills 14 inches apart. When the oats were 8 to 10 inches high the weeds were hoed out of the spaces between the drills with a hand-hoe; the oats grew 6 feet high, with large healthy stalks, which stood up well until the crop began to ripen, when the whole was prostrated by rain and wind and did not rise. The product weighed 235 pounds—a little below the standard in weight. If not blown down the yield might have been a bushel or two more. From the above result, would it not pay to sow our grain crops in drills and hoe them?

*Gilmer County, Ga.*—A package of the Schonon oats, sown March 10, on low wet soil, and, though somewhat damaged by rust, the yield was very good, while other varieties were almost a total failure. I have great hope that this variety will do well with us.

*Blanco County, Texas.*—Sowed three pounds of Schonon oats March 24, on one-eighth of an acre. No fertilizer used. Yield 5 bushels, weighing 52 pounds to the bushel. I think one more rain would have doubled the yield.

*Marengo County, Ala.*—Last season I distributed the Excelsior oats, and grew some myself, and in every case they grew well, much taller and more luxuriant than the common oats, but rusted so badly that we did not save a seed. The only oats that do not rust here are the red oats, introduced since the war. I would like to know the proper name and the history of this variety. It seems to be really a non-rusting oats. This grain will hold its own in southern agriculture, being more valuable, all things considered, than even Indian corn. Put in properly, at this season of the year, I think it pays better for the labor bestowed upon it than any other crop we raise, and its extended and successful growth will mark a new era in our agricultural advancement.

#### THE PERUVIAN CORN.

*Haywood County, N. C.*—The corn from Peru made a large flourishing growth, but did not mature.

#### JUTE.

*Charleston, S. C.*—Last season I received from the Department some jute seed, which I planted at Summerville, twenty-two miles from this city. The seed was not planted until June 10, and was on very poor land, but by October 1 the plant had attained a height of six feet. This fully demonstrated to me that the cultivation of this fibrous plant can be a success in the South. I have preserved seed, and will plant it next March for a further test.

#### GRAPES IN ALABAMA.

*Lawrence County, Ala.*—About three years ago I received from the Agricultural Department several specimens of grape-vines for experiment. Those that have lived and borne fruit this year are as follows:

1. *Rogers, No. 15.*—This vine is rather a slow grower, but stout, and stands the winter like a native. The fruit is pale red; berry large and round, sweet and luscious; bunches equal to the Catawba in size and number of berries. This is the first year that it has borne fruit with me. It was quite free from mildew, and ripened from the first to the middle of August. I thoroughly sprinkled it with sulphur from the first show of the bloom till the end of May. This is a most excellent grape for this region.

2. *Hartford Prolific*.—This is now a well-known grape. It is a strong, thrifty vine, and an abundant bearer. Under the sulphur treatment, as above, it wholly escaped the mildew. It is a very early grape; ripens early in July.

3. *Creveling*.—This grape much resembles the Clinton, with larger berries, sweet and juicy. It ripens shortly after the Hartford Prolific, and, with the sulphur treatment, was this year quite free from mildew—the great pest of all grapes here except the Scuppernon.

#### PRODUCTS OF SONOMA, CALIFORNIA.

*Sonoma County, Cal.*—The chief products of Sonoma County, California, are wheat, corn, barley, oats, potatoes, and all the varieties of fruits grown in a semi-tropical climate. The grape is cultivated very extensively for wine and table purposes, and will eventually constitute the chief product of the county. The variety known as the Mission or Native grape is chiefly grown for wine-making, but all the foreign varieties yield equally well, and seem to be adapted to the climate. Price paid by wine-makers to the farmers from three-quarters to one cent per pound, delivered at the press. In that portion of the county contiguous to the sea-coast, where, in consequence of the prevailing heavy fogs, the grass does not entirely dry, the dairy business is chiefly carried on, yielding handsome returns to those engaged in it. Potatoes are also extensively cultivated there, but for want of rotation of crops the yield has decreased and the quality deteriorated, causing farmers to abandon their cultivation and turn their attention and farms to the more profitable business of the dairy, which, however, is confined to the making of butter, which meets with ready sale in the San Francisco market at from 30 to 75 cents per pound. The yield of wheat has been very large this year in Sonoma County, considering the fact that in the greater portion of the State the wheat crop has been an almost entire failure for want of moisture. The several valleys in the county yielded as follows: Dry Creek, 42 bushels per acre; Russian, 38; Santa Rosa, 35; Sonoma, 34.40; other small localities equal to 35; making the average yield for the county 37.35. Average price paid per bushel, \$1 44; many farmers realized \$1 65.

Hops were at one time profitably cultivated in this county, but the prices having declined to 10 to 12 cents per pound, growers found that they could cultivate more profitable crops, and nearly all the growers plowed up their yards, and abandoned their cultivation. The fruit crop, peaches, apples, pears, &c., has been unusually light this year, owing to the prevailing north winds at the time the fruit was in blossom and while forming. From the same causes the quality is not as good as it is generally.

#### WOOL IN MENDOCINO, CALIFORNIA.

*Mendocino County, Cal.*—One of the most important items of interest in this county is wool, the fall clip of which is just now going to market. This business is rapidly growing in importance, and the experiment has met with great success. The fall clip this year is largely in excess of that of any former year; in fact, is nearly equal to last spring's clip in quantity. Not that sheep will produce an equal clip in the fall to the spring clip, but owing to the large number of spring lambs that yield their first fleece in the fall.

## BUTTER AND CHEESE.

*Outagamie County, Wis.*—Not one-fourth the quantity of butter and cheese made in this county in September and October that was made in the same months last year.

*Trumbull County, Ohio.*—The season will compare fully with last year, for dairy products. Nearly all the milk worked up by factories. The prices during the fore part of the season were very low, but later prices have ruled much better, and the most of the August, September, and October cheese has been sold at remunerative rates.

## FODDER IN THE SOUTH.

*Gladsden County, Fla.*—Permit me to call attention to the fact that neither in the last census report, nor in the forms for the Agricultural Reports, is there a column for the noting of the "fodder" crop. The blade of the corn designated as "fodder" is our chief dependence for long forage, supplying the place of "hay" in all of the South Atlantic and Gulf States, and deserves some notice in making up the aggregate value of southern products. An approximation to the amount and value of this crop may be had by allowing 1,000 pounds of "fodder" for every 80 bushels of corn, and valuing it at \$12 50 per thousand.

## CLOVER IN GEORGIA.

*Wilkes County, Ga.*—Quite an increase in clover-sowing. We look upon its culture as a decided success. I cut two tons from an acre at one time.

One of the most profitable lots I have is seeded with yellow or Chilian clover; now up and on good ground; gives good grazing by middle of January; dies in June; seeds itself no matter how closely grazed, and comes up again during the rainy season in late summer. Seed from Patent Office between 1856 and 1860.

## CLOVER IN NANSEMOND COUNTY, VIRGINIA.

A correspondent at Suffolk, Virginia, writes: Much of our land produces clover well, and at present I have 16 acres, a part of which cut two tons to the acre last summer. We find that oats, (winter,) sown either in the fall months or in January, yield much better than the spring oats. Some of my neighbors have done well with spring wheat. I have prepared a plat of five acres, clover-sod turned under in November, on which I desire to seed with several kinds of wheat and oats, with and without fertilizers; (bones, 100 pounds; guano, 100 pounds; salt, 10 pounds, per acre, and two bushels of plaster on growing crop.)

## DEPRECIATION OF SUGAR-CANE.

*Liberty County, Fla.*—Your attention is called to the depreciation of the sugar-cane. It has been planted here so long that it has become almost as hard as a hickory sapling, and contains but little saccharine matter. We see Congress making liberal appropriations for everything but the Agricultural Department; this is always stunted. It is the cultivation of the soil that makes a nation prosperous. Why, then, cannot a small appropriation be made to introduce a few ship-loads of African cane, to reinstate the planters in profitable seed? This would increase the crop in five years 25 per cent.

## THE QUALITY OF FERTILIZERS.

*Kershaw County, S. C.*—I know no boon to the cotton-planter which would be so great as the promulgation of some method by which the unscientific planter could test his fertilizers as to percentage of *soluble matter*, or, better still, a law of Congress requiring manipulators of fertilizers to truly label the quantity and nature of ingredients on each parcel, with a sufficient penalty to prevent frauds.

## WHEAT IN RUSK COUNTY, TEXAS.

*Rusk County, Texas.*—I am satisfied that the sandy lands in this vicinity do not suit wheat. I have tried for four years to raise it, and have abandoned it altogether. I tried the Deihl and Mediterranean; they both rusted and made nothing. The Tappahannock did quite well two years, and last fall I planted three acres, but it rusted so badly this spring that it was not worth cutting.

## OVERCUP OAK.

*Prairie County, Ark.*—There will be plenty of "overcup" to keep hogs until next fall. The overcup oak is a species of the white oak, which grows exclusively upon overflowed lands. The timber is better than any other variety of white oak. The acorn is entirely covered with a thick hull; it floats in the water, and is drifted in great heaps, sometimes containing many wagon-loads. The fruit is nearly as pleasant to the taste as the chincapin. This oak should not be confounded with the overcup or burr oak of Kentucky, which is here called cow oak.

## CROPS IN UTAH.

*Sevier County, Utah.*—This county having been farmed but one season, no comparison can be made with former years. Estimated product: wheat, 5,000 bushels; oats, 2,000 bushels; barley, 500 bushels; potatoes, 1,000 bushels.

## GOOD STOCK PROFITABLE.

*Giles County, Tenn.*—I have recently sold 20 head of horses, mares, colts, and fillies, at from \$300 to \$3,366 a head. If all the stock of the county were the best of its kind, how much wealth would be added to individuals and to the country!

## BEAR GRASS.

*Cherokee County, Texas.*—I have growing in my field a plant which I have seen only in Florida and Texas. The common name is bear grass, (*Yucca filamentosa*.) The leaves are 2 to 3½ feet long, one-half to one and a half inch wide, very strong and tough, and when wilted by immersion in boiling water a moment are very pliable. They are the best thing I ever saw for tying grape-vines, fruit-trees, hanging meat, &c. The flower is magnificent, growing on a stalk 4 to 10 feet high, and 2½ to 3 inches in diameter; white or light cream color, like wax, and 500 to 1,000 on each stalk. It will grow in the poorest white sand, and will stand heavy freezing any length of time. The root and leaves are perennial, but the flower-stalk comes from the root each year, something



like the banana. The seed-vessel resembles the banana in shape, having, when ripe, a little pulp around the seeds, which is also like the banana in taste, but of a dark brown color.

#### CULTIVATED GRASSES IN TENNESSEE.

*Wilson County, Tennessee.*—Our farmers are paying more attention to the grasses, and are rapidly increasing the quantity of both pasturage and hay. For the former they prefer blue grass, orchard grass, and clover; for the latter, timothy, redtop, and clover. Timothy is universally preferred.

#### GRAPES.

*Orange County, Va.*—Some new enterprises are being entertained in this section, among which grape culture is most prominent and thus far successful. It promises to be progressive, and we expect wine-making to become one of the institutions of the county.

*Carteret County, N. C.*—All varieties of the grape, except the Scuppernong family, have generally failed from the effects of mildew. The Delaware, Iona, Concord, and Walter, as far as our observation extends, are the best of the soft-wood varieties for this climate. The culture of the soft-wood grape in this county is quite recent, however. The Scuppernongs have been cultivated more or less for a number of years, but have received more attention of late, and we are generally sure of a good yield in quantity and quality, with much less expense than with other grapes.

*Craven County, N. C.*—Grapes will be an important product with us in a few years. Large vineyards have been planted, and are coming into bearing.

#### SILK CULTURE IN TEXAS.

*Gonzales County, Texas.*—At our recent fair there was on exhibition a skein of beautiful silk, manufactured in this county from the raw material produced here. This encourages us to hope that this industry, with proper attention, may prove a source of revenue.

#### EARLY APPLES IN VIRGINIA.

*Prince George County, Virginia.*—Large orchards of early apples are being planted, as there is quite a brisk demand for such fruit for the New York markets.

#### GINSENG.

*Cherokee County, N. C.*—From 80,000 to 100,000 pounds of ginseng have been dug from the mountains this fall and sold at 25 to 27½ cents per pound.

#### CHICCORY.

*Tillamook County, Oreg.*—A little chiccory has been grown here this year. It does remarkably well.

#### WOOL IN CALIFORNIA.

*Alameda County, Cal.*—The fall clip of wool is about all in market, but sales have been light. Several of the extensive wool-houses and manufacturers in the Eastern States have sent their agents to Australia to purchase wools, some of which are being sent forward to New York

and Boston, via San Francisco. These wools will come strongly in competition with the finer grades of wool grown in the United States, and will be a great detriment to the producers of that class of wool.

#### DROUGHT AND FIRE.

*Gratiot County, Mich.*—The late fires swept over our country, destroying fodder, crops, and fences, and, in some instances, houses and barns, but I think no lives were lost. Hay has been destroyed to such an extent that the price has gone up at least one-third, and before next spring hay will bring \$25 per ton, at least 100 per cent. higher than it was before the fire.

*Mecosta County, Mich.*—With the exception of one or two light showers about the 1st of September, we have had no rain since the 20th of July, till the middle of October. We are now having an abundance. The fires, which have devastated so much territory north and west, swept through the forests here generally, but did not kill much timber, and did but little damage in the county.

*Wayne County, Mich.*—The drought continued until last evening, when we had a fine rain. Much of the wheat sown in September has not yet come up. Pastures are nearly all dried up, and stock has to be foddered as in the winter. There has been much suffering among the stock from want of water, many farmers being obliged to drive their stock from three to five miles to water.

*Livingston County, Mich.*—The drought is unprecedented. No rain to amount to anything since the last of June. Pastures, even on low lands, are completely dried up, and much of the corn-fodder is already fed out. Scarcely any wheat sown on summer fallows, and much of the seed sown is lost. Many fires yet burning in swamps and marshes.

*Ingham County, Mich.*—This county, more favored than some others in the State, has suffered considerably from drought and fire. Pastures are short, and wells and watering places dry. Fences have been consumed and timber burned, notwithstanding the zealous efforts of the citizens to save them. But a plentiful rain on the last day of August has for the present put a quietus upon the ravages of fire.

*Juneau County, Wis.*—The hay crop was large, but the late fires destroyed hundreds of tons, which will cause considerable scarcity of fodder in this vicinity.

*Outagamie County, Wis.*—One hundred stacks of hay reported burned by the late fire on Rat River Marsh. Stacks would average, perhaps, three tons each. In many localities the soil has been burned to the depth of two feet. A great quantity of valuable timber and fences have been destroyed. It has been a terrible month for Northern Wisconsin on account of fire. Rain has finally put a stop to our troubles. For nearly a month work of all kinds has been neglected on account of fighting fire.

*Defiance County, Ohio.*—The woods are all on fire, the swales are entirely dry, and much good timber is ruined by fire.

*Morgan County, Ohio.*—October the driest for ten years; water very scarce; several heavy frosts; no snow, and but one small shower of rain. Ice the 29th.

*Gibson County, Ind.*—In some parts of our county water is very scarce. Some hauling for stock two to four miles.

*Vanderburgh County, Ind.*—The dryest fall, up to the 20th of October, known in this county for twenty years. But little rain since the middle of August, to within about the 20th instant.

*Grant County, Ind.*—The dryest time experienced since our county was settled.

*Perry County, Ill.*—The season has been dry without precedent. Showers have fallen in some parts of this county sufficient to insure reasonable or nearly average crops of corn, potatoes, &c., but we have had no general rain sufficient to wet the ground thoroughly, since first week in March last.

*Wright County, Minn.*—The fall season has been very dry. Fires have run over large tracts of land, destroying buildings, crops, and even lives. Much suffering will be experienced on the frontier during the coming winter.

*Meeker County, Minn.*—A large amount of hay has been destroyed by fires, and should the winter be severe must occasion scarcity of hay.

*Franklin County, Mo.*—Drought continued until October 9. Much destruction by fire in consequence thereof.

*Marion County, Iowa.*—Weather extremely dry, and very pleasant. Most farmers are feeding their stock now, in consequence of short pasturage. Water lower than ever known since the county was settled. Many farmers have much difficulty and great inconvenience in procuring water for their stock.

*Nemaha County, Kans.*—This fall has been very dry and windy, and with a heavy coat of dry grass on the prairies, much loss has been sustained by fires. One thousand tons of hay, many miles of fences, 500 bushels of corn, grain in the stacks, stables, and three houses have been burned; about one-third of the prairie in this county has been burned over, and night is luminous with fires in every direction.

*Cowley County, Kans.*—Near 1,000 tons of hay have been destroyed by the extensive prairie fires which have raged among us this fall. Was very dry until October 30, when some 4 inches of rain fell.

*Sedgwick County, Kans.*—Corn is the main crop, mostly on prairie sod. Much hay has been destroyed by prairie fires, ranging from one small stack to 600 tons in a yard. The largest portion of the prairie is burned over. It appears that some are determined to drive all the cattle out of the county.

*Gage County, Nebr.*—Large amount of hay, grain, and some stock burned through this section by prairie fire.

*Hall County, Nebr.*—Prairie fires are raging in every direction, but no lives have been lost yet; a considerable amount of property has been destroyed by those fires, and a great many farmers have been compelled to take home their cattle from the herds, on account of the prairies being burned about four weeks too early, the 15th of November being the date when cattle are usually taken from their pasturing-grounds.

*San Bernardino County, Cal.*—The heated term continues, and no rain yet, the thermometer averaging 95° for the month of October so far, and what the grasshoppers left the heat has parched up. No feed of any amount in the valleys for months, and the mountain range, for the first time since the county was settled by a white population, is completely eaten up, and unless rain comes within four or five weeks, dead cattle and sheep will literally strew the plains by thousands.

*Yankton County, Dak.*—Only two light showers since July; consequently have suffered great damage by prairie fires.

#### DISEASES OF STOCK.

*Clarke County, Va.*—A disease, improperly called hog-cholera, has prevailed in this vicinity to a very fatal extent, from early spring to the

1st of September. I am safe in saying that one-third of the hogs in the county have died with it, and more than one-half in particular districts. I said it was improperly called cholera, because in no stage of the disease is there any excessive discharge from the bowels until just before death, and not then except in chronic cases. The great majority die upon the third or fourth day of the attack with all the symptoms of pneumonia. This has been confirmed by post mortem examinations, and when they do recover there has been obstinate constipation of the bowels throughout the disease. I have now two hogs which have recovered from it; one had a great many tumors upon his legs and feet, which did not suppurate, but remained for a long time; blindness from opacity of the cornea and total loss of the hair from the body were also symptoms in this case. This hog has recovered his eye-sight, but his eyes have changed to an intense black from a chestnut-brown color. The treatment found most successful, in the absence of apples, is calomel in twenty-grain doses for the first two or three days. But there is no longer any doubt in this community that an apple-orchard will both prevent and aid in the cure of the disease. After losing one-half of my hogs, the remainder (seventeen) were turned into an orchard, and not one took the disease, and two that were sick recovered. This is also the experience of others. It has been most confidently asserted that hog-cholera will be cured by feeding parched corn.

*Montgomery County, Iowa.*—Hog-cholera has made its appearance in a few localities.

*Fort Randall, Todd County, Dak.*—An outbreak of "splenic or periodic fever," among beef-cattle, (about 200 head,) at this post commenced in May, 1871, when ten deaths occurred; in June, six; in July, ten; in August, twenty-two, and in September, three. The epidemic reached its acme about the middle of July. The total number of deaths in 200 head of cattle was 51. Mode of invasion, rapidity of course of disease, and death occurring at an early period, together with the post mortem appearances, prove conclusively that it was the "splenic fever," the affection described by Professor John Gamgee in report of Agricultural Department for the year 1869. It is highly probable that the cattle arriving here in two different lots have had the disease communicated to them by passing over or having been herded in sections of country previously traveled over by droves of Texas cattle, en route to supply the various Indian agencies along the Missouri River. The disease has not, however, appeared at any other point where cattle are herded and kept for issue as beef, as for instance at the Yankton agency, 15 miles from here; Whetstone agency, 30 miles from here, and other agencies still more remote on the Missouri River.

*Ellsworth County, Kans.*—A large number of cattle have died within the last six weeks in this county, with a disease supposed to be "Spanish fever." Some herds of fine stock, numbering twenty to thirty head, have lost as high as 60 per cent. Texas cattle were not affected with the disease. Of those examined the gall was found to be five or six times as large as it should be, the spleen enlarged, and the manifold dry and hard.

*Vernon County, Mo.*—Calves are dying in the eastern part of the county with the black leg, which is very fatal.

*Dallas County, Iowa.*—Some deaths are reported among calves and young cattle, occurring very soon after the stock was turned into the fields from which the corn had been gathered. There is little "smut" in the corn—less than usual.

*Jackson County, Ga.*—We have had an unusual disease among the

poultry; thousands have been swept off this summer. I lost all mine, about 100 head. The disease seemed to be a loathsome disease attacking and killing the same day. The only remedy was to feed on salt dough.

A correspondent reports that there is a disease in some parts of Ohio County among horses, old and young, which affects the upper part of the throat and breaks into running sores. Many valuable horses have died.

*Montgomery County, Va.*—Hog-cholera has prevailed extensively on the fine corn-lands of New River. Some farmers have lost 25, some 50, and some 100 head, mostly stock hogs. An observing farmer has made several post-mortem examinations. He invariably found the entrails filled with worms, whenever examined, 2 to 4 inches long, in countless numbers, which so completely filling the cavity as to prevent the passage of anything. He administered croton oil and spirits of turpentine; out of 20 shoats 17 were thus relieved.

*Marion County, Iowa.*—Many hogs have died of “quinsy.” Thousands of dollars’ worth have died in the county in the last five weeks.

*Johnson County, Iowa.*—Hog-cholera slightly manifest in some parts of the county.

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## DETERIORATION OF WHEAT.

The causes of deterioration in the yield and quality of certain crops, so manifest in the experience of a majority of American farmers, demand investigation. The fact that one field produces double the quantity of another adjoining, and that the yield of virgin soils diminishes year by year, calls for explanation and even reiteration of the reasons for such deterioration, and suggestions of remedies and means of recuperation. Recent inquiries have been directed to the present Commissioner of Agriculture relative to the diminution in the average yield of wheat. He has felt a personal interest in this subject, and enjoyed the advantage of many years of experience and investigation, and thus responds to such inquiries:

Many farmers look upon the culture of wheat as the most profitable work in which they can be engaged, while some claim that corn is a more profitable crop. Let the question be settled by the fact that land is sometimes better adapted to corn than to wheat; but, be that as it may, the wheat crop is certainly of sufficient importance to claim our attention to all the prominent errors which exist with regard to its proper cultivation.

It is a curious and no less remarkable fact, that, in the midst of the use of highly improved implements, guided by experienced hands and superior knowledge of the science of agriculture, the production of wheat has gradually and certainly diminished in quantity in all the wheat-growing States. Why is this? May the evil be overcome? It is no solution of these questions to answer that the soil has been exhausted of those peculiar constituents essential to the growth and maturity of wheat, for this argument would lead to the conclusion that nature had not by her laws made provision for the perfect growth of wheat at all, and that ultimately this production must become utterly extinct. But this is an unwise as well as unprofitable conclusion. We must, therefore, resolutely face the fact that the cause of the failure is

to be found in the farmer's want of skill, and inquire how this skill may be improved.

Examine the present mode of cultivation in the wheat-growing States. Finding a field in clover, it is plowed in the fall or in the spring, and planted with corn. The corn having been taken off, it is plowed again the next spring and sown with oats, and upon this oats-stubble all the manure of the barn-yard is put. It is then plowed under, and the field sown with wheat; and when this crop is taken off it is either sown again with wheat, "stubbled in," as it is called, or it is sown with timothy in the fall, clover in the spring, and again is laid down to grass, remains two years, and then goes through the same rotation. This is the ordinary process of cultivation throughout all the Middle States, and it is by this process that our wheat crops have diminished at least one-third in the last twenty-five years, while there is not the same diminution in any of the other crops which make up the whole course. The products of corn, oats, and grass are as large if not larger than they ever were. The marked failure is in the wheat crop. It is visited by fly, midge, rust, mildew, or it grows into straw without a corresponding production of grain. An experiment made upon my farm, and running through a period of ten years, induces me to say that the failure of the wheat crop is occasioned, in a great measure, by the improper use of barn-yard manure. Wheat is a delicate plant, both in its organic structure and the food it consumes, and yet we apply, in aid of its germination and growth, the gross, raw product of the barn-yard, filled with embryos of worms, bugs, midges, and beetles, giving a nauseous dose to the first germ of the wheat, and furnishing an unfit food throughout the whole life of the plant. Add to this the vermin which the contents of the barn-yard have brought upon the field, and then we may account for the midge, Hessian fly, mildew, rust, and all other evils which we have been accustomed to deplore when harvest comes.

I trust I may not be understood as depreciating the use of barn-yard manure; so far from this, I am convinced that human skill has never been able to concoct a combination of plant food so excellent as that which comes from the stable, when properly used. But the proper use of it is upon corn ground. After the grass has been cut and made into hay the second year, and when the tap-roots of the clover have attained the size which makes them valuable as renovators of the soil, let the grass grow up for a few weeks; then haul all available barn-yard manure upon it, and scatter it over the ground; and as late in the fall as the season will allow plow it under deeply. Corn is a voracious plant, and will consume any food, however gross. Its roots are all-reaching and far-reaching; they will find the manure readily, and the crop will tell the story of its value. When the corn is taken off, and during the next winter, let the corn stubble be broken close to the ground, raked off, and burned, or, what is better, hauled to the barn-yard, and in the spring as soon as the ground is dry enough harrow with a sharp and heavy harrow until the surface is smooth; sow oats without plowing, and roll after sowing. The manure is yet undisturbed, and not likely to make the oats so rank as to cause them to lodge. Oats will grow better and be more productive without plowing than with it. As soon as the oats are off, let the stubble be plowed in as deeply as possible, by which the manure, covered before corn-planting, will be thrown to the top, and the scattered oats will have an opportunity to vegetate; then stir the ground again with the plow, thus destroying the growing oats, and thoroughly mixing the earth and upturned manure, which, by the lapse of time, has undergone a thorough decomposition and combined with the

earth, and in this way has been made a food properly prepared for the wheat plant. The earth through its influence has been assimilated to the humus which was originally so productive of wheat. If the land under this treatment tends to become too mellow, let timothy be sown in the fall with the wheat, at the rate of one bushel to the acre, and clover in the spring at the rate of one bushel upon five acres. If no timothy be sown in the fall, the wheat will be greatly benefited by harrowing it with a sharp harrow in the spring. No fear need be entertained of injuring the roots, and the ground will be freshened and well prepared for receiving the clover-seed. When it is sown, a roller passed over the ground will fix the clover-seed for immediate germination, and level the surface for the reaper and mower; and I may add, that the habitual use of a roller upon cultivated land, whether in corn, oats, wheat, barley, or clover, has a tendency to destroy the larvæ and pupæ of insects to an extent rendering them harmless, while all these crops are benefited by it.

In the Southern States there is no reason why cotton or tobacco may not be substituted in this course for wheat. It may be suggested that, when either of these crops is cultivated the last time, the land may be sown with clover, which by the following June will grow to its full size, and may then be plowed under. If the ground be again plowed in September, it will be in the best condition for a wheat crop, or, what is better, if the clover be left until the following spring, when it shall have attained its full growth, the land will be in a condition to grow corn, cotton, tobacco, or anything else. This system, pursued for a series of years, may be relied upon for the production of crops perpetually, always using barn-yard manure upon the clover sod, and planting with corn. It is the enriching influence of clover roots and the rotation of crops which produce the result. Let it be remembered that there is little reliance to be placed upon the effect of a green crop turned under by the plow; ninety per cent. of it is water. It is the full-grown *root* of clover that enriches the soil.

Care in the selection of seed wheat is of the very first importance. Discard all idea of mixing ingredients with it to destroy smut, rust, mildew, or anything else; for, beyond the mere operation of washing or the manure they may furnish, it is questionable whether they produce any good effect. Smut is a fungoid growth from a diseased grain of wheat, which by contagion will be communicated to the mass, but from which the mass may be purified by washing with soap and salt water. Mildew is a parasitic fungus upon the straw, by which the seed is never affected otherwise than by the destruction of the straw and consequent shrinking of the wheat in the head. The midge, Hessian fly, and weevil, are insects the consideration of which should be introduced in any discussion on the subject of the cultivation of wheat. The midge is a small winged insect, the larva of which is an orange-colored maggot, found between the skin and chaff of the grain of wheat while it is in its milky state. The egg is deposited between the chaff and the kernel, and is so minute as not to be discoverable by the naked eye. The larva extracts the milk and destroys the grain. The Hessian fly deposits its egg, which is about the size of the smallest grain of clover-seed, upon the blade of wheat, from which it falls into the crotch of the plant or upon the ground; if upon the latter it perishes, and if upon the former it is hatched into a larva resembling a flaxseed. As it grows, it lives upon the sap of the straw, and destroys it at its point of contact, which is usually in the first joint, so that it is broken off by the wind or its own weight. The weevil is a hard-shelled beetle, which preys only upon grain after it is matured. The remedy for smut and mildew is

careful cultivation, frequent rolling, and selection of clean, pure, heavy seed. The weevil may be driven from barns or bins by any strongly smelling plant, such as mint or burdock.

There are involved in this discussion two simple principles of agriculture—the timely application of manure, and the proper rotation of crops. It may and probably will be said that clover will not grow successfully in the Southern States. With all due respect to the little experience which southern farmers have had in the use of this grass, I must insist that such is the character of the clover-plant, with its deeply penetrating tap-root, which nature intended for the supply of moisture and nourishment, that no other grass will endure more drought. Lime is one of the largest constituent elements of clover, and, if it be applied to the land, clover will grow almost anywhere, and wherever it grows the soil is renovated and enriched by it.

### APPEARANCE OF WINTER-WHEAT.

Voluntary returns from regular correspondents indicate a medium condition of winter-wheat. The dry weather in many localities interfered with early seeding, and the fly has been at work in some places. An increase of area sown appears probable in Arkansas and Texas. The following extracts are given :

#### WINTER CROPS.

- York County, Maine.*—Many pieces of wet land have been sown to winter-wheat.
- Windsor County, Vt.*—The recent rains have filled streams and springs, and have helped fall feed and fall-sowed grains.
- Yates County, N. Y.*—Wheat came up well; small but healthy; slight damage by the worm. The severe drought prevents as large a top as usual; about the same area sown as last year.
- Otsego County, N. Y.*—Winter grain and fall feed are looking poorly.
- Seneca County, N. Y.*—Wheat has come up badly and looks spindling, with decreased acreage.
- Bradford County, Pa.*—Wheat has come up very slowly; a poor stand.
- Huntingdon County, Pa.*—Light showers have kept the winter-wheat in good condition. It is fully up to an average.
- Butler County, Pa.*—The showers of the past few weeks have improved the appearance of fall grains fifty per cent.
- Lancaster County, Pa.*—Wheat looks well; neither too thin nor too rank.
- Sussex County, Del.*—Decreased acreage sown to wheat, attention being given to small fruits, which are more profitable.
- Carroll County, Md.*—Late showers have improved wheat and rye, which are looking well.
- Fauquier County, Va.*—The favorable fall has given wheat a fine start.
- Prince George County, Va.*—The wet weather will diminish the already small area in winter-wheat. Winter oats have almost entirely superseded wheat, except immediately on the James River.
- Fairfax County, Va.*—Fall months have been favorable and wheat has come up well. Decreased acreage.
- Powhatan County, Va.*—Most favorable seeding season for several years, but, owing to failure of the wheat crop in this county, there is not a full crop seeded. Winter oats have been substituted by many farmers.
- King George County, Va.*—Wheat looking finely; acreage somewhat increased.
- Culpeper County, Va.*—Early sown wheat looking well.
- Nelson County, Va.*—Wheat came up rapidly, and is looking unusually promising.
- Frederick County, Va.*—A good stand of wheat.
- Rockbridge County, Va.*—Fine stand of wheat, and looking well, except that sown in August and September, on which the fly has been working.
- Transylvania County, N. C.*—Early sown wheat looking well.
- Moore County, N. C.*—The drought has delayed the sowing of oats and wheat.



*Jackson County, N. C.*—A heavy seeding of wheat and small area of rye; growing finely.

*Fannin County, Tex.*—Almost every farmer has sown what seed-wheat he could procure. Wheat, very scarce; price, \$2 to \$2 25 per bushel, in specie.

*Coryell County, Tex.*—Prospect for winter wheat and rye never better. A larger area has been sown to wheat than for several years.

*Prairie County, Ark.*—Area in winter wheat increased 25 per cent. above average. Winter-oats 20 per cent. above average. Little rye sown.

*Weakley County, Tenn.*—Fine sowing season; but the area sown to wheat will be smaller than for several years.

*Smith County, Tenn.*—Wheat is being put in better than last year, but not very well yet.

*Carter County, Tenn.*—Wheat has taken good root, and looks well.

*Giles County, Tenn.*—Wheat and rye quite promising. Acreage increased 10 per cent.

*Yazette County, W. Va.*—Some farmers deferred sowing wheat until late in October, hoping thereby to escape the ravages of the Hessian fly next season.

*Marion County, W. Va.*—Wheat and rye have come up well. I never saw a better stand at date.

*Mason County, W. Va.*—The showers in October have brought up the wheat, which is looking very well for the season.

*Grant County, Ky.*—Wheat and rye looking badly. The drought and the fly are affecting them seriously.

*Lincoln County, Ky.*—Wheat and rye doing well.

*Livingston County, Ky.*—Wheat looking well.

*Adair County, Ky.*—Wheat looking better than usual.

*Vernon County, Mo.*—Wheat sown nearly a month later than usual, to avoid the fly and chinch-bug, but warm days and frequent showers have hastened growth. Prospect never better.

*Phelps County, Mo.*—Dry season. Grain sown late and on reduced area.

*Adair County, Mo.*—Too dry for seeding.

*Putnam County, Mo.*—The chinch-bug is the great pest of this county, in some instances destroying nearly all the crop. There appears to be no way to get rid of it but to quit sowing spring-wheat.

*Montgomery County, Ill.*—Wheat coming up finely and growing rapidly.

*Edwards County, Ill.*—Wheat has been put in well and early, but it is small and backward, owing to drought.

*Fairfield County, Ill.*—The rains are bringing up the wheat, and benefiting pasturage.

*Scott County, Ill.*—Large crop of wheat sown, and looking well.

*Pike County, Ill.*—Not much more than half the wheat up; dry weather; farmers put it in deep, hoping to reach moist earth. The rain came and run the ground together, forming a crust, which prevents the plants from coming through.

*St. Clair County, Ill.*—Wheat very promising.

*Floyd County, Ind.*—Wheat is not overgrown, but well rooted and set.

*Noble County, Ind.*—Wheat has had very little rain.

*Brown County, Ind.*—Dry month, but the small showers and cloudy weather have kept wheat alive.

*Fayette County, Ind.*—The drought ended, and fall grains are coming up finely.

*Cass County, Ind.*—Wheat is in worse condition for winter quarters than for many years. Drought.

*Parke County, Ind.*—Poorest prospect for wheat in the past ten to fifteen years. Drought.

*Scott County, Ind.*—The season continues dry, with occasional showers, just enough to keep wheat alive. Increased acreage sown. The fly is damaging the early sown.

*Madison County, Ind.*—Remarkably dry. Wheat looks better than could have been expected.

*Franklin County, Ind.*—Wheat is looking well.

*Logan County, Ohio.*—The effect of the drought upon wheat cannot yet be determined. I have known in other years wheat to lay in the dust in the fall, and with the late fall rains spring up and mat the ground before the winter proper set in, and produce above an average crop.

*Crawford County, Ohio.*—Wheat doing well; as large a growth as is desirable at this time of year.

*Henry County, Ohio.*—Wheat less promising than I remember to have seen it in thirty years. Ground exceedingly dry at time of sowing. Came up thin and in spots.

*Vinton County, Ohio.*—Most of the wheat sown late. The fly is in the early sown.

*Branch County, Mich.*—Wheat looks poorly, owing to the drought. Unpromising for a crop next season.

*Hillsdale County, Mich.*—Wheat does not come up well. Fire still raging in the woods. In many localities the earth is dry to the depth of three feet.

*Clinton County, Mich.*—Wheat has not come up well. Some farmers have waited for rain before sowing.

*Livingston County, Mich.*—Scarcely any wheat sown on summer-fallow, and much of the seed sown is lost. Many fires yet burning in the swamps and marshes.

*Wayne County, Mich.*—Much of the wheat sown in September has not yet come up. Pastures nearly all dried up. Much suffering among stock for water.

*Mercer County, Wis.*—Owing to the continued dry weather, wheat and rye have not been sown as early as usual, but what has been sown looks well.

*Columbia County, Wis.*—Little grain sown this fall, owing to the dry weather.

*Washington County, Iowa.*—Fall wheat prospect poor. Drought.

*Adams County, Iowa.*—Five times as much winter-wheat sown as in any previous year.

*Shawnee County, Kans.*—Wheat sown a month later than usual, but it is looking well.

*Morris County, Kans.*—Very little seeding done before October 10. A good breadth sown, but hardly as great as last year.

*Republic County, Kans.*—Two years ago I spent a week with a team in going after winter-wheat for seeding. The result from ten bushels was very satisfactory. Last year I sowed again, and four other farmers followed. The results were so good that five hundred to one thousand acres have been sown this fall—last year thirty-one. I have just procured five bushels of winter-rye, and will start that over the county next fall. Will get winter-barley as soon as I can procure it.

*Dickinson County, Kans.*—Dry month; wheat backward.

*Osage County, Kans.*—Chinch-bugs still alive by millions, and in some fields attacking the growing wheat.

*Bourbon County, Kans.*—Decreased breadth in wheat and put in worse than usual.

*Miami County, Kans.*—Sown late, but looking well.

*Gage County, Nebr.*—Early sown wheat looks well; late sown not so good.

*Cass County, Nebr.*—Wheat looking remarkably well.

*Stanislaus County, Cal.*—No rain yet, but the farmers have been sowing wheat and barley extensively on dry summer-fallow.

*Alameda County, Cal.*—No rain since the middle of May; but little wheat sown in this section of the State for the want of rain to moisten the ground.

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### VALUE OF CORN FODDER.

In the annual report of 1870 a digest of the views of numerous correspondents, of intelligence and experience, is presented, from which the following conclusions were drawn:

1. Green corn-fodder is neither worthless nor the poorest of all soiling material.
2. It is best when planted in drills or hills, not so thickly as to prevent normal growth and development, cultivated to destroy weeds and grasses, and cut between tasseling and earing, when the elements elaborated for production of the ear are stored in readiness for immediate use.
3. It is probable, both from the *rationale* of the case and from facts presented above, that in the more northern latitudes a mistake has often been made in sowing thickly southern corn which cannot mature, the fodder from which, fed in August, must be very nearly worthless. On the contrary, the fodder from northern corn, especially sweet corn, drilled widely and cultivated, and fed just before earing, is found to be very valuable.
4. Its value, compared with lucern, millet, the best grasses, and other plants containing a large percentage of nutriment, taking into consideration the quantity produced and the cost of its production, has not been determined fully, and should be decided by a series of thorough and exhaustive experiments.

Confirmations of the correctness of these conclusions are received from every direction, as the result of further and more careful experiment during the present year. Among the authorities repeatedly quoted to show the assumed worthlessness of corn-fodder, is the Boston Journal of Chemistry. The position of that journal is that "when raised from broadcast-sowing it is nearly worthless, but when sown in hills or in drills and cultivated with access of air and sunlight, it is of high value." An experiment made by the editor this season shows that fodder-corn

planted in drills contained of dry matter, the water being evaporated in a drying closet, 17 per cent., while that from corn sown broadcast contained but 8 per cent., in which sugar and gum were almost entirely wanting. This illustrates the great superiority of stalks collected just as the ear begins to form.

At a meeting of the Western New York Dairymen's Association, in September, Mr. Lewis F. Allen stated that, in experimenting with fodder-corn, he had planted one acre in sweet corn, which grew to a height of about  $2\frac{1}{2}$  feet, feeding being commenced when the corn began to tassel. The acre supplied sixteen cows twenty-three days, (equivalent to feeding one cow three hundred and sixty-eight days,) yielding about  $8\frac{1}{2}$  tons. Common Ohio green corn, of which the crop was double that of the sweet corn, was then fed, and the cows appeared to relish it equally well. The result was a steady increase of milk and a large increase of butter.

In respect to a substitution of lucern in place of fodder-corn, Mr. Martin said that the value of the former as a food for dairy cows would appear to have been overrated to some extent. It belongs to the clover family, and the milk of cows fed upon it is not equal for purposes of butter and cheese to milk from the grasses proper; and the butter and cheese obtained from feeding it are deficient in keeping qualities.

Mr. E. W. Stewart brought forward the practice of Mr. Fry, who raised corn in drills, dropping the seed in every third furrow. One acre supplied one hundred and five cows four days, equivalent to feeding one cow four hundred and twenty days. Mr. Stewart held that when the corn-plant began to tassel it contained all the constituents of the grain.

Mr. Pierce, of East Hamburgh, said that he had not found sowed corn capable of increasing the production of milk after it had fallen off, but that if the feeding was commenced in season the flow would be kept up, and the cows sustained in good heart and flesh.

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## AGRICULTURAL SOCIETIES AND FARMERS' CLUBS.

A correspondent in Plymouth County, Massachusetts, writes urging the formation of farmers' clubs and the frequent meeting of farmers for comparison of views, &c. He says:

If we had farmers' clubs organized in all the towns, and these in communication with a central head, any important fact established could be at once made known to all the clubs throughout the country. The most important work for the clubs would be to establish facts by actual experiments. This is our great want at present. We have very little positive knowledge in regard to the best methods of applying labor or material to the soil for any crop. Take Indian corn, for example. We find great difference of opinion in regard to the plowing of the land, the application of fertilizers, the planting of seed, and the cultivating and harvesting of the crop. This ought not to be. It is true that climate and soil have something to do with the methods; but with organized effort and experiment the best methods of planting and cultivating our principal crops may be developed, and thereby some progress be made in the right direction. Let a farmers' club be formed in every town, and let no year pass without the institution of some experiment in agriculture for the instruction of the members, and when the results are important let the facts be communicated to the Department of Agriculture for more general dissemination.

The Concord (Massachusetts) Farmers' Club presents the following list of subjects to be discussed by members during the ensuing winter, one being assigned to each weekly meeting, from November 2 to April 18, the meetings to be held at the houses of the members:

Economy of small farms as compared with large ones. Our discussions—what questions shall we select, and how discuss them? Insects injurious to fruit-trees and

flowering shrubs, and the remedies. Birds, their habits and agricultural value. The farmer and the hired man—cannot some means be adopted to secure responsible help on our farms? Comparative value of heavy and light soils for farming purposes. Field and garden seeds. Co-operation for farmers. Restoring worn-out lands—how shall we do it? The farmer and the markets—how can the farmer get a fair return for his crops? Crops of 1871—what crops have paid the best for the labor and money expended? Of what benefit has chemistry been to agriculture? Special fertilizers—notes of experiments. Agricultural machinery—what machines does the farmer need? The law of germination—our use and abuse of it. History of the Concord Farmers' Club. Profits and losses in milk-raising. Education of farmers' sons and daughters. The cranberry crop—soil and cultivation. Experimental farming—its value to the public. Small fruits raised for family and market. Pickles—at what price can we afford to raise them? Barns—plans and specifications, with details.

This programme is suggestive to such clubs as are at a loss to know what course to pursue to make their meetings interesting and instructive. These organizations are rapidly increasing in numbers, and, when properly conducted, must result in much practical good to the agricultural interest.

As an adjunct of town clubs, supplying a feature calculated to give vitality and permanency, as well as interest and utility to these local organizations, we would recommend rural libraries, in which the farmer may find the latest and best agricultural books and journals for the instruction and profitable entertainment of himself and family.

In the West a lively interest is springing up in the formation of town clubs among the farmers, and the good results are already apparent. Our correspondent for Rock County, Wisconsin, reports the existence of a club at Beloit, embracing thirty-four farmers of the township, who farm each from 60 to 360 acres, limestone soil, prairie, and timber-land. He adds:

We are advancing in this town; getting more correct ideas of farming by rotation, clovering, pasturing cattle and sheep, raising horses of breeds adapted to farming purposes. We have better stock than formerly, and are also raising more fine-boned hogs than heretofore, and considerably more corn and less wheat; make more manure, and draw it out and plow it under, instead of burning the straw, as was done twenty years ago. We make no crop a specialty; mixed husbandry pays the best.

A correspondent in Butler County, Ohio, in a communication transmitting names of the officers of the county society, adds:

We have very successful fairs, and in many regards our society is well managed. Our grounds are large and commodious, and in every way well improved. Our officers, however, a long time ago, permitted the introduction of negro minstrels, fat women, big babies, deformed animals, riding nuisances, &c., to the annoyance of visitors and to the disgust of those who believe that such exhibitions should not be tolerated at such a place. Part of the grounds became worse than a bear-garden, and the "noise and confusion" are enough to drive quiet people out of the grounds. Besides, these exhibitions distract the attention of the young, and some older people, from the real object of the fair, and tend to educate the people in the wrong direction; they degrade and debase, rather than instruct and improve. I wish the influence of the Department of Agriculture could be brought to bear against this abomination.

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## RECENT STOCK SALES.

At the cattle sale of Edward Iles, near Springfield, Illinois, November 15, 22 short-horn cows sold for \$15,664, or an average of \$712 each. "Jesse Hopewell" was sold to J. H. Kissenger, Clarksville, Missouri, for \$2,499; "Oxford Duchess" to J. G. Taylor, Decatur, Illinois, for \$2,100; "Potentilla" to D. Sodowsky, Indianola, for \$1,800; and "Nelly Bly" to Frank Spear, Tollula, Illinois, for \$1,800. The lowest price realized was \$150, for "Rosalie." Ten bulls brought \$3,725, an

average of \$372 50 each. The highest price, \$800, for "Chief Napier," purchased by E. W. Mills, Sullivan, Illinois; "Canadian Prince" brought \$510, and "Seventh Duke of Airdrie" \$500. At this sale 16 Berkshire swine averaged \$28 68 each. Chester Whites sold low.

At the sale of the Clifton stud, property of R. W. Cameron, New York, November 1, 35 thorough-breds of all ages sold for \$27,985, an average of \$799 60 each. The stallion "Hampton Court," foaled in 1864, and sired by Young Melbourne, brought \$3,000; J. Carter Brown, of Providence, the purchaser. "Warminster," foaled in 1869, sold for \$1,650; and "Glen Athol," foaled 1869, brought \$1,400. The six stallions averaged \$1,426 66 each. The mare "Stolen Kisses," foaled in 1864, was sold for \$1,900, to P. W. Hudson, Manchester, Connecticut; "Invercauld" brought \$1,580, and Eleanor, \$1,000. The lowest price was \$300, for "Casemate," foaled in 1860. Of the two-year olds "Inverary," brown filly, sired by Leamington, was bought by P. W. Hudson for \$2,400. The yearlings ranged from \$925 to \$375, and the weanlings from \$925 for a bay colt of "Stolen Kisses," by "Leamington," down to \$100. Of half-breeds a bay gelding, by "Hartington," brought \$500. Two colts by "Leamington," property of R. B. Forbes, jr., brought respectively \$705 and \$500. In Jersey cattle the cow "Daisy," four years old, brought \$350; "Daffodil" \$225; three heifer calves, respectively, \$165, \$150, and \$140; and a yearling bull, \$130.

The stock consigned to A. M. Harkness, Philadelphia, by P. H. Fowler, Watford, England, were sold November 7. Twelve Jersey cows and heifers, and two bulls, and four Guernsey heifers, were disposed of at an average of \$213 75 per head, \$290 being the highest price realized for a cow, and \$115 for a bull. Eleven mountain and Shetland ponies averaged \$143 each. Twenty Shropshire Down sheep averaged \$19 per head—\$11 to \$25 for young rams, and \$24 to \$40 for ewes.

General Singleton, Quincy, Illinois, sold, November 1, 11 short-horn cows at an average of \$224 18 per head, and one bull at \$475. The highest price paid for a cow was \$450 for "Deborah," by S. L. Crippen, Camp Point. The Alderney cow, "Buttercup Fifth," brought \$500, bought by J. P. Erskine, of Quincy. A number of Berkshire swine was sold. One sow, with five pigs, brought \$55; another, with seven pigs, \$49, and another, with the same number of pigs, \$41; single sows, \$22 to \$26; pigs, \$15 to \$25.

Geo. E. Waring, of Ogden Farm, Newport, Rhode Island, has sold his Jersey cow "Fancy" (reserving her next calf) for \$1,250 to John S. Eldridge, jr., Readville, Massachusetts.

At a sale of stock consigned to Richards, Leftwich & Co., Baltimore, on November 21, ten Jersey cows and heifers averaged \$192 50 per head, \$340 being the highest figures reached. Five Guernsey heifers averaged \$104 per head, and six short-horns averaged \$161 66.

At a sale of Jersey cattle belonging to S. J. Megargee, Montgomery County, Pennsylvania, November 15, prices ruled low. The highest price realized was for "Buttercup," six years old, \$250, and run as low as \$30 for a four-year old. Calves ranged from \$7 for a bull one month old to \$54 for a heifer calf six months old.

R. W. Cameron, of New York, has sold Alderneys as follows: Cow Heatherbell, four and a half years old, \$450; cow Daisy, four years old, imported, \$350; bull, fifteen months old, \$130; one heifer calf, eight months old, \$160; and one at \$140; and another, seven months old, \$165.

J. J. Davidson, Balsam, Ontario, Canada, has recently sold the three-

year old Clydesdale mare "Darling Third," by imported Netherby, to William Moffat, of Strongville, Ohio, for \$1,000 gold.

Colonel J. J. De Forest, of Duaneburgh, New York, has recently sold twelve pigs, the produce of one improved Cheshire sow for one year, for \$163. The prices ranged from \$15 for a pair of pigs, to \$30 for a boar.

Joseph Harris, of Rochester, New York, has sold to J. S. Hardin, Louisville, Kentucky, two Essex sows for \$350. Mr. Hardin has also purchased three Jersey cows at \$316 each.

Mr. M. H. Cochrane, Compton, Canada, shipped, November 2, eight head of short-horns—Duchesses, Oxfords, and Cambridge Roses—to Earl Dunmore, in Scotland. The Mark Lane Express says that the two Duchess heifers are the produce of Duchess 101st and Duchess 103d, which Mr. Cochrane bought in calf last summer for 2,500 guineas, and the same price is now paid for their calves. The calves are considered superior to their dams. The Oxford cows were bred by Mr. Sheldon.

Messrs. Wolcott & Campbell, New York Mills, New York, have sold to Mr. Cheney, of Gaddisby, England, five head of short-horns, which were shipped to Southampton. One of the five, the Ninth Maid, of Oxford, although landed safely, died a few days after arrival at Southampton, during the quarantine to which all stock is subjected, and in this case with very few of the comforts to which such animals are accustomed.

One of the largest public sales of horses and cattle which ever took place in California was held at Bellevue ranche, belonging to the estate of the late R. J. Walsh, Colusa County. The horses, 148 head, were all unbroken. They were bred from the best American mares by superior horses. The first, second, third, and fourth choice, one pair each, sold for \$120, \$120, \$80, and \$67, respectively. The remainder were sold in a single lot at \$24 each. The bulls were sold as follows: first, second, and third choice, \$100 each; fourth choice, \$52 50; fifth, \$40; and the four remaining bulls for \$155. The general horned stock sold, first choice, 5 head, \$100 each; second choice, 10 head, \$70 each; third choice, 10 head, \$59 each; and so on down to the eighteenth choice, comprising the remaining 380 head, which sold for \$18 25 per head—altogether, 1,145 were sold under this head. The Bellevue ranche contains 20,000 acres, extending along the Sacramento River for eight miles, and mostly valley land. For the past five years the ranche has been managed by the executor of Mr. Walsh, who died in 1866, leaving a debt of \$80,000 on the property. There were then 1,200 head of stock on the ranch. In the five years the total sales of stock and grain have amounted to over \$250,000. The \$80,000 debt has been paid; over forty miles of fence have been built; there is now as much stock on hand as there was five years ago, and the executor has in hand \$40,000, the proceeds of the stock sale.

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#### FARM MANAGEMENT IN ENGLAND.

A heavy clay farm of 133 acres, in Clavering, Essex, abandoned to weeds and neglect, and clover sick, producing but 24 to 32 bushels of wheat, was rented in 1862 by Mr. W. Savill, a schoolmaster of the village, for a period of seventeen years. He put in drains three feet deep, and kept the surface clear of weeds. Commencing with 85 acres of arable land, he has increased his annual tillage since 1867 to one hundred acres, and has steam-plowed an average of 35 acres annually

for the past four years. He applies eight loads per acre of farm-yard manure once in three years, and every year gives his crops a top-dressing, costing at least 25 shillings per acre. The result of this treatment is an average of 47 bushels of wheat per acre, or 48 bushels of barley. His last crop of wheat, after potatoes, was 53½ bushels per acre. He employs five men and five boys regularly, and occasionally five extra men and six to eight girls of thirteen to sixteen years of age.

Professor George H. Cook, of the New Jersey Agricultural College, reports the practice of Robert Leeds, an English farmer of considerable reputation. Mr. Leeds's farm embraces 1,160 acres; 1,000 acres being in active tillage under four-field rotation—roots, wheat, barley and oats, clover and timothy—the remainder in pasture or permanent meadow. Last year there were 300 acres in beets, ruta-bagas, and turnips, yielding 900 bushels of roots per acre, the whole of which were consumed upon the farm. The stock consists of 2,000 sheep and 150 beeves, besides horses, calves, and pigs. The sheep are chiefly Southdowns, the beeves Durham, all in fine condition. Mr. L. calculates to add \$30 to \$80 to the value of a steer in eight or nine months. He practices the system of box-feeding. These boxes are about ten feet square, quite high, sheltered and well ventilated, in which the steer can turn around and lie or stand at pleasure. The water and feed boxes are movable up and down, as in a month after going in they may need to come up a foot to clear the bedding. One box has oil-meal, another cut roots, another hay, and a fourth water. He can help himself at any time, and such generous bedding of clean straw is thrown to him that he eats some of it, while he tramples the remainder and converts it with his droppings into the best of manure. The bullock stays in this box until ready for the knife, and when he comes out, fat, he leaves, perhaps, ten cubic yards of rich compost beneath him. Mr. Leeds sells, annually, 200 to 250 beeves, and 500 sheep.

William Smith, of Woolston, Bucks, reports the cost of steam culture upon his farm, in preparation of seed-bed for wheat, barley, beans, and roots. A field of 39 acres of heavy clay land, sown to wheat, which is the seventeenth crop under steam culture, cost an average of 4s. 7½*d.* A field of 29 acres heavy land, which produced a crop of beans in 1870, when the preparation cost 4s. 8*d.* per acre; wheat in 1871, at 5s. 11½*d.* per acre, has been prepared for beans next year at a cost of 6s. 2*d.* The field is not quite clean, but will be so when the beans come off next year. The ridges will be forked and picked this winter at an expense of about 5s. per acre. Another field of heavy land, 24 acres, has been prepared for barley next year. The ridges will, after picking, as in the preceding case, need splitting by a subsoiler worked by horses, in the winter, at a cost of 3s. per acre. This, added to the ridging and subsoiling at 6s. 2*d.* per acre, makes the total cost of the seed-bed 9s. 2*d.* per acre. A field of light land, 14 acres, prepared for barley—the sixth white straw crop in succession—costs 6s. 2*d.* per acre, requiring only ridging and subsoiling. Thirty years ago this field was in grass of the poorest sort, giving a very light produce on an average of years, and when plowed up, twenty to thirty years ago, the yellow clay, which plowed up at not over four inches from the surface, looked like good stuff to adulterate butter with; yet, by the aid of the ridger and subsoiler, this clay has been converted into black mold to the depth of a foot. A lot of 13 acres of light land has been similarly prepared for beans at the same expense, and neither the spade nor plow, worked by man or horse, can equal it in quality at any cost. To steam culture Mr. Smith attributes his success in keeping his land clean under a yearly

system of grain-cropping, and thinks it has much to do in keeping it in condition. His land is not only heavy, but very hilly and uneven, which would need, under horse culture, four good horses to plow three roods per day, and the best farmers cannot, with horses in such land, make a clean seed-bed on an average of years for £1 per acre. He states that his own clay lands did not, under horse culture, produce over 20 bushels of grain per acre, and that the best-farmed land of like kind in the neighborhood does not now produce over 24 bushels per acre on an average of years, while his clay land yields an average of 36 bushels. The character of the land has been entirely changed, and his opinion is that clay soils in other districts would change under similar treatment.

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### THE BRITISH FOOD SUPPLY.

The importations of wheat into Great Britain for the months of 1871, as reported from the official records, amount to 32,365,338 cwt., against 25,969,710 cwt. for the same period last year. The Russian contribution is 13,310,475 cwt., against 8,219,154 cwt. for a similar period of 1870. That of the United States, 10,832,561, against 10,666,001 last year. Germany reduces her proportion for these periods from 3,085,895 to 2,447,256 cwt. France, usually sparing little, sends 122,004 cwt., against 174,651 the previous year. Next to Germany, in quantity, comes British North America, supplying 2,426,248 cwt. this year, and 2,212,723 in ten months of 1870. The United States has increased her proportion but little, which stands at 33 per cent. of the whole; but Russia has advanced from 32 to 41 per cent. The average price paid for Russian wheat was \$2 84 per cwt.; for that of the United States, \$2 99, being an increase from last year of 37 cents per cwt. The total receipts for our wheat for this period have been \$32,464,350; for flour, \$6,168,680. Russia sends little wheat in this shape; none is separately reported this year. The total receipts of flour and wheat meal are but 3,347,001 cwt. The quantity of Indian corn imported in ten months is 14,260,760 cwt., costing \$27,330,870.

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### NOTES FROM THE GARDEN.

#### DEPTH TO PLANT SEEDS.

The proper depth to plant seeds is a question of considerable importance, and one which, like many other similar questions relating to plant growth, cannot receive a definite answer that would be of general or universal application. In dry sandy soils, situated in dry climates, a deeper covering will be required than would be judicious where both soil and climate indicate the reverse of these conditions. For instance, it has been shown that peas continue longer in bearing condition, on sandy soils, when sown at a depth of 6 inches, than they do when placed nearer the surface; and it is said that the Indians upon the table-lands of the Colorado plant corn 10 to 12 inches below the surface with the best results; but if planted with only 1 or 2 inches of covering, the crop fails. Seeds also vary in their ability to penetrate depths of soil in germinating. Leguminous seeds, and some of the largest seeding



gramineæ, can be planted deeper than those of a lighter character. It has been given as a general rule that all seeds germinate most speedily when covered with a depth of soil equal to their own thickness, and where the constant presence of sufficient moisture for germination can be maintained; this rule is, perhaps, as nearly correct as any that can be given.

#### A BERLIN PROJECT.

A "dendro-pomological garden" is about to be established at Berlin. This garden is to be planted with a collection of fruit-trees, and to comprise an arboretum where all hardy ligneous plants will be systematically arranged. Hedges of various plants, capable of being used for the purpose of live fences, will also be introduced. The idea and the botanical arrangement emanates from Professor Karl Koch, the plans for laying out the garden being perfected by Mr. Meyer, landscape gardener of Sans Souci.

Several years ago, a similar project was proposed by Mr. William Saunders, of this Department, who prepared plans for the botanical arrangement, and for the laying out of the grounds. The work was not commenced until the spring of 1868; since that time operations have been gradually progressing, the ground-plans are nearly completed, and the collections yearly increasing in value and interest. The plan of the Department embraces various important details not included in the published plan of the Berlin project.

#### AUSTRALIAN SEEDS AND PLANTS.

Inquiries are frequently made of this Department for seeds of Australian trees, especially for the rapid-growing species of *Eucalyptus* and *Acacia*. The native habitats of these plants being characterized by seasons of extreme dryness, has led to the belief that they would be particularly adapted to the dry atmosphere of the western plains. This is a mistake, so far as regards the growth of these plants in dry soils and climates, inasmuch as the season of growth in Australia is very wet; dry weather succeeds this growing period, corresponding to our winters, which is the period of rest. The seplants are unable to resist even 10° of frost, consequently they are not adapted to climates where this degree of frost prevails. No instance is known where they have flourished in the open air east of the Pacific coast. Our native trees furnish species of as rapid growth as any of these Australian plants, so that there seems no necessity for anxiety in this matter. There are a sufficiency of hardy trees known to be well adapted to meet all reasonable necessities.

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#### ENTOMOLOGICAL RECORD.

[By TOWNEND GLOVER, *Entomologist*.]

**BETTLER DESTROYING TWIGS.**—Many small branches or twigs of pear, persimmon, and various other trees, deeply cut into and girdled by some insect, have been received by the Department this autumn, with letters making inquiry as to the insect causing the injury, and the best mode of preventing its ravages. It appears, from the correspondence, that the trees are much more injured this autumn by it than they were a few years ago, thus proving that the insect is increasing in numbers, and, if

not prevented, may eventually do much injury. A correspondent at Richmond, Virginia, writes that the elm, persimmon, &c., have been much injured in that neighborhood. Mr. G. F. B. Leighton, of Norfolk, Virginia, states that the pear, hickory, elm, and persimmon are attacked in his vicinity; but that the persimmon receives the greatest injury.

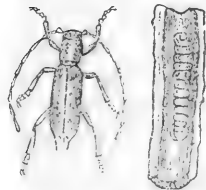
The beetle that thus girdles the twigs is the perfect insect of the so-called "twig-girdler," *Oncideres cingulatus*, Say, (Fig. 1,) a medium-sized, long-horned beetle, of a chestnut-brown color, and having a broad lighter-colored band across the wing-covers. The female beetle first makes a perforation in a branch, generally just below a bud; she then deposits an egg in this perforation, in one case even making as many as six perforations, in which eggs were deposited below the buds in a single branch, not more than a foot in length, sent by Mr. Leighton.



After the insect has deposited her eggs, she then proceeds to gnaw all around the branch, thus forming a circular cut or incision, about one-eighth to one-tenth of an inch in width, below the place where the eggs are deposited, so that the exterior part or end dies; the larva, when hatched, feeds on the dead wood, which sort of food appears to be essential to its growth. The principal injury is said to be done in August and September. They have also been found to injure walnut and apple as well as the trees above mentioned.

A great number of the perfect beetles that had just changed were found in Maryland in twigs broken from a large hickory tree, and lying on the ground beneath it. The best way to eradicate this insect is to cut off all such branches and twigs as have the least appearance of having been girdled, and to gather up all fallen branches on the ground and to burn them immediately, as the eggs or larvæ of the next year's generation are contained in these twigs, and, if allowed to remain undisturbed, would produce a race of beetles next season which would girdle all the trees in the neighborhood. The best time to prune off the infested branches is after the leaves have fallen from the trees, as the injury can be more plainly seen than when the tree is in full leaf.

There is another long-horned brownish beetle which also cuts off the branches of oak, apple, peach, hickory, and chestnut. This beetle, which is known as the "oak-pruner," *Elaphidion villosum*, Fab., (Fig. 2,) (*Stenocorus putator* of Peck,) does not make the incision from the outside of the branch like the twig-girdler above mentioned, but the larva cuts the twig from the inside. The egg is deposited in July on a twig near the extremity of a branch. The larva, when hatched, penetrates into the wood, and forms a cylindrical burrow several inches in length



in the interior of the branch, and, when full grown, eats away parts of the wood of the branch in which it resides, from the inside, leaving only the bark untouched, so that these branches are broken off in autumn by the first strong wind, and fall to the earth with the larvæ yet in them. Professor Peck considered that this was done in order that the branch might retain sufficient moisture from lying on the damp ground to enable the pupa and insect to be perfectly developed. If this insect should increase so as to become very injurious, it may readily be destroyed by gathering up all fallen branches under the trees in winter or spring, before the perfect beetle is developed, and burning them immediately. If such fallen branches are examined in early spring, they will

be found to contain either pupæ or perfect beetles, which, if not destroyed, would, next season, deposit eggs on the neighboring trees.

The white poplar (*Populus alba*) in this neighborhood is subject to a species of shedding of the twigs, but this does not appear to be caused by any insect, as, upon examination of the fallen twigs, no eggs or vestiges of the work of any insect could be found, and the only peculiarity exhibited by the twigs is a very great enlargement or swelling just above or at the place where the twig is broken.

A NEW ENEMY TO THE STRAWBERRY.—Last May a communication was received from Mr. B. Bryan, of Silver Hill, Maryland, stating that he had observed some small insects injuring his strawberries soon after they had commenced blooming. In his letter he says: "I noticed that the blossoms were dying, and, upon examination, found that a small insect somewhat similar to the curculio was stinging or piercing with its snout the blossom-bud and footstalk of the blossom-bud, thereby causing the death of the blossom." "I found these little curculios in all parts of the field where the berries were growing, and the damage was the same all over the place, and on some vines as high as two-thirds of the blossoms were killed." Mr. Bryan also states that if these insects deposit eggs in the punctures they make, they fail to hatch in almost every instance. On searching a neighboring patch of strawberry plants, he

"failed to find any of these small curculios." The insect sent proved to be *Anthonomus signatus*, Say, (*bisignatus* of Schönher.) (Fig. 3,) and as yet must be extremely local, for although diligently searched for in several strawberry beds, both in this neighborhood and in Maryland, not one of these insects could be found. In the specimens of blossoms injured, no eggs or vestiges of larvæ could be found, thus proving that the punctures are merely made for the sake of feeding upon the plant. As



Fig. 3.

this insect has not yet been mentioned as injuring the strawberry, it has been thought advisable to draw the attention of horticulturists to Mr. Bryan's letter, as the fact of this beetle having injured his crop so materially may perhaps account for the failure of the strawberry crop in certain localities. This insect is about 0.11 inch in length; including snout, 0.15 inch. Oval in shape, the thorax one-half the width of the body; elytra or wing-covers reddish brown, with two large irregular oval spots of a darker shade, margined with white, occupying a space a little below the center of each wing; inner margin around the scutellum same color as the spots; scutellum, or triangular spot between the base of the wing-covers, white; thorax, head, and legs dark chestnut brown, coarsely punctured; underside of body clothed with fine whitish hairs; end of abdomen reddish brown. They vary much, some of them being almost entirely without the irregular oval spots on the wing-covers, and of a nearly uniform chestnut-brown color.

NEW INSECTS FROM THE WEST.—During the summer, the assistant entomologist, in company with the New York agricultural editorial excursion party, made collections of insects in Kansas, Colorado, Wyoming, and Nebraska, among which five species have been described as new. *Arctia Williamsii*, Dodge, (Fig. 4,) recently described in the Canadian Entomologist, occurs in the mountains.

It is a very pretty moth, with chocolate-brown upper wings marked with lines of creamy white; the hind wings rust-red, with brown spots. It is dedicated to Mr. Henry T. Williams, editor of the Horticulturist. *Caloptenus Dodgei*, Thos., a small, almost wingless grasshopper, is found near



FIG. 4.

the summit of Pike's Peak. *Acridium frontalis*, Thos., is quite abundant on the wild sunflower in Kansas. *Ædipoda undulata*, Thos., and *Pezotettix megacephala*, Thos., were collected from the cowcatcher of the locomotive, running at usual speed, during the trip through Nebraska. All are grasshoppers, with the exception of the first named.

## CHEMICAL MEMORANDA.

The laboratory of the Department is engaged upon several researches of considerable importance and extent. The results of the weekly determination of chlorine and phosphorus in the grape vine and leaf will, when duly completed, possess both a practical and scientific value. The examination of some of the principal commercial fertilizers has been commenced, with the intention to exhibit, at least partially, the condition of this manufacture. The work will be fairly and accurately performed, and will fully set forth the facts of each case.

Among the analyses incidentally executed this month, a few possess special interest.

**SUGAR-BEETS.**—Messrs. Chaffee and Schreiner, of Denver, Colorado Territory, lately sent to the Department specimens of sugar-beets raised in that vicinity. They were of unusual size, averaging 5 pounds 4 ounces in weight, 18½ inches in length, and 14 inches in circumference two inches below the collar. The substance of the root was compact, firm, and perfectly white. The polarization process gave 14.50 per cent. of sugar, several determinations yielding the same figures.

Dr. Nichols, superintendent of the Government Asylum for the Insane, near Washington, furnished samples of beets grown on the farm attached to that institution. They were of large size, remarkably well grown, firm, and uniform in texture. Average weight, 5 pounds 2 ounces; length, 14 1-5 inches; circumference, 15½ inches. Sugar, per cent., 9.50.

C. F. Hawley, esq., of Kansas City, Missouri, forwarded beets grown in that region. Their weight averaged 2 pounds 4 ounces; length, 11¾ inches; circumference, 11⅓ inches; percentage of sugar, 6.75. These beets were badly grown, small, unhealthy in texture, and very uneven in point of size.

These results go to confirm the prediction already made by the Department, that the natural conditions of growth in the United States are very generally favorable to the production of sugar-beet. The points at which the experiments were made are sufficiently distant from each other to represent much of the territory hitherto untried by this crop, and the percentages of sugar obtained average higher than in most European factories.

Dr. Jellett lately reported from the model farm at Glasnevin, Ireland, 12.05, 9.50, 12.59, 11.62, and 12.43 per cent. of sugar. In Germany and France the working average is less than 10. The second figure obtained by Dr. J., (9.50,) was from beets which had not been earthed up, while the others had been thoroughly cultivated; and he claims that this instance alone proves that direct solar influence is unnecessary for the formation of sugar.

A beet-sugar factory has lately been established in Black Hawk Valley, Sauk County, Wisconsin, by a co-operative association of thirty-four German farmers. Their first crop was a partial failure, but the success of the enterprise seems now (from our meager reports) to be certain.

Their machinery was in part derived from Chatsworth, Illinois, and cost about \$25,000. The success and economy of the new diffusion processes, and the improved modes of utilizing the residues, warrant the belief that certain prosperity will reward the energy which engages in these enterprises.

**A FLORIDA LAKE-WATER.**—A specimen of the water from a small lake in the northeastern part of Florida was recently examined qualitatively. The residue of the filtered liquid reached 300 grains per gallon. Reaction slightly alkaline; specific gravity, 1.0059. A large amount of organic matter was suspended, probably owing to carelessness in bottling. The solid matters were chiefly sulphates of lime and magnesia, common salt, and small percentages of iron and potash salts. The spectroscope gave no indication of the rarer elements sometimes found in mineral waters. It is unusual to observe so large a proportion of dissolved mineral matter in lake-water.

**VIRGINIA GOLD-BEARING QUARTZ.**—The assay of a gold-bearing quartz derived from Virginia yielded \$2,237 54 per ton. As the specimens were not selected by experts, this very unusual richness is deserving only of brief notice.

**EDIBLE FUNGUS.**—An analysis of the fungus called "tuckahoe" or "Indian bread," *Sclerotium coccos*, Schweinitz: (*Sclerotium giganteum*, Torrey,) is of interest as showing that its nutritive value has been greatly over-estimated. A specimen received from Mr. J. R. Bryan, of Columbia, Virginia, has been very carefully analyzed by the assistant in this laboratory. In external appearance it was rough, dark-brown or brownish-gray in color, covered with a thin and hard cuticle, and penetrated by cracks in every direction. The substance internally was extremely hard and dry, and pinkish in color. Analysis of the latter, (the bark having been removed,) gave the following results:

Moisture, at 140° centigrade, in an atmosphere of carbonic acid.....	14.16
Organic matter.....	85.68
Mineral ash.....	0.16
	<hr/>
	100.00
	<hr/>

A portion of the dried material yielded to the proper solvents and reagents:

Glucose.....	0.93
Gum (Arabin?) and pectin (?).....	2.60
Pectose.....	17.34
Cellulose, and insoluble nitrogenous matter.....	64.81
	<hr/>
	85.68
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The material also yielded by two experiments: Nitrogen, 0.364 per cent. and 0.392. As no nitrogenous body could be dissolved in the watery solution, it is inferred that some insoluble azotized principle is present which was not separated from the cellulose. No fat, resin, oil, or starch was contained in the specimen analyzed.

The analysis of this curious fungus, or parasitic growth, by Dr. Torrey, describes it as chiefly composed of a substance which he called sclerotine. He considered this principle to be identical with pectin, a substance since discovered. It is not impossible that the extremely hard and dry condition of the material, evidencing its subjection to a temperature sufficient to change at least its physical character somewhat before its receipt at the laboratory, may account for this discrep-

ancy in percentage of soluble matters. It is, however, certain that tuckahoe possesses a very small nutritive value.

POUDRETES.—A sample of poudrette analyzed recently will serve to introduce the subject of fertilizers. It contained in 100 parts:

Moisture.....	11.23
Organic matter.....	6.96
Phosphates.....	1.72
Ammonia.....	none.
Mineral matter.....	80.09
	<hr/>
	100.00
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Mineral matter insoluble, (sand).....	67.93
Soluble in acids.....	12.16
	<hr/>
	80.09
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This poudrette has lost all its ammonia in the process of manufacture, and the original manure has apparently been mixed with about twice its weight of worthless material, probably with the view of absorbing and retaining the liquid portion. One hundred tons would be worth, (approximately):

6.96 tons organic matter, at \$2 50.....	\$17 40
1.72 tons phosphates, at \$1 50.....	258 00
12.16 tons soluble salts, at \$5.....	60 81
	<hr/>
	335 21
	<hr/>

Or about \$3 35 per ton.

Name, "Dogan's Poudrette;" sample left by John J. Shipman, Lewisville, Fairfax County, Virginia. Price stated to be \$20 per ton.

## SCIENTIFIC NOTES.

REFRIGERATION OF WARM-BLOODED ANIMALS.—In a series of experiments upon the refrigeration of warm-blooded animals, by Dr. Horvath, a young dog was cooled to such a degree that the temperature in the rectum descended to 40° Fahrenheit; yet the animal on the application of heat revived, perfectly uninjured.

In another experiment, where the same region in a rabbit indicated 45°, and in a cat 49°, neither the action of the heat nor of the respiratory movement could be perceived. On the restoration of warmth by pouring warm water over these animals, (which had remained for an hour in a state of apparent death,) spontaneous contractions of the heart, which had ceased for an hour, were observed. The electrical current applied directly to the muscles induced energetic contractions in the same muscles which, before the warmth was applied, were insensible to the strongest electrical action. Another interesting and important fact was, that in an animal which was first refrigerated and then warmed, it was not possible to excite the action of the muscles of the skeleton by even the strongest electrical stimulus when applied to its nerves, while the same muscles, on the direct application of the current, contracted energetically. The fact that we can separate nervous and muscular energy from each other by this agency, which hitherto it has only been possible to do by the employment of curare, promises to be

of good service in future researches concerning the physiology of the muscular and nervous systems.

**PREPARATION OF PEAT.**—Mr. Alloway has lately delivered a lecture upon peat, before the Society of Arts of London, in which he points out the difficulties that have hitherto prevented the utilization of this substance as a fuel. He adverts to the expensive apparatus used by various persons for treating it, and especially for condensing the peat by pressure, and states that it is impossible to do this satisfactorily by the ordinary means, owing to the peculiar spongy structure of peat and the difficulty of drying it. His method consists in first breaking up the freshly-cut clods with a mallet, by which they are disintegrated, after which they are to be placed in a ditch in the peat-bog, filled with water where they are to remain, forming a thick mush, until the time comes for further treatment. Early in April the operation of making into bricks is commenced, and a small quantity is taken up at a time and molded rapidly by hand into pats, which are then laid upon slats and allowed to drain and dry; this being generally accomplished in the course of a few days.

**METAMORPHOSIS OF ALBUMINOUS SUBSTANCES IN THE BODIES OF ANIMALS.**—In the investigations upon the metamorphosis of albuminous substances in the bodies of ruminants, by Stohmann, Frühling, and Rost, it has been shown: First, that the whole of the albuminoids undergoing decomposition in the organism appear in the form of oxidation products in the solid and liquid excretions. These results were obtained with food not only poor but also rich in nitrogen. Second, the metamorphosis of albumen is dependent on the quantity of albumen in circulation in the organism. As a rule, the metamorphosis of albumen rises and falls with the albumen in the food. The increase of albuminous matters, above a certain quantity, is a waste with adult animals. Third, the imbibition of large quantities of water increases the metamorphosis of nitrogenous matters. Fourth, the excretion of nitrogen quickly adapts itself to an increase of nitrogen in the food. Fifth, with an insufficiency of albumen in the food the body becomes poorer in albumen. A goat which daily consumed in its food 8.27 grams of nitrogen excreted 11.1. The 2.53 grams lost daily correspond to 74 grams of flesh. The weight of the animal sank, in the ten days of the experiment, from 31.54 to 29.72 kilograms. Sixth, considerable increase of weight took place when, along with a sufficiency of albumen, larger quantities of non-nitrogenous substances were administered.

These experiments showed that the metamorphosis of nitrogenous nutritive materials takes place in the herbivora exactly according to the same law as Voit established for the carnivora; and that relative to the metamorphosis of albuminous matters there is no distinction between carnivorous and herbivorous animals, save that the nitrogenous products of decomposition assume a different form, so that in the herbivora a portion of the nitrogen takes the form of hippuric acid, a substance which is wanting in the carnivora.

**CHANGE OF MATERIAL IN ADULT SHEEP.**—Henneberg and others have been lately conducting a series of experiments upon the change of material in the adult sheep, under uniform feeding, the animals being two four to five year old wethers. These were fed with as much meadow-hay as was needed to keep them in good condition in regard to nourishment, while each had ninety grains of common salt daily, and as much water as they wished. The experiments were conducted with the assistance of Pettenkofer's respiration-apparatus. It was found that the

excretion of carbonic acid by the animals during the day-time was different from that during the night, but that this was determined, not by the amount of light and darkness, but by the distribution of food during the two portions of the twenty-four hours. The feeding was generally followed very soon by the excretion of carbonic acid. The excretion of water by the skin followed much the same rules as that of the carbonic-acid excretion. A parallelism was found between the excretion of the carbonic acid and of the water in twenty-four hours, both being greater or less as the consumption of nutriment or respiration material was greater or less. From this it would appear that, to economize food, it is necessary to protect animals from conditions which induce perspiration.

A certain medium temperature of the stall in which the animal is fed will be the most economical, since, while the lesser heat involves the necessity of a greater amount of food, an increased temperature, on the other hand, produces an increased consumption of water, and, in consequence, the increased transudation of water through the skin of the animal, produces a loss of heat of the body by conduction and radiation.

The result showed that the food consumed was slightly greater than that required to keep the body in *statu quo* along with a normal growth of wool, but not to an extent which had any real significance. The atmosphere contributed only one-sixth part to the material received, but, on the other hand, laid claim to nearly one-half of the material excreted. More than one-half of the organic substance of the food fell, directly or indirectly, to the process of respiration, while the growth of new wool absorbed not one per cent. of it. About eight-ninths of the residue were found in the fæces and one-ninth in the urine.

The oxygen excreted in the form of carbonic acid was nearly equal to that removed from the atmosphere, which is a general characteristic of herbivorous animals. The distribution of various mineral constituents of food, on their reappearance in the feces and urine, corresponds, on the whole, though not exactly, with their respective solubilities and dialytic relations. The two alkaline earths, lime and magnesia, appeared in relatively large proportions in the fæces—the lime in greater proportion than the magnesia. Similarly with the two alkalies and the urine, the potash was recovered therefrom in greater proportion than the soda. Of the phosphoric acid scarcely more than a trace was found in the urine.

**HUMATE OF AMMONIA.**—It has already been observed that plants grown on soil rich in silica and poor in humus contain less silica in their ash than those grown on soil poor in silica but rich in humus. Since an excess of silica is always present in soil, the amount taken up by a plant must clearly depend on other circumstances than the quantity at its disposal. Thénard has recently thrown light on the subject, by showing that humic acid forms, with ammonia and silica, very permanent acid compounds. These compounds are soluble in very dilute alkali, from which solution they can be separated unchanged. They lose nitrogen only at a high temperature. Humic acid does not combine with silica unless ammonia be present. It appears probable from these considerations that humic acid plays an important part in the economy of plant-growth. When seeds germinate on wet blotting-paper, a brown zone, having the reactions of humus, forms at some distance from the seed. The author concludes that humus is produced in this case from a soluble colorless body by the action of the atmosphere.



**PREPARATION OF BUTTER.**—It is quite a common belief that butter can only be made from sour milk, and chemists explain this on the ground that acidity is necessary to destroy the membrane which envelops the butter molecules, so that they are set free to combine with each other after shaking. Mr. E. H. Baumhauer thinks he has disproved this theory by the following experiment: He first carried fresh milk to his laboratory without shaking or exposing it; this he divided in four portions of half a gallon each, placing them in bottles of one gallon capacity. One he left neutral, viz, as it came from the cow; one was acidulated with lactic acid; one made slightly alkaline with carbonate of potash, (this became acid during the manipulation;) and the fourth received a greater quantity of carbonate of potash, and remained alkaline throughout. The temperature was about 70° Fahrenheit. These bottles were shaken violently for one minute by four men. When at rest wart-like grains adhered to the glass, which, under the microscope, looked like drops of fat of oval, but irregular shape, somewhat like mulberries. From minute to minute the shaking was interrupted; the globules uniformly increased, and after eighteen minutes yellow butter was obtained in all the bottles, in little masses like peas. According to our author, the lactic acid could have had no influence in dissolving the membranes of the globules, and, in fact, he doubts the existence of such membranes. He thinks that shaking at the proper temperature combines the floating particles of butter; when the milk is too cold no butter forms; when too warm, a kind of emulsion is obtained, which, at a low temperature, hardens, but is white and less translucent than good yellow butter. Mr. Baumhauer promises the best success in butter-making whenever proper attention is given to the temperature of the milk, which ought to be between the narrow limits of 65° to 70° Fahrenheit.

**PROPER KIND OF WATER FOR WASHING WOOL.**—Professor Trommer, of the Agricultural Academy in Eldena, in reference to the importance of the quality and chemical composition of the water used for washing the wool of sheep, whether before or after shearing, calls attention to the fact that the matter to be removed by washing is quite complex, and consists, in the main, of the non-volatile portion of the sweat, the grease of the wool, abrasions of the epidermis, the dust from the surroundings, and the dirt from the excretions of the animal. It has an alkaline reaction from the prevalence of potassium, either in the form of carbonate, or in its combination with grease as a kind of soap. Pure water readily dissolves these potash compounds, and the resulting solution is in itself a very good wash; but when the water contains lime, a decomposition takes place, and insoluble compounds of lime (either carbonate or soap of lime) precipitate upon the wool and are removed with the greatest difficulty. Hence the necessity of avoiding calcareous water. Professor Trommer mentions an easy way to detect the presence of lime, viz: a solution of soap in alcohol, when poured into a tumbler of water, will make it rapidly turbid whenever it contains salts of lime, while pure water remains clear for some time. When, however, necessity compels us to the use of hard water, the addition of some alkali is recommended, which shall precipitate the lime in solution as an insoluble carbonate. Caustic soda is the cheapest for that purpose. The author enumerates some of the advantages arising from the washing of the wool after being shorn, remarking that the quantity of water necessary for the operation being so much less, its qualities can be corrected much more easily and with less expense, and its temperature

made exactly suitable. Above all, the health of the animal will not be endangered, as is done by the old proceeding. The professor calculates that in the average 6,040 units of heat are consumed in the evaporation of the adhering water, which he thinks too heavy a tax on the animal economy.

**NITROUS AND NITRIC ACIDS IN SOILS.**—Investigations have lately been prosecuted by Chabrier upon the presence and functions of nitrous acids in soils. The soils examined were finely powdered and passed through a sieve, and then bleached, according to the method adopted in the saltpeter works of Algiers, for the purpose of determining the percentage of nitrous and nitric acids. As the result, it was ascertained that all tilled soils contained nitrous acid. Nitric acid, as is well known, is accumulated, especially in dry weather, in the superficial strata of the earth, the reverse being the case with the nitrous acid. Hence, it would seem that the soluble nitrates ascend in the soil by capillarity in dry weather, when they are transformed, at least in part, into nitrates, which, on the other hand, are washed out by the rain. The water of the soil generally contains 1 part of nitrous acid to 25,000 parts of water; never more than 1 part in 5,000. Fields which have lain fallow contain little nitrous acid but much nitric acid; while, on the other hand, forest land contains moderate quantities of nitrous and but little nitric acid; and inundated clay no nitrous and but little nitric acid. The author is of the opinion that the nitric acid, in spite of its slight percentage, is of importance in the earlier periods of vegetation.

**DISPOSAL OF THE NITROGEN OF MANURE.**—From more than twenty years of experiment, Laws & Gilbert have ascertained that harvest plants do not by any means take up all the nitrogen which has been put into the soil in the form of manure, or of ammonia, or other concentrated substances. Even if land be manured with the same amount of nitrogenous matters, and the same plants be cultivated, not half of the nitrogen is abstracted from the manure. Of the remainder, a certain part is to be met with in the form of ammonia in the drainage water, and a considerably larger amount occurs therein as nitric acid, a large part of the nitrogen being abstracted from the manure in this way. Of what is left, however, a very considerable portion is accumulated in the soil, and is carried into its deeper strata.

**SORBY ON TINTS OF FOLIAGE.**—We have already referred to the investigations of Sorby in regard to the various tints of foliage, and especially to the change of color in the leaves in autumn; and in a late number of "Nature" we find a *résumé* by him, giving the present state of his inquiries on the subject. He separates the different coloring matters into five groups: first, the *chlorophyl* group, characterized by being insoluble in water, but soluble in alcohol and in bisulphide of carbon, and embracing three or four species; second, the *xanthophyl* group, containing several species, only two of which are common in leaves, one being more and the other less orange. They are characterized by being insoluble in water, and soluble in alcohol and in bisulphide of carbon, differing, however, from the members of the first-mentioned group in having peculiar spectra; third, the *erythrophyl* group, comprising a number of colors soluble in water, in alcohol, and in ether, but insoluble in bisulphide of carbon. Those met with in leaves are more or less purple, are made bluer by alkalis and redder by acids; and thus sometimes plants containing the same kind may vary more in tint, owing to a variation in the amount of free acid, than others colored by entirely different kinds. Among the species some have very interesting botanical

relationships, being so far found only in particular classes of plants. Fourth, the *chryсотannic* group, containing a considerable number of yellow colors, some so pale as to be nearly colorless, and others of a fine, dark, golden-yellow. They are soluble in water, in alcohol, and in ether, but not in bisulphide of carbon. Of these there are two sub-groups, one in which a dark color is produced with ferric salts, constituting the tannic acid sub-group, and the other giving no such reaction, and forming the chryso-phyl sub-group. In both sub-groups the intensity of color is usually greatly increased by partial oxidization, and they are thus altered into colors of the following group. Fifth, the *phaiophyl* group, which comprises a number of colors insoluble in bisulphide of carbon, and of very variable solubility in water or alcohol. These are in that state of oxidization which has a maximum intensity of color, and are simply decolorized by further oxidization. Our author proceeds to state that the numerous tints of foliage depend almost entirely on the relative and absolute amount of the various colors of these different groups, although all their relationships cannot at present be explained.

The color of green leaves is mainly due to a mixture of chlorophyl and xanthophyl, and the variation in the relative and absolute amount of these easily accounts for the darker and brighter greens. The tints are also much modified by the presence of colors of the erythro-phyl group, which, according to circumstances, may give rise to lighter or darker browns, approaching to black or to reds. Healthy unchanged leaves also contain various substances belonging to the chryсотannic group; but in many cases when these belong to the more typical kinds of tannic acid, their color is so faint that they have little or no influence on the general appearance of the leaves.

On the approach of autumn, before the leaves have withered, the foliage of different plants presents an exceedingly variable mixture of chlorophyl, xanthophyl, and erythro-phyl, with the different members of the chryсотannin group, and it is to the changes which occur in some or all of these substances that the very variable tints of autumn are due. The most striking of these depend on the alteration of the chlorophyl. So long as it remains green the production of the bright reds and yellows is impossible; but when it disappears, the yellow color of the xanthophyl is made apparent, and if much erythro-phyl be present or contemporaneously developed, its color, combined with this yellow, gives rise to scarlet or red. In many cases, however, the chlorophyl does not disappear, but is changed into the dark olive modification, easily prepared artificially by the action of acids on the more green shades; and when this is present, only dull and unattractive tints can be produced. We may thus easily understand why the special tints of early autumn are yellows and reds, or dull and dark greens. In these changes the various pale-yellow substances of the chryсотannin group remain comparatively unaltered, and even sometimes increase in quantity, but they soon pass into the much darker red-browns of the phaiophyl group, while the erythro-phyl fades, and thus later in the autumn the most striking tints are the brighter or the duller browns, characteristic of the different kinds of plants or trees.

As far as we are able to judge from the various facts described above, we must look, according to Mr. Sorby, upon the more characteristic tints of the foliage of early spring as evidence of the not yet matured vital powers of the plant. In summer the deeper and clearer greens are evidence of full vigor and high vitality, which not only resist but also actually overcome the powerful affinity of oxygen. Later in the season the vital powers are diminished, and partial changes occur; but

the affinity of the oxygen of the atmosphere is nearly balanced by the weakened, though not destroyed, vitality. At this stage the beautiful red and yellow tints are developed, which produce so fine an effect in certain kinds of scenery. Then comes more complete death, when the affinity of oxygen acts without any opposition, and the various brown tints of later autumn make their appearance, due to changes which we can imitate in our experiments with dead compounds.

**HYDRATED LIME ON WATER-PLANTS.**—Bauer found small crystals on confervæ in a fresh-water pond, which, on further examination, he discovered to consist of a hydrate of the carbonate of lime, containing five molecules of water, precisely similar to those first discovered by Pelouze in a solution of lime in sugar, and subsequently detected in a well-tube. This hydrate is distinguished by the peculiarity of losing its water at a temperature higher than 59° F., even when under water.

**SUB-TROPICAL GARDENING IN ENGLAND.**—One of the most successful attempts at sub-tropical gardening in England is on the estate of Mr. Robert Were Fox, F. R. S., at Penjerrick, near Falmouth, in Cornwall. The temperature is here extremely mild in winter, the thermometer never falling below the freezing-point for more than two or three nights in succession, and hardly ever below 30° F., and snow never lying on the ground. Many trees and shrubs which are only seen in hot-houses in other parts of England here grow to perfection out of doors. The hydrangeas, covered with magnificent masses of blue flowers, here form splendid banks by the side of a stream running through the grounds, the small lakes in which are covered with several exotic species of water-lily, and the grass by the side carpeted with the selaginelle, which forms such a favorite bed for ferns in green-houses. There is a specimen of rhododendron 180 feet in circumference, and the camellias are everywhere loaded with fruit. The dragon's-blood tree (*Dracæna draco*) grows well out of doors, as also does the Australian gum tree, (*Eucalyptus globulus*.) There is a magnificent specimen of the camphor-tree, (*Laurus camphora*,) and several of the rare *Benthamia*. Several marmosets are allowed free liberty in the grounds, climbing to the tops of the highest trees, and always returning to the house at night. At a spot on Falmouth Harbor called Flushing, the temperature through the year is even still more equable, and the establishment of a tropical garden there would probably be attended with the most successful results.

**THE JARDIN D'ESSAI IN ALGIERS.**—The French government established many years ago in Algeria a "jardin d'essai," in which all plants likely to be easily grown in Algeria, and which might be useful either for their ornamentation or from their economic value, should be kept for distribution or for sale. The Société Générale Algérienne has now the control of these gardens, and, under the able management of its present president, M. Auguste Rivéro, they have attained great interest and importance. An avenue was planted in 1847, which now consists of about eighty trees of the date-palm, from 20 to 50 feet high, and about one hundred and fifty of the dragon's-blood tree, (*Dracæna draco*,) about 8 feet in height. All the trees were, in last December, in full flower or fruit. Among the more remarkable of the smaller avenues is one formed of bamboo, (*Bambusa arundinacea*,) planted in 1863, and forming an immense mass of foliage, the stems supporting which are from 40 to 50 feet high; and another formed of about one hundred plants of *Chamærops excelsa*, each being about 10 feet in height; other palms which flourish

to perfection are *Caryota wrens* and *C. Cumingii*, growing 15 feet high and covered with fruit; *Oreodoxa regia*, from Cuba; several plants upward of 25 feet in height, and a plant of *Juboa spectabilis* 12 feet high. There is a small forest of *Anona cherimoya* in full fruit, which is nearly as good as that of the closely related species which yields the custard-apple. Near this is an immense tree, some 30 feet in height, covered with fruit of the Avocado pear, (*Persea gratissima*,) and at its feet a quantity of guava-trees (*Pisidium cattleyanus*) crowded with its perfectly ripe, large, pear-shaped, golden fruit. In the New Holland district of the garden are different species of acacia, many of them 20 to 25 feet in height, and magnificent trees of several genera of Proteaceæ, *Banksia*, *Hokea*, and *Grevillea*; and trees of *Eucalyptus globulus* planted in 1862, and then only a few inches high, which are now about 40 feet in height, and over  $4\frac{1}{2}$  feet in circumference. There is a specimen of *Araucaria excelsa* about 60 feet high, and measuring a little over 9 feet in circumference at its base.

**ARTIFICIAL PREPARATION OF MILK.**—One of the latest enterprises in organic chemistry consists in the preparation of artificial milk, which has been attempted by Dubrunfaut, and which he claims to have accomplished by emulsifying fatty matters with an artificial serum. This is done as follows: 40 or 50 grams of sucharine matter (lactin, cane-sugar, or glucose,) 20 or 30 grams of dried albumen. (the dried white of egg as met with in Paris,) and 1 or 2 grams of crystals of soda carbonate, are dissolved in a half liter of water, and the whole is emulsified with 50 or 60 grams of olive-oil, or other comestible fatty matter. The emulsification takes place best at a moderate temperature, that of  $50^{\circ}$  or  $60^{\circ}$  being sufficient. The liquid thus prepared has the appearance of cream, and requires to be mixed with twice its volume of water to acquire the consistence and aspect of milk. To prepare a fluid approaching cream in its qualities, gelatin is substituted for albumen; 100 grams of fat are emulsified in a liter of serum, containing 2 or 3 grams of gelatin. Artificial cream prepared in this way, shows no tendency to separate into fat or serum.

Gaudin, in discussing the preceding suggestion, gives his testimony as to the depriving fats of all unpleasant odor by mere subjection to an appropriate temperature. He also states that very good artificial milk can be prepared from bones rich in fat, by purifying this fat by means of superheated steam, and combining the fat thus obtained with gelatin. This milk is, he says, almost like that of the cow; and, when kept, acquires first the odor of sour milk, then that of cheese. The gelatin in it represents the caseine; the fat, the butter; the sugar, the sugar of milk. It serves for the preparation of coffee and chocolate, of soups and creams of excellent flavor, and its cost is but trifling.

## MARKET PRICES FOR FARM PRODUCTS.

Articles.	November.	December.	
NEW YORK.			
Flour, State .....	per barrel..	\$6 00 to \$7 30	\$5 80 to \$7 10
western .....	do.....	6 00 to 9 25	5 80 to 9 25
Wheat, No. 1 spring .....	per bushel..	1 54 to 1 55	-----
No. 2 spring .....	do.....	1 49 to 1 52	1 50 to 1 55
winter and amber, western .....	do.....	1 55 to 1 65	1 58 to 1 67
Corn, new western, mixed .....	do.....	75 to -----	76 to 78
old western, mixed .....	do.....	76 to 77	78½ to 80
Rye .....	do.....	Nominal.	90 to -----
Barley .....	do.....	72½ to 1 02	90 to 1 30
Oats, western, mixed .....	do.....	50 to 51	55 to 77
State .....	do.....	52 to -----	54 to -----
Hay, shipping qualities .....	per ton.....	22 50 to -----	22 00 to -----
prime .....	do.....	24 00 to 31 00	24 00 to 32 00
Pork, mess .....	per barrel..	13 00 to -----	13 45 to 13 50
prime .....	do.....	9 50 to 10 00	10 50 to -----
Beef, mess .....	do.....	7 00 to 11 00	7 00 to 11 00
extra mess .....	do.....	11 00 to 14 00	11 00 to 14 00
Lard .....	per pound..	9½ to 10¼	9 to 9¾
Butter, western .....	do.....	12 to 23	12 to 23
State .....	do.....	15 to 34	21 to 33
Cheese, dairy .....	do.....	11 to 12½	11 to 12½
factory .....	do.....	12 to 13½	12 to 14
Cotton, ordinary .....	do.....	16¾ to 18½	16½ to 18¾
middling .....	do.....	18¾ to 20¾	18¾ to 20¾
Tobacco, sound lugs, light grades .....	do.....	7½ to 8	7½ to 8
sound lugs, heavy grades .....	do.....	7¾ to 8½	7¾ to 8¾
common leaf, light grades .....	do.....	8¼ to 9¼	8¼ to 9¼
common leaf, heavy grades .....	do.....	8½ to 10	8½ to 10
Wool, combing fleece .....	do.....	-----	-----
extra, pulled .....	do.....	60 to -----	48 to 61
Texas, common to medium .....	do.....	-----	32 to -----
California, common .....	do.....	20 to 37½	20 to 43
BOSTON.			
Flour, western, superfine .....	per barrel..	5 75 to 6 50	5 50 to 5 75
extra .....	do.....	7 25 to 7 50	7 25 to 7 75
choice .....	do.....	9 00 to 10 25	8 00 to 10 00
Corn, yellow .....	per bushel..	88 to 90	86 to 87
mixed .....	do.....	86 to 88	82 to 85
Oats .....	do.....	50 to 57	51 to 57
Rye .....	do.....	95 to 1 00	95 to 1 00
Barley .....	do.....	90 to 1 12	75 to 95
Pork, mess .....	per barrel..	14 25 to 14 50	13 50 to 15 00
prime .....	do.....	11 00 to 12 00	11 00 to 12 50
Beef, mess .....	do.....	8 00 to 12 00	10 00 to 12 00
extra mess .....	do.....	12 00 to 13 00	12 00 to 13 00
Lard .....	per pound..	10¼ to 10¾	9¼ to 10
Butter, New York and Vermont .....	do.....	18 to 33	18 to 33
Canada .....	do.....	20 to 30	20 to 30
western .....	do.....	10 to 29	12 to 28
Cheese, eastern factory .....	do.....	10 to 14	10 to 14½
Ohio factory .....	do.....	10 to 13	10 to 13½
Hay, prime .....	per ton.....	20 00 to 32 00	20 00 to 33 00
Wool, western .....	per pound..	55 to 75	56 to 70
combing, and delaine fleeces .....	do.....	68 to 75	68 to 72
tub .....	do.....	-----	72 to 105
pulled .....	do.....	40 to 75	40 to 75

## Market prices for farm products—Continued.

Articles.	November.	December.	
CHICAGO.			
Flour, winter, extra .....	per barrel..	\$7 50 to \$8 25	\$8 00 to —
spring, extra .....	do.....	6 75 to 7 55	6 00 to \$7 00
Wheat, No. 1 spring .....	per bushel..	1 22½ to —	1 23¼ to —
No. 2 spring .....	do.....	1 19 to 1 20½	1 18½ to 1 19½
No. 3 spring .....	do.....	1 12½ to —	1 09 to —
Corn, No. 2 .....	do.....	47½ to 48¾	40¾ to 41½
rejected .....	do.....	44 to 45	38¾ to 40
no grade .....	do.....	—	—
Oats, No. 2 .....	do.....	30 to 30¾	31¾ to 32
rejected .....	do.....	26½ to 27	29 to 29½
Hay, timothy and clover, (on track) ..	per ton..	13 00 to 14 00	14 00 to 15 00
prairie .....	do.....	9 00 to 10 00	10 00 to 11 50
Pork, mess .....	per barrel..	12 75 to 13 00	13 00 to 13 10
extra mess .....	do.....	—	—
Beef, mess .....	do.....	8 25 to —	—
extra mess .....	do.....	9 25 to 9 50	10 00 to —
Lard .....	per pound..	8¾ to 8¾	8¾ to 8¾
Butter, firkin and tub .....	do.....	15 to 20	14 to 18
extra .....	do.....	22 to 25	23 to 25
Cheese, New York factory .....	do.....	15 to 15½	15 to 15½
western factory .....	do.....	12 to 14	13 to 14
western reserve .....	do.....	—	—
Wool, medium fleece .....	do.....	—	55 to 62
unwashed, medium .....	do.....	—	32 to 42
tub .....	do.....	—	61 to 75
CINCINNATI.			
Flour, family .....	per barrel..	6 75 to 6 90	6 60 to 6 90
extra .....	do.....	6 30 to 6 50	6 50 to 6 60
superfine .....	do.....	5 75 to 5 90	5 75 to 6 00
low grades .....	do.....	4 50 to 5 00	4 50 to 5 25
Wheat, No. 1 white .....	per bushel..	1 55 to 1 60	1 55 to 1 60
No. 2 white .....	do.....	1 50 to 1 55	1 50 to 1 55
No. 1 red .....	do.....	1 41 to 1 43	1 43 to 1 45
No. 2 red .....	do.....	1 40 to —	1 40 to 1 42
Corn No. 1 .....	do.....	56 to —	47 to —
new, ear .....	do.....	53 to 54	—
Rye, No. 1 .....	do.....	78 to —	79 to 80
No. 2 .....	do.....	76 to —	77 to 78
rejected .....	do.....	—	—
Barley, No. 1 .....	do.....	80 to —	88 to 90
No. 1 State .....	do.....	70 to —	75 to 80
Oats, No. 1, mixed .....	do.....	34 to 36	37 to 38
No. 2, mixed .....	do.....	35 to —	36 to —
Hay, tight-pressed .....	per ton..	16 00 to 17 00	15 00 to 19 00
loose .....	do.....	17 00 to 18 00	17 00 to 21 00
Pork, mess .....	per barrel..	12 00 to 12 50	12 50 to 13 50
prime mess .....	do.....	—	—
Lard, prime, steam .....	per pound..	8¾ to 8¾	8¾ to 8¾
Butter, choice Ohio .....	do.....	16 to 22	23 to 25
fair to good .....	do.....	—	16 to 18
Cheese, western reserve .....	do.....	13 to 13½	—
factory .....	do.....	14 to 14½	14 to 15
Cotton, ordinary .....	do.....	14½ to 16½	14 to 17¾
middling .....	do.....	17 to 18¾	17¾ to 19¼
Tobacco, lugs, West Virginia .....	do.....	—	5 to 6
lugs, Kentucky .....	do.....	9½ to 13	9½ to 11
common leaf, West Virginia .....	do.....	—	8 to 9
common leaf, Kentucky .....	do.....	13 to 16	13 to 16
Wool, tub-washed .....	do.....	65 to 70	65 to 70

## Market prices for farm products—Continued.

Articles.	November.	December.
CINCINNATI—Continued.		
Wool, fleece-washed ..... per pound..	\$0 50 to \$0 55	\$0 42 to \$0 55
unwashed ..... do.....	42 to 45	42 to 45
pulled ..... do.....	50 to 52	50 to 52
ST. LOUIS.		
Flour, superfine ..... per barrel..	5 00 to 5 25	5 10 to —
extras ..... do.....	5 50 to 6 90	5 75 to 7 00
choice ..... do.....	7 00 to 7 25	7 50 to 8 00
Wheat, spring ..... per bushel..	1 18 to —	1 32 to 1 33
winter No. 1 ..... do.....	1 60 to 1 70	—
winter No. 2 ..... do.....	1 50 to 1 53	1 55 to —
winter No. 3 ..... do.....	1 40 to 1 45	1 44 to 1 45
red ..... do.....	1 30 to —	1 33 to 1 55
Corn, mixed ..... do.....	41 to 41½	44 to 46
yellow ..... do.....	42 to —	46 to —
Rye ..... do.....	61 to 63½	70 to 73
Barley, winter ..... do.....	75 to 80	75 to —
spring ..... do.....	85 to —	54 to 75
Oats, mixed ..... do.....	37 to 38	36 to 38
yellow ..... do.....	—	—
Hay ..... per ton..	20 00 to —	22 00 to 26 50
Pork, mess ..... per barrel..	12 75 to 13 00	13 00 to —
Lard, tierce ..... per pound..	9½ to 9¾	8½ to —
keg ..... do.....	10½ to 10¾	—
Butter, choice ..... do.....	26 to 29	23 to 28
fair to medium ..... do.....	20 to 24	17 to 25
Cheese, factory ..... do.....	14 to 15½	14½ to 15
Cotton, middling ..... do.....	17 to 17½	17½ to —
Tobacco, sound lugs ..... per cwt..	7 00 to 8 50	6 75 to 8 00
common leaf ..... do.....	8 00 to 9 00	8 00 to 8 75
medium to good leaf ..... do.....	9 00 to 12 00	9 00 to 12 00
Wool, tub-washed ..... per pound..	60 to 69	58 to 67
fleece-washed ..... do.....	48 to 56	48 to 56
combing ..... do.....	35 to 43½	42 to 43½
pulled ..... do.....	—	—
NEW ORLEANS.		
Flour, superfine ..... per barrel..	6 00 to —	—
extras, (according to grade) ..... do.....	6 75 to 8 50	7 30 to 9 00
Corn, mixed ..... per bushel..	88 to 90	75 to 78
yellow ..... do.....	82½ to —	73 to 77
white ..... do.....	93 to 94	78 to —
Oats, choice ..... do.....	52½ to 53	53 to 55
Hay, choice ..... per ton..	34 00 to 35 00	40 00 to 42 00
prime ..... do.....	33 00 to —	40 00 to —
Pork, mess ..... per barrel..	15 25 to 15 75	14 50 to 15 00
Lard, tierce ..... per pound..	10½ to —	8¾ to 10¾
keg ..... do.....	12 to —	10 to 10¾
Butter, choice western ..... do.....	22 to 24	22 to 25
choice northern ..... do.....	32 to 33	33 to 34
common northern ..... do.....	—	—
Cheese, choice factory ..... do.....	14 to 16	14 to 15
western reserve ..... do.....	12½ to —	12½ to —
Cotton, ordinary ..... do.....	17½ to 17¾	16 to 17¾
low middling ..... do.....	17½ to 18	18 to 18½
middling ..... do.....	18½ to 18¾	18½ to 18¾
Tobacco, lugs ..... do.....	7 to 8	7 to 8
low leaf ..... do.....	8 to 8½	8 to 8½
medium leaf ..... do.....	9 to —	9 to 9½



## Market prices for farm products—Continued.

Articles.	November.	December.
SAN FRANCISCO.		
Flour, superfine.....per barrel..	\$6 50 to \$7 00	\$6 00 to \$6 25
extras.....do.....	7 25 to 8 00	6 75 to 7 75
Wheat, State.....per cental..	2 50 to 2 65	2 40 to 2 65
Oregon.....do.....	2 50 to 2 65	2 40 to 2 65
Corn, white.....do.....	2 00 to 2 05	2 10 to ———
yellow.....do.....	2 00 to 2 05	2 00 to ———
Hay, State.....per ton.....	22 50 to ———	25 00 to ———
Pork, mess.....per barrel..	19 00 to 22 00	20 00 to ———
prime.....do.....	18 00 to 18 50	18 50 to ———
Beef, mess.....do.....	14 00 to 17,00	17 00 to ———
Lard.....per pound..	12 to 13	11½ to 13
Butter, State.....do.....	35 to 50	35 to 50
Oregon.....do.....	20 to 25	20 to 25
overland.....do.....	20 to 35	20 to 35
Cheese.....do.....	12½ to 17	15 to 17
Wool, choice.....do.....	32 to 35	32 to 35
inferior to common.....do.....	18 to 25	18 to 20

## ITEMS FROM VARIOUS SOURCES.

**IMPROVEMENT OF AMERICAN COTTON.**—Mr. S. G. Godfrey, of Cheraw, Chesterfield County, South Carolina, responds to some interrogations on this subject, from this Department, as follows:

The experiments of our cotton planters recently have all aimed at an increase of production, without regard to the quality of staple, and with success, as is shown by the crops of the past few years, when, with our imperfect system of labor, we have been enabled to produce crops which will compare favorably with the largest crops made before the war, with the most perfect system of labor. I say "without regard to quality," because the most prolific variety of cotton with us, and the most popular (the Dickson,) is decidedly the shortest and coarsest staple we have. I have thought for some time that it would be to our interest to turn our attention more to the improvement of our staple, in order to place our prominence over the foreign staple on a surer foundation in the markets of Europe. I am afraid we cannot look to the farmer to make the start in this matter. So long as the Dickson cotton commands as high prices in the market as the Peeler and other improved varieties, the farmer will plant the Dickson, because it has the reputation of being the most productive. The Southern cotton farmer is poor, and cannot afford to risk experiments; besides, he is not a speculator; he is accustomed to make his money by hard labor. We cannot expect him to go to the expense and take the trouble to change his seed unless he is paid for it. We will have to look to the cotton dealers. If they would pay a higher price for improved cotton, I think the thing could be accomplished. Let the improved variety be quoted every day in the papers a few cents per pound higher than common uplands. The farmers would soon see it, would get improved seed, and in a few years we would have a staple as much better than our present cotton as the latter is now the superior of the Surats. The Peeler is the only improved variety that I am acquainted with. I have tried it three years, and find that it produces equally as much to the acre, and matures as well as our ordinary variety. The staple is finer and at least one-third longer.

**JUTE.**—Mr. John A. Bassett, of Salem, Massachusetts, in a note to this Department, accompanying specimens of jute manufacture, states that—

Cotten is baled almost exclusively in gunny cloth. It requires seven yards to the bale. All this, with the exception of 4,000,000 yards, is imported. The domestic cloth is preferred to the imported, and brings a better price in the market. All the imported cloth is made from long-fiber jute. The use of the butts for cloth making is the result of improvements in machinery made by Mr. John R. Norfolk, of this city. The value of the importation last year was something over \$5,000,000. The outer bark of the jute plant is difficult to remove, and nothing has yet been devised to supersede hand labor for this purpose. If the plant is to be cultivated in this country, a machine for this purpose will be indispensable. In India, with labor at a few cents per day, the fiber is produced at less than 1 cent per pound. The average cost of jute butts here is

4½ cents per pound; long jute, 6 cents. The cloth weighs 2¼ to 2½ pounds to the yard of 45 inches in width. The price ranges from 21 to 35 cents per yard, according to the season in which it is sold. In the bagging season it brings the highest price. The imported cloth is always a few cents cheaper. There are probably not over 200 looms in this country producing this cloth, and their existence depends entirely upon the tariff on imported gunny cloth.

**THE PEA-NUT CROP OF VIRGINIA IN 1870.**—The statement of Mr. T. B. Bowland, of Norfolk, Virginia, of the amount of the Virginia peanut crop for the year ended October 1, 1871, reports that the first consignment of the crop was received October 10, 1870, and were quite green, and that sales were made during the month at \$1 10 to \$1 50 per bushel. The highest prices were reached in March, \$2 65 to \$2 75, with a few sales of fancy at \$3 per bushel. In June prices fell to \$1 50 and \$2, with few sales. Nothing could be done in them in July, and little in August. In September the trade revived sufficiently to close out the stock on hand at \$2 to \$2 25 per bushel. The receipts of peanuts at Norfolk in 1868-'69 amounted to 139,178 bags; in 1869-'70, to 90,112 bags; and in 1870-'71, to 65,150 bags. The crop of 1868-'69 averaged about 3 bushels of 22 pounds to the bag; that of 1869-'70 was poor in quality, very light in weight, and barely averaged 2½ bushels per bag; the crop of 1870-'71 was good and heavy, and averaged fully three bushels to the bag. The statement estimates 10,000 bags taken elsewhere, which makes the total crop of Virginia 75,150 bags, or 225,450 bushels of 22 pounds. Mr. B. states that the present crop is large and of excellent quality.

**PREMIUMS FOR TOBACCO.**—A committee of the St. Louis Tobacco Association have raised \$10,000, to be awarded in premiums to tobacco growers of the West and South, with a view to the encouragement of this culture in those sections. The premiums are to be offered in classes as follows: 1st class, factory-dried dark leaf; 2d, dark and medium bright manufacturing leaf; 3d, bright manufacturing leaf; 4th, cutting tobacco; 5th, largest crop by any one planter; 6th, manufacturing leaf; 7th, factory-dried leaf; 8th, cutting leaf; 9th, black wrappers; 10th, factory-dried leaf. Premiums ranging from \$1,000 down to \$100 for the best in the classes named; and from \$700 to \$50 for less quantity and second best. Competition in the 1st, 2d, 3d, 4th, and 5th classes, open only to Missouri, Kansas, and Illinois; in 6th and 7th classes, open only to planters. All tobacco entered for premium is to be exhibited at St. Louis under the direction of the association.

**POTASH.**—The use of this product in agriculture has been increasing rapidly during the past few years, and the article is becoming one of considerable commercial importance, while the natural supply is being developed in practically exhaustless quantities. Vast deposits have been opened at the Stassfurth salt works in Germany, the magnitude of which may be inferred from the fact that at the present time more potash is being furnished from these mines—where, a dozen years ago, it was not supposed that a ton could be produced—than from the wood-ash sources of the whole world, 30,000 tons of the muriate of potash having been manufactured there during the year 1870. The surface salts (which hold the potash) at these mines are capable of supplying millions of tons. It is probable that the salt mines of this country will be found, upon careful examination, to contain potash, and we may confidently look for the rapid cheapening of this useful product. The exports of ashes, pot and pearl, from the United States for the fiscal year 1870-'71 were 13,169 hundred-weight, valued at \$103,249; in 1869—

70, 22,030 hundred-weight, valued at \$256,330; and in 1868-69, 20,686 hundred-weight, valued at \$161,731.

**ASPHALT WALKS.**—An economical asphaltting of walks is suggested in England, as, and upon trial, is said to have cost only 3*d.* per yard. The materials used were merely tar and burned turf ashes. The ashes were burned in large heaps in the course of converting old pastures into arable lands. The cost of burning 20 cubic yards was rather under 2*d.* per yard after the ground was plowed; the tar cost 1*d.* per gallon. The ashes were procured from the middle of a heap of a bright red color. About 450 square yards of walk were asphalted with 336 gallons of tar, rather less than one gallon per yard. The walks were quite firm with fine gravel before being operated upon with tar and ashes; only 10 cubic yards of ashes were required. The work was done by various systems. A strong stand, about a foot high, was placed against the ashes, shot down in cart-loads, and the barrels rolled upon the stand as wanted; a common pail was used to pour the tar upon the ashes; about a barrowful of ashes was mixed with the tar until saturated, so that, when patted with the back of a shovel, the mixture did not adhere to it; the mixture was then wheeled to the spot where required, laid upon the walk about an inch thick, patted down smooth, and sprinkled with dry ashes. The work was done in June and July, so that the surface generally became dry enough to roll in about half a day. The rolling cannot be overdone, and may be continued day after day for a week. The other methods were merely to hoe the walks, pour tar on them and then to throw the ashes over the tar, rolling as in the former process; or, by picking up the surface about two inches, smoothing down, applying the tar to soak the gravel, then adding dry ashes on the surface and rolling. The hoeing or picking of the walks is a much quicker process than by mixing the tar and ashes together first, but the latter makes the most finished job. A man may asphalt about 40 square yards per day.

**THE HOG CROP IN MISSOURI.**—The Missouri Democrat publishes a list of about 2,000 hog-growers of that State, with the number of hogs on hand, the latter footing up 65,914, against 53,041 last year, an increase of about 24 per cent. The number of hogs listed for taxation in the States of Ohio, Illinois, Missouri, Iowa, and Kentucky, in April, which includes only those six months old, is stated, on the authority of the several State auditors, to be 9,541,706, against 7,836,121 last year, an increase of 21 $\frac{3}{4}$  per cent. The average prices from 1850 to 1860, at St. Louis, were, for mess pork, \$14 62 $\frac{1}{2}$  per barrel; clear sides, 8 $\frac{1}{2}$  cents per pound; shoulders, 6 $\frac{1}{2}$  cents per pound; lard 9 $\frac{3}{8}$  cents per pound. From 1860 to 1870, mess pork, \$24 73 $\frac{1}{2}$ ; clear sides, 15 $\frac{1}{2}$  cents per pound; shoulders, 11 $\frac{9}{20}$  cents per pound; lard, 12 $\frac{3}{10}$  cents per pound. The average price of live hogs from 1850 to 1860 is stated to have been \$4 65 to \$5 43; from 1861 to 1870, \$6 11 to \$7 76. The lowest and highest yearly average prices of live hogs, per 100 pounds, in St. Louis, for 21 years, are given as follows:

1850	.....\$2 60 to \$3 27	1857	.....\$6 12 to \$7 23	1864	.....\$7 52 to \$10 48
1851	..... 3 42 to 4 65	1858	..... 4 70 to 5 67	1865	..... 8 45 to 10 94
1852	..... 4 52 to 5 50	1859	..... 5 06 to 6 71	1866	..... 7 48 to 8 90
1853	..... 4 31 to 5 19	1860	..... 5 19 to 6 71	1867	..... 5 46 to 6 83
1854	..... 3 80 to 4 65	1861	..... 4 02 to 5 10	1868	..... 6 13 to 8 17
1855	..... 4 80 to 6 25	1862	..... 3 05 to 3 80	1869	..... 8 66 to 10 57
1856	..... 4 65 to 5 46	1863	..... 3 75 to 5 19	1870	..... 6 66 to 7 65

**DISEASES OF HOGS.**—Mr. Walter Barnes, of Larissa, Cherokee County, Texas, writes to the Department as follows:

In May and June of 1870, the black jack, red oak, and hickory trees were infested with the large, black, striped caterpillar, which, on coming to maturity, fell to the ground, to burrow and to change to the chrysalis. Hogs ate them with avidity, and nearly all the sows lost their pigs before weaning time. In the fall there was a large bitter mast, and many hogs had the kidney worm; I know of none that died. They would be weak in the loins, frequently so weak as to drag the hind legs on the ground, for five to ten days, then gradually get stronger, and after a month or two get well, but with sunken loin and shrunken hams. I have now several in the latter condition, which I would not kill last winter, although they were fat and never got thin. I killed one hog, of which one kidney was entirely gone, the other only a skin full of living worms, with not a particle of the kidney tissue. I am feeding over two hundred head in all. Occasionally have a case of cholera.

[The caterpillar mentioned is probably an oak-feeding insect, *Anisota (dryocampa) senatoria*, the larva of which answers this description. It changes into a yellowish-brown moth. I have never before heard of their injuring hogs; if so, it is a new fact.—T. G.]

**SHEEP HUSBANDRY IN NEW MEXICO.**—During the summer of 1870, Colonel P. R. Skinner transported from Connecticut to his residence, at Cimarron Seco, Colfax County, New Mexico, 50 Cotswold bucks, imported from the flock of Robert Garnes in England. These he placed in a sheep run, with 3,000 native merino ewes, in a locality of favorable conditions, both of pasture and climate, for the growth of the sheep. At the lambing season, about the 1st of May, his ewes were in as good flesh as was desirable at the time, and the lambs of superior size and quality. Many of them weighed from 12 to 14 pounds when dropped, and increased to 20 and 25 pounds at the age of seven or eight days. He thinks the grade bucks will make a more eligible cross than the pure blood, from the fact that the latter produces a lamb rather too large for the capacity of the New Mexican ewes. In order to guard against danger from this source, he was obliged to exercise very great care. The Mexican ewes averaged but 1½ pounds per fleece, while the Cotswold bucks averaged 11 pounds. He estimates that the half-bloods, next year, will average 5 pounds. He does not find it necessary to provide any food for his stock, except the grass which is abundant both in summer and winter.

**SURFEIT OF CLOVER.**—*West Charlotte, Vermont.*—In looking over the report of diseases in cattle in the monthly report, I am reminded of a sick cow on this farm in March last. She would be taken about 9 or 10 o'clock in the morning with dizziness—keep going backward in a circle, and if she turned to the right in her backward march would often lick her right shoulder, or if to the left she took a turn a similar action was observed. These spells lasted about two hours each day; she was very fat when first taken, and in half an hour would look like a mere skeleton, and before night no one could discover that anything had ailed her. It was discovered that the cause was feeding bright-green clover hay, which was discontinued in her case, and the fits ceased; but ever after, if a little clover hay was given her, she would have a fit just in proportion to the amount of hay given. She was bled once, which is all that was done for her, and now is apparently as well as any of the cows. Her milk, during her season of dizzy fits, had a greenish hue. When she was first taken her calf was a week or ten days old.

**RAILROADS.**—Poor's Manual for 1871-'72 reports number of miles of railroad in operation in the United States in 1850, 9,021; in 1860, 30,635; in 1870, 53,399. Constructed in the decade ended in 1850, 5,508 miles; in that ended in 1860, 21,614 miles; in that ended in 1870, 22,764 miles.

The building of railroads was seriously interrupted during the war, but from 1865 to 1870 a fresh impetus was given to all railroad enterprises. In 1870 there were 6,145 miles constructed—more than in the whole decade ended with 1850. In 1850 the net merchandise tonnage of all the railroads was estimated at 4,500,000 tons; in 1860 it was 18,500,000 tons; and in 1870 it was 72,500,000, exclusive of coals, ores, and similar freights, and 95,000,000 tons including these items. In 1850 the tonnage was 400 pounds per head of total population; in 1860 it was 1,200 pounds per head, and in 1870 it reached 3,816 pounds to each inhabitant. The value of the tonnage per head in 1850 was \$29; in 1860, \$84; and in 1870, \$285. From 1850 to 1860 the increase in tonnage was  $1\frac{3}{4}$  tons for each added head of population; from 1860 to 1870, the increase was more than four times as large, or nearly 8 tons. In 1850 the average earnings per mile were \$4,000, or \$1 55 per head of population; in 1860 they were \$4,000 per mile, or \$4 90 per head; and in 1870, \$9,000 per mile, or \$11 75 per head.

**DIVERSIFIED INDUSTRY IN LOUISIANA.**—Richard H. Day, president of the Louisiana State Agricultural Society, in a recent letter to this Department, says:

You are doubtless aware of the great wants of the South at the present time—labor, capital, and a diversified industry. The latter will eventually bring the two former. Heretofore the culture of cane and cotton has monopolized the entire attention of our people. It is only within the last year or two that the folly of this course has begun to be appreciated, and that other crops have been cultivated. The failure of the cotton crop this year will strengthen and confirm this appreciation, and give stability to the culture of other crops. It has been demonstrated by actual trial that even in this latitude apples, pears, peaches, and, indeed, almost every fruit, can be raised as successfully as in the North; and, when proper cultivation is given, as large crops of corn. I have been raising corn on a few acres consecutively every year since 1867 and every year increasing the yield without any commercial fertilizers. This year the yield was over 100 bushels to the acre.

**CHINESE SUGAR-CANE.**—S. F. Taft, corresponding secretary of New Mexico Horticultural Society, in a letter to this Department, says:

The Chinese sugar-cane seed is decidedly a good acquisition. Crystals like rock-candy formed in the sirup made from it; (I suppose this would be termed grape sugar.) No effort was made by any one to granulate it. Where grown upon the same ground with the common Chinese, white, black, and red imphee, the sirup was lighter-colored, and of decidedly superior flavor. It was tested by four persons upon four different soils, holding its superiority upon all; that upon the white-oak soil being superior in quality, that upon the bottoms yielding the greatest quantity. It stood up well this dry season; don't know how it will do in a wet one.

**NORTH CAROLINA TRUCKERS.**—A correspondent writing from Goldsborough, North Carolina, says that the country around that place affords great facilities for market-gardening and fruit-culture. The soil and climate are favorable, and the access to northern markets convenient and quick. The trucker can ship his vegetables and fruit from this point at 10½ a. m. and have them in Washington, in the market, at 6 a. m. the next day. The afternoon picking, shipped at 9 p. m., will be in New York at 5 p. m. the next day. Crops are claimed to be fifteen to twenty days earlier than in the vicinity of Norfolk, and only five to eight days later than Charleston, South Carolina, while shipping facilities are quicker.

**FRUIT IN THE WALLA WALLA VALLEY.**—Mr. Thomas K. McCoy, of Walla Walla, Washington Territory, writes that he has apples, peaches, pears, plums, and various berries, in bearing, and has taken out from the States during the past year forty varieties of peaches and six of apricots. He claims to have planted the first peach-pit in that valley, and has had

peaches eight years in succession. He pronounces his region the best fruit country he has ever seen.

**THE DROUGHT IN UTAH.**—William Fuller, secretary of Eastern Gardeners' Club, Salt Lake City, writes that "on Sunday, October 8, we had a storm of snow and rain which continued, with intermissions, until Monday morning. This was the first moisture of any amount that we have had since the 13th of May, with the exception of one or two light sprinklings. The continued drought caused our mountain streams to greatly diminish, and, as a consequence, many of our garden crops have suffered, and some trees have died."

*Winter wheat in Nebraska.*—Robert W. Furnas, president Nebraska State Board of Agriculture, in transmitting samples of Nebraska grains to this Department, states: "Our fall crops could not look better than now, (November 7.) Our farmers are discarding spring wheat almost entirely, and sowing fall wheat. Put in with drill and rolled, the success of fall wheat is no longer doubtful." Another correspondent at Groveland, Nebraska, says: "A good many farmers have sown a little winter wheat this fall, and more would have been put in if the seed could have been procured."

*Improved swine in Iowa.*—A correspondent in Iowa City, Johnson County, Iowa, writes that there is considerable interest felt in that section in the improving of stock, especially hogs. Poland-Chinas take the lead; Chester whites rank next. Sales of shoats: Poland-Chinas, \$18 to \$25, for breeders; Chester whites, \$6 to \$12, for breeders. Hog crop large and fat now, selling at \$3 25 per cwt. Corn, 18 cents per bushel.

*Cotton-culture in California.*—The California Cotton Planters and Manufacturers' Association have purchased a large tract of land on Kern Island, in Kern County, for agricultural purposes, and propose to plant 1,000 acres in cotton the coming season, and several hundred acres in corn, potatoes, cabbages, onions, parsnips, carrots, &c. The prospectus of the company indulges in some rather extravagant calculations of product and profit of the area to be devoted to cotton-culture.

**NOVEMBER WEATHER IN KING GEORGE COUNTY, VIRGINIA.**—Our King George County, Virginia, correspondent writes as follows:

November is commonly one of the most pleasant months of the year in Eastern Virginia. The month just passed, however, has been exceptional. After the first week it was wet, rainy, and cloudy, and very unfavorable for our main farm work of this season, the gathering of the corn crop. The temperature has been low, falling with some regularity. There was very little ice formed until the last two days. Rains have been heavy and frequent. The mercury ranged from 70° on the 1st to 27° on the 30th. Rain-fall for the month, 3.62 inches. The average of the month for twenty-two years is 2.33 inches.

**HEAVY YIELD OF WHEAT.**—Mr. James Smith, of Cedarville, Washington Territory, writes to the Department as follows:

I send you a sample of wheat that I have raised the past season; 1,200 bushels on 26 acres of land, a trifle over 46 bushels to the acre. In the spring of 1870 the land was covered with brush and timber. I cleared the land the following summer, burnt it in August, got ready for sowing February 1, 1871, without plowing, and harrowed the seed in, finishing February 12. Finished thrashing September 7.

**ITALIAN BEES IN UTAH.**—A Utah correspondent writes that there were a number of Italian bees imported into that Territory last spring, and that they have thus far proved a decided success; in many instances, one hive producing four to six swarms, and 100 pounds of honey and upward. There is also a lively interest noted in relation to the importation of improved breeds of horses, cattle, sheep, and swine.

**GRASSHOPPERS IN UTAH.**—A correspondent in Cache County, Utah, writes that “the grasshoppers have not deposited any eggs in our vicinity, and we hope for better crop results next year.”

**DIVERSIFIED AGRICULTURE IN NORTH CAROLINA.**—A correspondent in Halifax County, North Carolina, writes:

It is evident that the effort to make a large crop of cotton, to the exclusion of most other farm interests, is the cause of the extensive wastes of second-growth pines and gulleys so common to the eye. Many of our people are waking up to the fact, and, so far as their shattered resources admit, are adopting a mixed husbandry. Information on agricultural subjects is eagerly sought by the more intelligent, and the system of rotation of crops, with its necessary concomitants, is beginning to elicit inquiry.

**PULASKI COUNTY, VIRGINIA.**—A correspondent at Dublin writes:

This county is a beautiful blue-grass country, and can compare with almost any other region except Kentucky. The stock of fat cattle shipping to Baltimore and other points from this county has been large this fall. Superior coal is found in the county, and iron ore of good quality is abundant.

**FISH-CULTURE IN ENGLAND.**—It is stated that, under the care bestowed by various associations and the legislature, food fishes are rapidly increasing in numbers in the rivers and estuaries of Great Britain. The increase in the salmon supply is especially noted. The total quantity of salmon sold at Billingsgate during the year 1870 was 3,859,184 pounds, an increase of 224,784 pounds over the sales of 1869. The total value is given at £213,059, or about 27½ cents per pound. The increase of salmon is not confined to the great salmon rivers. The fishermen of the Cornish rivers, the Fowey and the Looe, agree that where there was one salmon or salmon-trout ten years ago, there are fifty now. Mr. Cuthbert W. Johnson concludes an article upon the subject by remarking that—

It is evident that in protecting the fish in their migrations up streams, by keeping those waters free from the matters noxious to the fish, and from unlawful fishing, far greater things are yet to be accomplished in increasing our supply of fish. That our rivers may thus be made far more profitable than at present has been clearly proved by the results of the efforts made during the last few years. Our information on this national question has only recently been increasing. The same remark applies to our great sea fisheries; for it has only within the last few years been shown by the commissioners appointed to inquire into those fisheries that the value of the fish annually caught on the Great North Sea Dogger bank exceeds the value of all the yearly agricultural produce of the fine counties of Essex, Norfolk, and Suffolk.

**SOUTH AUSTRALIAN STATISTICS.**—The report on the crops and live stock of South Australia for the season of 1870-'71 states the area of land under cultivation to be 959,006 acres, against 850,576 acres the previous year. This was distributed as follows: Wheat, 604,761 acres, an increase of 72,626 acres; barley, 22,912 acres, increase 2,798 acres; oats, 6,188 acres, increase 1,750 acres; peas, 3,719 acres, decrease 133 acres; hay, 140,316 acres, decrease 1,583. The remainder is divided among other crops. The products were as follows: Wheat, 6,961,164 bushels; barley, 337,792, bushels; oats, 88,383 bushels; peas, 47,341 bushels; hay, 197,149 tons; potatoes, 9,563 tons; wine, 801,694 gallons; grapes sold, 35,847 hundred-weight. Average yields per acre: Wheat, 11 bushels 30 pounds; barley, 14 bushels 37 pounds; oats, 14 bushels 11 pounds; peas, 12 bushels 44 pounds; hay, 28 hundred-weight; potatoes, 57 hundred-weight. The cultivation of grape-vines occupies 6,131 acres, planted with 6,168,758 vines, of which 5,783,674 were in full bearing. The average product of vine in the last five seasons is 820,000 gallons, of which only 123,041 gallons have been exported. Fodder crops occupy 10,772 acres, and include wheat, barley, oats, lucern, artificial grasses, &c. Orchards and gardens cover 7,108 acres. The total

quantity of land of the province, exclusive of the northern portion, is 245,329,920 acres. Area sold, 4,198,999 acres. The live stock is reported as follows: Horses, 83,744, increase 9,916; cattle, 136,832, increase 17,135; sheep, 4,400,655, decrease 36,300; goats, 25,008, increase 11,031; pigs, 76,025, increase 12,199; poultry, 550,426, increase 182,587. The large decrease in sheep is accounted for by losses from drought, and overstocking in the far north, the absence of inducement for breeders to augment their flocks, and to the practice of boiling down and meat-preserving.

**THE ROAD-STEAMER IN GREAT BRITAIN.**—English papers publish an account of the trial trip of a new road-steamer, which made the run from Ipswich to Edinburgh by road, a distance of four hundred and fifty miles, in seventy-seven hours' traveling time. The engine is one of four now being built for the Indian government, under Thompson's patent, with India rubber tires, and is of 14 nominal horse-power, but which has been worked up to 80 indicated horse-power. Her weight is about 13½ tons; length, 15 feet; breadth, 8 feet 8 inches; height to top of chimney, 15 feet. The omnibus weighs about 3½ tons, and seats 21 passengers inside and 44 outside. The chief difficulties encountered by the engine on her journey appear to have arisen from foraging for water and coal. Since this trip she has made several of an experimental nature, in one of which she took 40 tons of gross load up a hill one mile in length, with an incline of one in seventeen. After a return journey to Ipswich, she will be shipped to India.

**INDIAN DEPARTMENT OF AGRICULTURE.**—A department of agriculture, revenue, and commerce has been created in British India, to take official cognizance of the following subjects: land revenue and settlements; advances for works of agricultural improvement; agriculture and horticulture; fibers and silk; studs and cattle-breeding; cattle disease; forests; meteorology; commerce and trade; customs, sea and inland; opium; salt; excise; stamps; minerals and geological survey; fisheries; industrial arts; museums; exhibitions; statistics; gazetteers; weights and measures; census; surveys, revenue, topographical, and trigonometrical.



# METEOROLOGY.

## OCTOBER AND NOVEMBER, 1871.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY THE OBSERVERS OF THE SMITHSONIAN INSTITUTION.]

Table showing the highest and lowest range of the thermometer, the mean temperature, and amount of rain-fall, (in inches,) for October and November, 1871, as reported by the observers at the stations named. Observations daily at 7 a. m., and 2 and 9 p. m.

Stations in States and Territories.	OCTOBER.					NOVEMBER.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
<b>MAINE.</b>												
State Ag. College.	10	Deg. 72	21	Deg. 27	Deg. 47.8	In. 7.50	1	Deg. 53	30	0	Deg. 29.0	3.58
Surry	23	71	21	27	51.0		21	49	30	4	30.9	
Bucksport	23	65	21	31	49.3	5.23	1	52	28	5	31.3	3.65
West Waterville.	11	74	21	28	50.3	6.94	1	48	30	4	31.1	3.87
Gardiner	10, 11	66	21	30	49.7	7.58	1	55	30	7	33.4	4.90
Lisbon	10	73	21	25	49.4	8.50	1	52	30	5	31.5	7.37
Standish	11	74	21	24	50.1	5.41	1	64	30	6	32.5	6.60
East Wilton							1	44	28	1	28.4	2.90
Norway	10	75	21	24	48.2	5.80	1	48	28, 30	2	29.4	5.40
Cornish	10	73	21	24	49.2	4.50	1	58	28	2	29.9	5.20
Cornishville	10, 11	72	21	27	50.8	5.90	1	61	30	2	30.6	5.01
<b>NEW HAMPSHIRE.</b>												
Stratford	10	78	21	19	45.2	4.80	1	50	28	-10	25.5	2.18
Whitefield	10	76	21, 25	18	45.4	5.74	1	60	28, 30	-5	26.8	2.16
Tamworth	11	76	21	19	48.0	5.13	1	50	28	2	29.2	4.10
Contookville	11	77	25	32	51.5	4.30	1	67	30	3	33.1	6.20
Amoskeag	15	74	21	18	48.5	5.63	1	58	30	3	31.4	6.41
<b>VERMONT.</b>												
Lunenburg	10	74	21	23	47.9	3.88	1	50	30	-6	26.8	1.00
Craftsbury	10	68	19, 21	18	43.1	4.02	1	48	28	-15	22.6	2.43
South Troy	10	80	21, 25	22	47.9	4.55	1	52	29	-5	26.7	2.78
Randolph	9	73	30	24	48.2	1.95	1	63	28	-9	28.5	3.60
Woodstock	9, 10	70	21	20	44.9	2.06	1	58	28	-9	26.6	2.83
Norwich	22	72	19	30	50.6	1.50	1	62	28	-1	31.4	2.70
Near St. Albans.	10	73	19, 21, 30	25	47.4	3.00	20	45	28	-6	26.7	0.70
West Charlotte	2	70	21	26	51.1	5.06	1	55	28, 30	4	32.2	3.28
Panton							1	54	28	-2	29.0	3.67
Castleton	10	72	21	25	49.9	4.12	1	58	30	-2	30.9	2.55
<b>MASSACHUSETTS.</b>												
Kingston	23	75	21	29	54.0	4.63	1	60	28, 30	10	37.7	4.55
Lawrence	10, 15	74	21	30	52.3	4.82	1	63	28, 30	7	34.1	4.14
Milton	10, 23	78	21	28	55.3	4.13	1	63	30	9	38.5	4.18
Cambridge	9	78	21	29	53.9		1	67	30	6	36.6	
North Billerica	9	76	21	24	51.5		1	64	30	6	34.7	
New Bedford, (R)	10	69	21	31	53.2	6.53	1	59	30	9	36.8	6.76
Do. (T)	10	72	21	28	53.9	7.12	1	60	28, 30	10	36.7	6.77
Worcester	9, 23	76	21	30	55.5	5.31	1	65	30	5	37.1	5.04
Lunenburg	15	74	21	28	51.9	5.36	1	63	30	2	33.7	4.62
Mendon	11, 23	73	21	25	52.5	4.10	1	63	30	6	34.0	3.10
Amherst	23	73	21	24	51.0	6.09	1	62	30	7	34.0	3.50

Table showing the range of the thermometer, &amp;c., for October and November—Continued.

Stations in States and Territories.	OCTOBER.					NOVEMBER.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
MASS.—Contin'd.		Deg.		Deg.	Deg.	In.		Deg.		Deg.	Deg.	In.
Richmond .....	12	75	31	27	55.1	.....	1	50	30	-2	30.1	4.56
Williams College.	9	74	21	25	49.3	2.00	1	60	30	-5	32.0	2.74
Hinsdale .....							1	66	30	-8	27.2	4.45
North Adams .....	2, 9	75	30	29	51.3	2.23						
RHODE ISLAND.												
Newport .....	10	74	21	32	56.8	6.06	1	61	30	10	39.8	4.13
CONNECTICUT.												
Columbia .....	23	80	20, 30	34	53.6	5.17	1, 18	58	30	6	35.4	4.63
Middletown .....	2, 10	73	21	25	52.5	3.60	1	63	30	11	35.6	4.06
Southington .....	23	73	22	29	52.6	6.05	1	61	30	9	35.2	4.15
Colebrook .....	9	74	21	20	50.0	6.48	1	62	30	0	30.4	4.34
Round Hill .....	23	75	21	33	53.6	4.98	1	64	28	8	40.7	4.30
NEW YORK.												
Moriches .....	23	76	21	30	57.6	5.23	1	62	30	18	42.2	5.59
South Hartford .....	2	76	30	30	52.1	3.50	1	72	30	-2	33.0	2.15
North Argyle .....	10	70	21	25	51.4	3.58	1	58	30	-5	29.1	2.65
Garrison's .....	15	76	21	31	52.3	4.47	1	67	30	13	36.9	3.99
Throg's Neck .....	23	76	21	32	55.9	.....	1	65	30	14	39.1	.....
White Plains .....	16, 23	73	30	34	54.6	.....	1	64	28	15	38.1	.....
Cooper Union .....	23	72	30	41	56.8	7.72	1	63	30	15	40.9	4.79
Brooklyn .....	15	75	21	32	54.5	5.35	1	66	30	15	40.8	4.37
Flatbush .....	15	76	30	34	54.3	2.40	1	63	30	15	40.6	7.18
West Day .....	9	71	21	26	48.7	2.85	1	51	30	-5	30.2	3.20
Glasco .....	23	77	21	30	52.8	2.88	1, 3	58	30	9	35.2	1.05
Minaville .....	5	74	19	32	51.7	.....	1	56	2	29.4	.....	
Middleburgh .....	8	80	30	32	54.9	1.30	1	68	28	8	36.5	3.00
Canton .....	5	77	21	26	49.4	1.71	20	47	30	-5	28.5	2.70
Gouverneur .....	10	76	25, 30	26	48.1	1.63	1	45	30	-7	27.2	1.83
North Hammond .....							3	55	30	-8	32.5	3.01
Fairfield Seminary							1, 15, 20	42	30	-5	27.7	.....
Cooperstown .....	9	77	21	22	50.0	1.97	1	58	28	-2	29.9	2.88
Lowville .....	18	87	30	26	48.5	1.42						
South Trenton .....	9	76	21	24	49.8	3.86	1	55	30	-3	30.4	5.43
Cazenovia .....	9	77	30	28	50.5	.....	1	59	30	3	30.4	.....
Oneida .....	9	78	21	30	52.4	4.38	1	52	28	4	31.9	5.83
Depauville .....	9	78	21	28	48.8	2.00	1	56	30	-3	29.2	3.83
Oswego .....	5, 9	75	21	31	52.4	1.62	1	59	30	8	33.9	3.73
Palermo .....	9	78	21	26	49.8	1.20	20	45	28	3	29.5	3.20
North Volney .....	9	78	21	29	52.2	.....	1	60	28, 30	7	32.3	.....
Waterburgh .....	9	78	21	20	47.9	.....	1	57	30	4	30.3	.....
Nichols .....	9	77	21	24	51.2	.....	1	60	30	10	34.0	.....
Newark Valley .....	1, 9	78	21, 30	20	47.9	2.10	1	58	30	4	31.1	2.80
Himrods .....	9	80	20, 21	28	50.9	1.38	1	60	30	6	30.9	2.70
Rochester .....	10	76	20	34	55.8	1.55	1	57	.....		33.0	3.70
Little Genesee .....	9	79	21	18	50.2	2.00	1	60	28, 29	9	31.2	3.83
Anglicia .....	9	77	21	23	49.5	2.15	1	58	30	7	31.1	1.64
Carlton .....	9	81	20	29	52.8	1.25	26	48	28, 30	12	32.8	3.40
Lockport .....	10	78	29	33	52.7	1.15	1	49	30	11	31.4	4.15
Buffalo .....	10	78	18	34	53.5	1.70	13	55	30	11	33.7	3.00
Jamestown .....	9	78	21	31	51.3	2.10	4	55	28	14	33.7	2.30
NEW JERSEY.												
Jersey City .....	15	76	21	32	56.1	6.94	1	65	30	14	39.3	4.71
Newark .....	15	73	21	32	53.5	6.03	1	64	28	13	39.3	3.99
South Orange .....	15	72	21	22	48.7	6.27	1	62	30	8	31.7	3.02
Trenton .....	11, 15, 23	75	21	36	58.2	5.99	1	64	30	19	42.5	4.83
Moorestown .....	5	79	30	31	55.5	5.51	1	63	30	20	39.1	4.37
Rio Grande .....	14, 23	84	19	39	61.4	8.50	1	69	30	22	41.2	10.13
New Germantown .....	11	76	21	27	52.5	5.10	1	66	30	14	37.3	4.60
Readington .....							1	62	29	20	40.3	.....
Vineland .....	15	77	21	30	53.5	3.35	1	66	29	20	40.4	5.18

Table showing the range of the thermometer, &amp;c., for October and November—Continued.

Stations in States and Territories.	OCTOBER.					NOVEMBER.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
<b>N. JERSEY—Con'd.</b>		<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>		<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>
Greenwich.....	23	76	21	35	57.2	3.40	1	66	29, 30	24	42.4	5.16
Atco.....							1	67	28, 29, 30	21	40.8	
Allowaystown.....							1	65	30	20	40.3	4.65
<b>PENNSYLVANIA.</b>												
Nyces.....	9	79	30	23	50.6	1.85	1	59	30	6	33.1	4.81
Dyberry.....	9	73	21	18	47.1	2.40	1	58	28, 30	6	31.4	2.70
Hamlington.....	9	74	30	28	52.6	2.02	1	57	30	6	34.3	2.29
Fallsington.....	23	77	30	31	55.3	5.40	1	64	30	20	42.3	3.80
Germantown, (M.).....	15	78	20	32	56.2		1	69	28, 30	20	37.7	
Philadelphia.....	23	77	21	35	57.7	3.89	1	66	30	24	43.0	3.97
Horsham.....	15	77	30	31	54.8	4.25	1, 2	64	29, 30	20	39.0	3.78
Plym'th Meeting.....	15	78	21	30	54.6	3.36	1	66	30	20	39.5	3.27
Egypt.....	15	78	21	25	52.5		1	63	30	15	37.6	
West Chester.....	5	77	21	29	53.2	4.80	1	65	28	20	39.2	5.37
Parkerville.....	23	75	29, 30	37	54.6	3.80	1	55	30	22	39.7	4.19
Factoryville.....	23	76	21	20	49.2	2.85	1	58	30	7	32.6	2.93
Reading.....	15	78	21	34	57.1	1.62	1	65	30	17	42.7	3.94
Ephratah.....	5, 23	76	1	38	56.1	2.14	1	56	28	19	38.6	3.44
Do..... (M.)							1	68	28	21	39.3	2.55
Tioga.....	9	78	30	16	45.2	1.15	1	50	30	2	28.9	1.60
Carlisle.....	15	76	30	33	54.7	3.30	1	62	29	23	40.9	3.35
Mt. Rock.....	15	77	30	26	52.5	2.39						
Fountain Dale.....	5	76	30	33	55.2	3.10						
York Sulp'r Sp'gs.....	23	82	21	31	53.8	2.90	1	59	29	22	38.8	3.40
Grampian Hills.....	5	78	21	24	47.5	2.88	1	57	28	12	31.5	4.71
Johnstown.....	9	85	21, 30	26	52.6	2.75	1	58	23	15	35.7	3.00
Greensburgh.....	5	80	19	34	54.5	4.15	4	62	28	22	39.6	3.93
Connellsville.....	5	81	19	30	54.4		1	60	23	12	37.7	
Brownsville.....	5	86	21	32	57.1		3	68	23	20	41.9	
Pittsburgh.....	5, 10, 26	76	21	34	55.1	2.40	26	63	23, 30	23	39.9	2.76
Greenville.....	5, 26	74	21	29	50.3	1.75	4, 13	52	28, 29, 30	20	34.1	4.75
Newcastle.....	5	77	{ 13, 17, } { 20, 21 }	32	55.1	1.70	4	54	23	15	36.6	2.75
Beaver.....							3	60	30	24	39.8	
Cannonsburgh.....	5, 9	85	21	29	52.6	1.79	4	64	23	12	37.3	1.92
<b>DELAWARE.</b>												
Milford.....	5	80	29	34	58.9	3.15	1	67	30	23	43.2	5.65
Dover.....	5	80	30	34	56.2	2.70	1	66	30	24	43.2	3.73
<b>MARYLAND.</b>												
Woodlawn.....	23	78	21	32	56.3	3.65	1	66	29	22	40.6	5.00
Fallston.....	15	78	21, 29	35	55.0	3.82	1	67	29	24	40.8	4.95
Woodstock Coll.....	15	77	30	30	53.4	3.32	1	66	29	23	39.3	4.84
Annapolis.....	15	80	19	36	58.9	3.69	1	69	30	26	45.4	4.27
Saint Iniges.....							1, 2	68	29, 30	30	45.5	5.09
Sam's Creek.....	15	75	30	31	55.5	2.27	1	60	29	22	40.2	2.54
Mt. St. Mary's.....	4, 5, 23	74	30	36	56.8	2.90	1	61	29	24	40.7	3.95
Frederick.....	5, 15	80	18	40	58.7	2.50	1	65	29	27	43.3	2.68
Cumberland.....	4, 5	70	30	34	54.1	2.60	5	69	29	25	40.6	2.25
Elicott City.....							1	69	29, 30	26	41.6	
<b>DIST. OF COLUMBIA.</b>												
Washington.....	4	77	30	30	57.5	3.45	1	67	29	28	44.0	3.85
<b>VIRGINIA.</b>												
Johnsontown.....	15	79	19, 30	39	60.5	4.10	1	69	30	23	47.1	4.70
Capeville.....	15	82	20, 29	48	64.6		1, 10, 20	68	30	32	51.6	
Hampton.....	15	82	29, 30	40	61.5	4.75	1	74	30	28	48.6	4.45
Comora.....	4, 23	80	29, 30	39	60.7	3.21	1	70	30	27	45.1	3.62
Vienna..... (W.)	4, 15	82	29	41	60.2	4.90	1	69	29, 30	28	44.0	4.10
Do..... (B.)	19, 20, 27	80	12, 13	48	63.0	5.00	10	82	29, 30	28	56.6	1.00

Table showing the range of the thermometer, &amp;c., for October and November—Continued.

Stations in States and Territories.	OCTOBER.					NOVEMBER.						
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<b>VIRGINIA—Cont'd.</b>												
Accotink .....	15	Deg. 80	13	Deg. 35	Deg. 56.1	2.85	1	Deg. 64	30	Deg. 27	Deg. 44.0	In. 3.71
Wolf Trap, near Vienna.	4, 15, 23	78	30	32	56.5	2.70	1	66	23, 29	24	43.8	3.70
Near Waterford..	4	83	21	30	57.0	2.90	1	66	29	20	40.9	3.00
Piedmont .....	15	80	30	32	55.1	3.10	1	68	29	22	41.6	3.20
Piedmont Station.	23	88	30	35	59.0	3.00	1	69	29, 30	26	42.6	3.25
Keswick Station.	3	82	29	35	59.5	1.80	1	69	30	27	43.9	3.40
Mount Solon.....	15	82	13, 19, 29	31	56.3	3.65	3	70	{ 17, 18, 29, 30 }	22	42.3	2.67
Lynchburgh .....							1	70	30	23	46.7	3.50
Wytheville .....	15	79	19	31	56.3	1.75	26	68	30	22	43.3	1.60
<b>WEST VIRGINIA.</b>												
Weston .....	27	78	19, 30	28	54.2							
<b>NORTH CAROLINA.</b>												
Tarborough .....	16	82	30	36	62.3	6.60	1	78	30	27	47.6	5.20
Oxford .....	4, 10, 15	78	19	38	61.0	2.70	1	68	30	26	46.5	4.50
Fayetteville (S.)	16	78	30	42	63.0	4.80						
Do (L.) .....	16	84	30	42	64.8	4.90						
Greensborough ..	10, 11	76	36	39	67.3	4.55						
Albemarle .....	17	86	1	33	69.0	3.83	27	80	17	22	46.6	4.73
Statesville .....	10	76	1	32	57.3	4.75	1, 27	70	16, 17	22	44.8	4.75
Asheville (A.) ..	10, 15	75	1, 20	36	57.0	2.80	26	69	29	26	45.1	2.20
Do (H.) .....							1, 27	74	17	22	48.0	
Charlotte .....	16	77	30	42	62.4		1	74	30	29	49.2	
Lenoir .....	23	72	13	39	57.7	3.50						
<b>SOUTH CAROLINA.</b>												
Gowdeysville ...	23	78	18, 19	50	64.2	4.80	1	78	16, 17	28	52.9	4.90
Greenville C. H..	28	82	12	49	61.9	5.00	27	82	16	30	52.4	3.66
<b>GEORGIA.</b>												
Berne .....	17	81	29	50	67.2	2.53						
Saint Mary's .....	11	84	29	56	73.4	4.78	1	84	16, 17	40	64.9	1.42
Quitman .....	16, 23	87	12	49	71.2	3.40	1, 27	80	17	35	62.3	5.40
La Fayette .....	8, 15	78	11, 12, 28	44	61.5	4.40	7	72	22	26	51.4	5.04
Macon .....	16	86	19, 20	52	67.3	2.25	1	80	17	34	56.1	8.25
<b>ALABAMA.</b>												
Huntsville .....	29	80	12	45	65.6	4.40	26	76	39	31	57.4	1.10
Moulton .....	15	75	19	41	62.9	4.40	9	67	22	30	50.0	1.35
Selma .....	6	86	12	46	70.6	1.60	6, 26	76	17	35	57.8	5.90
Carlowville .....	6	85	12	46	68.2	1.20	25, 26	76	30	35	55.0	8.74
Greene Springs ..	15	85	20	44	65.7	5.45	26	76	22	32	53.7	5.05
Coatopa .....	6, 15	84	28	44	66.0	3.80						
<b>FLORIDA.</b>												
Near Port Orange	6	83	3	65	74.9	3.86	1	84	15, 16, 17	43	67.5	2.18
Jacksonville .....	17	91	28	58	75.4	3.23	1	86	17	41	66.7	3.23
Picolata .....	23	86	29	61	76.1							
St. Augustine .....	24	90	28	62	75.9	1.00	1	90	16, 17	46	69.0	
Pilatka .....	17	92	2, 29	62	77.7	3.72						
Ocala .....	17, 26	96	2	60	68.0		24	93	16	40	70.1	
Tampa .....	22, 23, 31	84	19, 29	57	70.5	2.10	1	84	16, 17	42	64.3	2.80
Wellborn .....	18, 24	90	28	59	77.7	3.12	2	83	17	40	69.3	1.95
<b>TEXAS.</b>												
Clarksville .....	9	80	31	42	65.1		26	84	19, 30	33	54.9	
Near Clarksville.	5	82	31	44	63.7	8.45	26	82	19, 24, 30	30	49.8	4.43
Gilmer .....	3, 9, 23, 25	85	16	40	65.0	8.60						

Table showing the range of the thermometer, &amp;c., for October and November—Continued.

Stations in States and Territories.	OCTOBER.					NOVEMBER.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
<b>TEXAS—Cont'd.</b>												
Clear Creek.....	6	Deg. 89	31	Deg. 46	Deg. 69.2	14.88	4, 26	Deg. 80	30	Deg. 36	Deg. 58.3	In. 4.64
Houston.....	22	90	31	49	71.8	.....	25	87	19	32	54.8	.....
Greenville.....	5, 23	84	31	40	66.7	4.46	.....	.....	.....	.....	.....	.....
Oakland.....	.....	.....	.....	.....	.....	.....	26	82	30	32	56.1	0.70
Sand Fly.....	4, 8, 9	89	28	47	67.6	6.10	26	87	19, 20, 30	32	56.2	.....
Bluff.....	9	88	31	46	71.2	15.10	25, 26	83	30	32	58.2	2.88
Clinton.....	9, 14	86	31	46	68.5	10.65	26	83	30	34	58.4	1.50
Austin.....	9	87	31	45	66.0	7.22	26	82	30	30	54.9	4.14
San Antonio.....	4	90	31	44	66.0	7.09	26	82	30	32	56.8	2.16
<b>LOUISIANA.</b>												
New Orleans.....	{ 8, 14, 15, 16, 22 }	84	12	50	70.0	8.24	26	84	22, 30	42	60.0	7.95
Ponchatoula.....	25	90	20	50	73.4	12.50	{ 8, 25, 26, 28 }	82	23	35	60.3	11.52
Shreveport.....	14	85	28, 31	50	69.8	.....	7	81	30	28	54.9	.....
<b>MISSISSIPPI.</b>												
Marion Station.....	15	86	12	40	65.6	2.10	25, 26	82	15	30	59.1	7.50
Philadelphia.....	9, 15, 22	80	12	44	66.0	2.00	.....	.....	.....	.....	.....	.....
Grenada.....	5, 22	84	19, 20	41	62.9	2.80	26	80	22	27	52.0	4.52
Near Brookhaven.....	14, 22	88	12	46	67.7	4.00	26	84	20, 22	33	53.7	9.20
Columbus.....	5	82	12, 19	46	64.1	2.61	26	77	22	32	52.8	5.10
<b>ARKANSAS.</b>												
Pocahontas.....	.....	.....	14	37	.....	.....	25	77	30	26	45.7	2.60
Clarksville.....	5, 8, 25	82	12	40	60.5	7.95	26	72	20, 29	25	38.1	2.30
Mineral Springs.....	5, 8, 9, 10	88	19	38	60.5	3.75	5	74	19, 20, 21	26	45.8	2.10
<b>TENNESSEE.</b>												
Elizabethton.....	2	86	19	34	60.3	2.31	3	78	17	22	49.7	3.45
Tusculum College.....	.....	.....	.....	.....	.....	.....	26	68	17, 30	27	48.9	1.80
Knoxville.....	5, 6	78	12	36	58.4	4.77	26	66	30	26	46.3	2.61
Lookout Mount'n.....	4	79	12	42	63.7	6.12	.....	.....	.....	.....	.....	.....
Clearmont.....	5, 9	78	19	36	59.1	1.00	26	73	28	23	47.1	2.22
Austin.....	4, 8, 9, 25	80	12	36	60.7	2.05	4	72	21, 22, 24	26	45.8	2.20
Clarksville.....	5, 8	79	19	39	59.4	2.08	26	75	23	25	43.2	1.55
Trenton.....	20	86	12, 19	39	62.2	4.20	5, 26	77	29	25	47.3	1.20
La Grange.....	9, 25	82	7	43	63.0	3.00	26	78	30	24	49.1	3.70
<b>KENTUCKY.</b>												
Pine Grove.....	5, 9	78	19	34	54.1	2.44	26	70	23	14	41.1	2.83
Shelby City.....	9	78	19	38	58.2	2.51	5	68	23	22	43.8	2.68
Danville.....	9	80	29	41	59.9	1.34	26	74	23	22	44.9	2.33
Near Louisville.....	5	85	19	32	59.8	2.53	5	69	23	16	42.8	2.29
Blandville.....	.....	.....	.....	.....	.....	.....	5, 6	76	29	17	.....	2.35
<b>OHIO.</b>												
Salem.....	5	80	18	29	52.7	0.85	26	64	23	10	34.6	1.95
Martin's Ferry.....	5	82	19	31	57.1	.....	.....	.....	.....	.....	.....	.....
Painesville.....	5	76	28, 29	38	54.1	1.90	13, 26	51	29, 30	22	35.9	3.10
Baldwin's Univ., Berea.....	5	81	18	34	55.0	2.53	2	55	23	16	36.6	4.35
Adams's Mills.....	9	78	29	29	54.2	1.55	26	70	23	13	37.8	2.03
Pennsville.....	{ 4, 9, 23, 24 }	.76	29	27	59.2	0.90	26	74	23	14	34.7	1.70
Gallipolis.....	.....	.....	.....	.....	.....	.....	26	74	23	16	41.9	1.70
Oberlin.....	5	80	18, 28	33	53.3	0.45	{ 2, 3, 13, 26 }	54	23	10	34.2	2.05
Hudson.....	.....	.....	.....	.....	.....	.....	2	55	30	15	36.5	2.45
Sandusky.....	9	80	17	36	54.8	1.68	13	55	23	17	36.1	2.58

Table showing the range of the thermometer, &amp;c., for October and November—Continued.

Stations in States and Territories.	OCTOBER.					NOVEMBER.						
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain-fall.
<b>OHIO—Continued.</b>		<i>Deg.</i>	<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>		
Carson .....	5, 9	80	29	30	56.1	0.92	13	56	25, 30	20	33.2	1.00
North Fairfield ..	9	78	22	30	55.5	0.16	3	60	23	14	36.3	2.37
Westerville .....	5	82	29	26	52.5	0.88	5	59	23	8	36.9	3.32
North Bass Isl'd ..	5	80	29	33	55.6	0.73	2	54	30	18	36.8	2.31
Marion .....	9	78	29	26	52.7	1.16	5	57	23	10	34.9	3.41
Hillsborough .....	5	78	29	32	56.9	1.41	26	65	23	13	38.4	3.54
Bowling Green .....	5, 8, 9	85	29	25	56.1	2.80	3	65	25	9	37.7	3.30
Kenton .....	23	75	29	38	53.2	1.19	4	59	29	17	37.3	2.50
Bellefontaine .....	5	80	28	28	54.2	1.15	5	58	23	5	35.4	4.01
Urbana Univ .....	5	84	29	24	55.6	1.20	5	62	23	3	36.7	3.33
Bethel .....	5	83	12, 17, 28	34	60.3	1.13	26	69	23	8	38.5	3.30
Carthage .....	5	81	17	31	56.7	4.32	4	62	25	4	38.6	6.08
Farmer .....	5	83	17, 18	33	53.8	0.80	4	59	25	2	36.0	3.05
Jacksonburgh .....	5	83	28	34	58.0	1.70	4	66	23	10	39.7	3.05
Oxford .....	5, 9	82	1, 12	31	54.3	1.77	5	63	23	3	38.3	3.20
Mt. Auburn Inst. ..	5, 9	80	28, 29	36	57.5	1.07	5	65	23	14	41.0	3.50
Cumminsville .....	9	79	29	32	53.4	1.15	26	66	23	12	39.1	4.55
Cincinnati (H.) ..	5, 9	83	28	41	57.5	0.98	6	68	23	13	41.4	3.40
Do. (P.) .....	9	82	28	36	59.9	1.80	26	72	23	15	40.4	5.70
College Hill .....	5	79	1	37	58.6	1.35	26	70	23	9	39.0	2.70
<b>MICHIGAN.</b>												
Alpena .....	22	69	27	34	49.0	1.36	4, 9, 13	44	27	14	32.0	2.16
Detroit .....	5	84	21	25	52.0	1.45	2	55	23, 29	7	32.4	3.22
Monroe City .....	9	82	17	40	60.4	0.09	12	66	28	24	44.1	1.97
Ann Arbor .....	5, 9	79	18	33	53.9	1.10	4	53	29	9	34.0	2.49
Macon .....							4	57	23	9	33.3	2.40
State Agr'l Col. ..	6, 24	80	7	27	54.0	1.43	4	62	29	—2	32.1	1.75
Litchfield .....	5	79	20	26	52.6	2.38	3	62	22	9	31.4	1.58
Olivet College .....	2, 8	79	20, 28, 29	33	52.6	1.50	4	56	29	8	32.5	2.50
Grand Rapids (H.) ..	9	79	20	31	52.4	2.72	4	62	29	—2	32.3	2.43
Do. (S.) .....	8	76	20	31	51.6	2.71						
Northport .....	1, 9	75	28	33	50.2	5.62	4	50	29, 30	18	32.2	2.63
Benzonia .....	9	72	31	33	50.3	3.60	4	52	29	16	32.3	2.10
Copper Falls .....	1	72	27	27	42.7	3.40						
Ontonagon .....	1	68	{ 20, 26, 27, 28, 30, 31 }	32	45.2	3.30	11	48	2, 3	2	27.8	2.80
<b>INDIANA.</b>												
Fort Wayne .....	5	85	28, 29	32	57.6	0.85	4	68	25	4	37.1	2.85
Mt. Carmel .....	5	78	28, 29	36	57.9	1.50	26	66	23	10	40.0	1.90
Aurora .....	5	84	29	32	56.2	1.09						
Rising Sun .....	9	82	28	31	54.7	2.05	26	70	23	19	39.7	3.38
Vevay .....	5	84	28	35	57.5	1.00	5	67	23	13	42.1	3.12
Spiceland .....	5	84	28	29	56.6	1.73	4	64	23	2	39.9	3.23
Knightstown .....	5	84	28	27	57.0	2.05	4	65	23	0	37.5	4.46
Indianapolis .....	5	84	29	28	54.5	1.57	3, 4	64	22	6	39.1	3.34
Livonia .....							26	68	23	10	37.3	2.50
Laconia .....	5	84	19	37	58.4	2.64	26	73	23	16	42.0	2.29
Bloomington .....	4, 5, 9	78	17, 28	34	55.9	1.12	4, 5, 8	60	23	9	38.2	3.23
Merom .....	5, 9	81	28	34	60.7	1.00	8	68	23	8	39.3	2.53
New Harmony .....	5	83	7	38	58.9	1.87	8	69	23	15	41.2	2.26
<b>ILLINOIS.</b>												
Chicago .....	8	85	28	30	56.9							
Near Chicago .....							3, 4	66	23, 30	10		
Evanston .....	8	81	28	27	53.7	1.13	4	60	23	7	34.3	2.96
Mattoon .....	4, 5	88	28	34	60.9	5.00						
Marengo .....	8	82	28	21	50.5	2.97	4	58	23	—3	30.4	2.25
Aurora .....	3	80	28	24	55.9	3.31	4	63	23, 25	1	32.5	2.78
Louisville .....	4	88	16, 17	34	59.0	2.50	8	72	23	10	39.3	2.50
Belvidere .....	4, 8	86	28	22	54.2	3.45	3	63	23	—3	31.3	1.82
Sandwich .....	4	85	28	21	53.6	5.04	3	68	25	—3	31.9	3.70
Decatur .....	4	88	28	28	57.6	2.50	9	64	22	4	36.2	1.25
Wyanet .....							3	65	23, 24	—1	34.9	3.35

Table showing the range of the thermometer, &amp;c., for October and November—Continued.

Stations in States and Territories.	OCTOBER.					NOVEMBER.				
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature. Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature. Rain-fall.
ILLINOIS—Cont'd.										
	<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>	<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>
Hennepin... (O.)	4 88	28	26	58.0	1.10	4 67	23	2	35.1	2.80
Dubois.....	5 88	16	34	58.0	1.23	7 74	23, 29	11	38.8	1.62
Peoria.....	4 88	28	29	57.6	3.37	4 66	23	3	36.6	2.09
Havana.....	4, 20 88	28	26	55.2	3.05	4 66	24	0	34.4	1.95
Galesburgh.....	8 82	27	34	54.4	3.80	4 69	30	— 2	32.4	1.94
Waterloo.....	5 79	16	32	55.4	3.35	6, 8 64	29	5	36.0	2.10
Manchester.....	4 70	28	32	56.8	3.10	2, 4, 6 64	29	4	37.1	3.05
Near Manchester.....						4, 6 64	24	3	35.4	
Aundusia.....	4 81	28	32	55.9	1.23	4 64	29	— 2	35.2	1.36
Mount Sterling.....	4 78	28	40	58.4	4.20	3, 4 61	23	5	36.6	3.30
Oquawka.....	4 91	28	31	57.6	5.43	4 73	29	— 3	35.3	2.31
Angusta.....	8 83	28	30	55.8	5.61	3 68	29	— 3	34.6	2.76
Warsaw.....	4 92	28	30	57.5	6.73	2 67	29	0	34.2	3.83
Quincy.....	4 90	28	31	57.5	7.60	6 66	29	0	34.8	4.00
WISCONSIN.										
Manitowoc.....	22 77	28	28	50.1	3.35	2, 4, 7 50	23	8	32.8	1.20
Hingham.....	2 78	28	29	51.0	.....	4 51	23	4	31.6	.....
Milwaukee.....	8 82	28	27	51.8	2.72	3 51	23, 30	8	32.8	2.40
Geneva.....	1, 3, 4, 8 82	28	23	50.8	2.23	4 59	21	— 4	30.1	4.05
Waupaca.....	8 78	20	30	49.7	.....	3 56	23, 30	2	31.2	.....
Embarrass.....	1, 3 78	18	28	51.2	3.84	3 52	23	— 6	28.1	2.65
Edgerton.....	3, 4 82	28	26	53.7	1.60	2, 3 57	30	— 2	30.4	.....
Rocky Run.....	8 83	28	23	51.3	3.50	3 53	30	— 16	36.6	2.55
Madison.....	8 80	28	27	52.5	3.07					
Mosinee.....	1 75	20	23	45.2	6.20	3 53	23	— 13	25.3	.....
Baraboo.....	8 80	28	28	54.6	3.90	3 58	23	— 6	29.0	2.80
New Lisbon.....	8 88	27	22	53.4	.....	3 62	23	— 7	30.0	.....
Bayfield.....		27	24	43.8	.....	9, 12 48	23	— 2	27.0	.....
MINNESOTA.										
Beaver Bay.....	1, 3 70	27	25	44.8	3.30					
Beaver.....	8 80	27	24	46.4	2.70					
Afton.....	3, 4 75	31	28	50.8	3.00					
Saint Paul.....	1 78	31	23	47.5	1.98	2 57	29	— 11	27.6	1.34
Minneapolis.....	8 80	31	20	45.8	2.34	1 53	29	— 16	29.1	2.07
Sibley.....	4, 8 81	28	19	46.2	1.20	1, 3 53	29	— 25	23.9	1.93
Litchfield.....	4 75	31	16	43.7	2.40	3 46	29	— 23	20.7	1.80
New Ulm.....	4 88	31	22	50.4	1.69	1 60	29	— 14	25.9	2.29
IOWA.										
Dubuque.....	4, 8 82	28	26	53.2	2.79	3 64	29	— 2	31.9	5.33
Bowen's Prairie.....	4, 8 88	28	18	53.5	3.50	2 64	29	— 12	30.3	3.55
West Branch.....	3 81	28	22	52.0	2.87	3 62	29	— 11	29.0	4.42
Guttenberg.....	8 88	28	20	51.1	.....	3 62	23, 29	— 6	28.7	.....
Iowa City.....						3 56	29	— 10	28.9	3.99
Mount Vernon.....	8 84	28	23	51.1	.....	2, 3 60	29	— 13	29.4	3.26
Fort Madison.....	4 84	18	33	55.7	4.36	3 61	29	— 4	33.8	3.20
West Union.....	23 90	28	24	53.4	2.43					
Independence.....	8 88	28	25	51.5	3.35	3 62	29	— 14	28.1	.....
Near Independence.....	8 88	31	25	51.2	4.08	3 63	29	— 16	26.4	4.35
Cresco.....		28	19	.....	3.37	3 61	29	— 15	25.5	2.97
Rockford.....	8 80	27, 30 29	29	51.9	.....	3 58	29	— 10	29.3	3.60
Iowa Falls.....	8 82	31	28	54.7	0.62	3 58	29	— 10	28.6	3.56
Ames.....	8 69	23	25	53.2	1.80					
Algona.....	4 85	27, 28, 30 24	24	49.8	.....	1 60	29	— 18	27.2	.....
Afton.....	8 82	30	26	51.8	2.20	4 62	.....		34.0	3.70
Fontanelle.....	4 88	30, 31 27	50.9	2.20	.....	2 64	22	— 5	31.2	7.47
Grant City.....	4 88	31	22	52.1	1.10	2, 3 60	29	— 13	27.7	6.40
Sac City.....	4 88	31	20	49.0	3.25	1, 3 58	22, 29	— 12	36.4	4.10
Council Bluffs.....	4 86	30	26	52.2	1.95	6 74	22	— 6	31.5	3.35
Inst. Df. and Db. } Council Bluffs.						1, 6 64	29	— 3	31.2	3.61
Logan.....	4 86	30	23	53.7	2.20	6 68	22	— 8	29.8	3.85

Table showing the range of the thermometer, &amp;c., for October and November—Continued.

Stations in States and Territories.	OCTOBER.					NOVEMBER.				
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature. Rain-fall.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature. Rain-fall.
MISSOURI.										
St. Louis Univ. . . . .	4, 5	Deg. 84	28	Deg. 33	Deg. 60.0	In. 2.65				
Hematite . . . . .	5	93	{ 12, 16	33	58.6		3, 4, 6	8	29	Deg. 12 40.5 1.08
Rolla . . . . .	4	89	{ 11, 18, 19, 27	30	56.3	2.98	6	74	29	Deg. 11 38.2 1.69
Cave Spring . . . . .	5	89	18	30	55.9	7.00	5, 8	70	29	Deg. 8 27.2 3.90
North Springfield. . . . .	14	86	11, 18	34	56.3	5.64	6	74	29	Deg. 7 37.9 2.10
Mount Vernon . . . . .	5	85	31	37	57.9	8.65	8	79	29	Deg. 9 38.8 4.17
Kansas City . . . . .	4	91	30	34	58.0	3.87	6	76	29	Deg. 6 37.4 1.90
Nevada . . . . .	4	90	31	36	58.4	8.50	6	65	29	Deg. 8 38.3 2.41
Oregon . . . . .	4	92	31	30	55.9	2.42	5	75	29	Deg. - 3 35.4 3.73
Corning . . . . .	4	92	31	31	55.4	1.46	6	74	29	Deg. - 1 35.7 1.41
Saint Joseph . . . . .							5	71	29	Deg. 7 39.3 3.40
KANSAS.										
Paola . . . . .	4	92	31	28	56.9	5.58	5	75	29	Deg. 6 36.9 1.40
Baxter Springs . . . . .	4, 8	84	31	36	59.4	5.30	6	78	29	Deg. 10 39.3 4.12
Leavenworth . . . . .	4	90	31	32	55.4	3.19				
Atchison . . . . .	4	90	31	31	56.4	4.60	8	74	29	Deg. 0 4.00
Williamstown . . . . .	4	90	31	30	56.4	2.79	6	78	29	Deg. 0 3.30
Lawrence . . . . .	4	90	31	32	55.8	3.58	5	73	29	Deg. 3 35.9 2.42
Williamsburgh . . . . .	4	92	31	32	57.7	3.85	5	73	29	Deg. 4 37.2 2.27
Holton . . . . .	4	90	31	30	56.3	3.56				
Burlingame . . . . .	4	90	15, 31	31	56.3	3.25	6, 7	70	29	Deg. 2 2.95
Le Roy . . . . .	4	92	15	32	58.9	4.57	5, 7	75	29	Deg. 6 40.3 5.03
State Ag'l College . . . . .	4	91	31	31	57.6	1.14	5	72	29	Deg. 4 37.0 2.15
Council Grove . . . . .	4	89	31	30	56.3	3.35	5	72	27, 29	Deg. 8 36.5 2.40
Douglass . . . . .	4	94	15	26	56.5	3.55	5, 6	74	27	Deg. 6 38.4 2.30
Holden . . . . .	4	91	15, 30	29	56.6	0.10	6	78	27	Deg. 4 34.0 2.60
Olathe . . . . .	4	90	6	32	56.7	3.10	6	74	29	Deg. 3 34.8
NEBRASKA.										
De Soto . . . . .	4	90	30	25	53.3	1.18	1	66	29	Deg. - 8 29.4 3.82
Bellevue . . . . .	4	92	15	27	53.7	1.20	5, 6	69	29	Deg. 0 34.0 3.20
Nebraska City . . . . .	4	91	30	26	54.6	0.50				
Emerson . . . . .			30	22		1.40	4	72	29	Deg. - 10 31.9 2.55
Omaha Agency . . . . .							2	74	29	Deg. - 8 30.8 4.45
Santee Agency . . . . .	3, 20	85	31	20	50.4	0.25	2	73	29	Deg. - 16 27.0 2.65
UTAH.										
Coalville . . . . .	3	74	30	12	44.7		14	55	30	Deg. - 21 28.1 2.50
CALIFORNIA.										
San Diego . . . . .	18	88	29	52	64.6	0.00	21, 22	79	30	Deg. 41 57.2 0.90
Taylorsville . . . . .	2	87	30, 31	28	55.8		2, 4, 5	66	30	Deg. 15 41.8
Monterey . . . . .							1, 2, 3	90	30	Deg. 38 27.8 0.50
Mendocino . . . . .	2	86	30	50	62.5	0.30	10, 19, 21	70	30	Deg. 41 60.2 4.89
MONTANA.										
Deer Lodge City. . . . .	3	78	13	9	41.0	0.79				
Missoula . . . . .	4	79	29, 30	21	45.4	0.65	2	58	26	Deg. - 2 32.1 2.54
WASHINGTON.										
Union Ridge . . . . .	2	78	13	29	52.0					
Cathlamet . . . . .	2	59	13	33	50.2		14	57	6, 7	Deg. 30 44.3
Port Angeles . . . . .	2	59	28	44	51.8	6.92				
COLORADO.										
Denver . . . . .	3	85	14, 31	24	53.5	0.40	1, 2, 3, 4	70	30	Deg. 0 35.8 3.10
Fountain . . . . .							15	62	30	Deg. 10 33.4 0.79
OREGON.										
Portland . . . . .	1, 2	75	31	35	53.9	1.19				
Eola . . . . .	1	69	30	28	48.9	0.68				
Astoria . . . . .	16	64	28	40	51.6	3.85	1	56	29	Deg. 53 44.5 1.44
WYOMING.										
Laramie City . . . . .	1	74	14	4	40.0		1	64	30	Deg. - 20 28.1 1.20



## NOTES OF THE WEATHER.

OCTOBER, 1871.

*Orono, Me.*—Heavy frost 17th ; earthquake 19th.

*Bucksport, Me.*—Frost 1st, 8th, 17th, 19th ; a haze bearing the appearance of dense smoke.

*Mount Desert, Me.*—A gale the night of the 6th ; smoky 9th and 10th ; smart rain 12th and 27th ; hard frost 17th and 21st.

*West Waterville, Me.*—Flooding rain, doing much damage to railways and highways throughout the State ; first snow of the season, also a slight earthquake, 19th ; very smoky 23d ; average temperature  $3^{\circ}.71$  above that of the last seven years, and the average rain-fall 2.33 inches greater.

*Gardiner, Me.*—Month very warm, and wet ; mean temperature  $2^{\circ}.16$  higher, and the average rain-fall 2.91 inches greater, than for the last thirty-five years.

*Lisbon, Me.*—Severe rain 12th ; four inches fell from 8 a. m. to 1 p. m. ; streams higher than for forty years ; seven main bridges and all smaller ones, together with a house and barn, swept away and destroyed ; railroads badly damaged ; sun totally obscured by a dense smoke all day 23d.

*Standish, Me.*—Dense smoke 9th and 23d.

*Oxford, Me.*—Very smoky 9th, 10th, 13th, 22d, 23d ; sun entirely obscured at times ; heavy rain 12th ; high wind 20th.

*Cornish, Me.*—Ten days smoky ; earthquake 18th.

*Cornishville, Me.*—Month has been warm and pleasant.

*Whitefield, N. H.*—Atmosphere very smoky, making it impossible to determine the kind of clouds or amount of cloudiness, 8th, 9th, 13th, and 23d.

*Tamworth, N. H.*—Ground frozen 1st and 21st ; atmosphere very smoky 5th, 6th, 7th, 8th, 13th, and 23d.

*Contoocookville, N. H.*—Very smoky atmosphere 8th, 7th, 13th, 22d, and 23d.

*Dunbarton, N. H.*—It has been quite smoky on several days. There have been no great fires in this region.

*Lunenburg, Vt.*—Frost 1st, 8th, 14th, 20th, 21st, and 30th.

*Craftsbury, Vt.*—First snow 18th.

*South Troy, Vt.*—Rain and hail 4th ; light snow 18th, 19th, 20th, and 29th.

*Randolph, Vt.*—Dense smoke, smelling of fire, 13th. Smoke so dense as to make it difficult to read, affecting the taste and making the eyes smart, 23d ; springs and streams still low.

*Castleton, Vt.*—Air full of smoke 12th.

*New Bedford, Mass.*—Hard frost 1st, 19th, 21st, 28th, and 30th.

*Lunenburg, Mass.*—Very smoky atmosphere, with a strong smell of burning wood, the darkness at times making it difficult to read, 21st to 24th.

*Mendon, Mass.*—Very smoky 8th, 9th, 20th, 21st, 22d, and 23d ; wells low ; reservoirs empty.

*North Adams, Mass.*—Atmosphere so full of smoke that no clouds could be seen 23d, 24th, and 25th.

*Newport, R. I.*—First ice 21st.

*Southington, Conn.*—Very smoky 5th, 8th, 12th, and 24th ; first hard frost 21st.

- West Day, N. Y.*—Twelve smoky days.
- Cooperstown, N. Y.*—Month dry; springs and wells very low; dense smoky atmosphere 21st to 24th.
- Lowville, N. Y.*—First snow 28th.
- Cazenovia, N. Y.*—Hail 3d; frost 1st, 8th, and 13th.
- Depauville, N. Y.*—Frequent high winds; thick smoke 22d.
- Palermo, N. Y.*—Air full of smoke 22d and 23d.
- Newark Valley, N. Y.*—Very dry month; springs low; water scarce.
- Angelica, N. Y.*—Rain, hail, and thunder 3d; snow and rain 11th; very smoky 6th.
- Buffalo, N. Y.*—A gale 19th.
- Jamestown, N. Y.*—Wells dry during the month.
- Rio Grande, N. J.*—Heavy frost 19th and 30th.
- Vineland, N. J.*—Month pleasant; wells low.
- Fallsington, Pa.*—Frost 19th; ice 21st; dense smoke 24th.
- Plymouth Meeting, Pa.*—Month mild; frost 1st, 8th, 13th, 18th; ice 21st and 30th; high winds from 18th to 31st.
- North Abington, Pa.*—Dense smoke, affecting the eyes, 5th, 8th, 11th, 14th, 23d, and 24th.
- Ephratah, Pa.*—The month has been very smoky throughout, often obscuring the light of the sun.
- Carlisle, Pa.*—Temperature 3° above the average; rain-fall below the average for October; but few frosts.
- Connellsville, Pa.*—Dense smoke, brought by northwest wind, 6th, 7th, 8th; rain and snow 11th; heavy rain, with sharp lightning and thunder, 26th.
- Greenville, Pa.*—Frost 1st, 8th, 13th, 17th, 20th, 21st; less water in Chenango Creek than ever known before.
- Fallston, Md.*—Near midnight a northwest wind filled the house with a pungent smoke, alarming the inmates, 6th; dense smoke also 12th.
- Sam's Creek, Md.*—Month very dry till 25th; frost 1st, 8th, 13th, 19th, and 30th; first ice 21st; smoky 8th, 9th, 12th, 13th, and 14th.
- Johnsontown, Va.*—White frost 19th, 21st, and 30th.
- Capeville, Va.*—First heavy frost 30th.
- Wytheville, Va.*—A dry month.
- Fayetteville, N. C.*—Smoky 2d, 7th, 13th, and 31st; heavy rain night of 17th.
- Albemarle, N. C.*—Very smoky; wind northwest 7th, 8th, and 16th; high wind and copious rain night of 11th; a dry month, and unusually warm.
- Gowdeysville, S. C.*—Month unusually warm; not frost enough to injure the tenderest plants; violent shower 11th.
- Greenville, S. C.*—Atmosphere very smoky 8th and 9th.
- Moulton, Ala.*—Month mild and pleasant, the greater portion dry; no severe frosts; heavy rain 15th and 16th.
- St. Augustine, Fla.*—Month cool and pleasant, with frequent light showers.
- Clarksville, Tex.*—But little rain during the month, and no frost.
- Sand Fly, Tex.*—Month wet and cold.
- Delhi, La.*—White frost 11th.
- Marion Station, Miss.*—Slight frost 19th and 28th.
- Brookhaven, Miss.*—An exceedingly pleasant month; nine cloudless days.
- Elizabethton, Tenn.*—Month unusually warm and pleasant; no hard frosts.

*La Grange, Tenn.*—Dense smoke 4th; very smoky 11th to 14th; light frost 28th.

*Arcadia, Ky.*—Month warm and pleasant.

*Westerville, Ohio.*—Heavy frost 1st.

*Urbana, Ohio.*—Most of the month hazy and smoky; mean temperature higher than usual; ten days cloudless.

*Elmwood, Ohio.*—Streams lower than ever known before.

*Farmer, Ohio.*—Month remarkable for extensive fires, and want of rain.

*Sandusky, Ohio.*—Nine very smoky days.

*Bowling Green, Ohio.*—Month noted for fires on the prairies, in the woods and swamps, and smoke everywhere; also for scarcity of water.

*Mount Auburn, Ohio.*—First killing frost 29th.

*Grand Rapids, Mich.*—At nineteen observations smoke has been so dense that the clouds could not be seen.

*Litchfield, Mich.*—Severest drought within the memory of the oldest settlers; great destruction of hay and timber at the north of the village.

*Benzonia, Mich.*—Dense and almost impenetrable smoke the first sixteen days and the 23d and 24th.

*Copper Falls, Mich.*—A stormy, unpleasant month.

*Northport, Mich.*—Extensive fires in the State 8th; air hot in the evening, (8 o'clock,) almost suffocating, 8th.

*Knightstown, Ind.*—Still dry, and wells failing.

*Fort Wayne, Ind.*—The woods and prairies on fire in every direction; air full of smoke; wind hot and dry 8th and 9th; frost 17th and 18th; ice 28th and 29th.

*Rising Sun, Ind.*—Ohio River lower than for thirty years; width from bank to bank, 693.22 yards; month very dry.

*Chicago, Ill.*—Hurricane for a few hours 14th.

*Aurora, Ill.*—Dense smoke 24th and 25th.

*Louisville, Ill.*—Violent gale from the south all day; great conflagration in Chicago; a dry month; wells nearly empty.

*Manchester, Ill.*—Month dry; pastures unproductive; dews light; streams unusually low; fruit good and plenty.

*Hennepin, Ill.*—Smoky 4th, 5th, 23d, and 24th.

*Marengo, Ill.*—The drought that commenced the 1st ultimo, and continued to the 30th instant, was probably the greatest ever known here.

*Dubois, Ill.*—Great wind-storm from the southwest 9th and 14th; first killing frost 15th; drought still continues, 31st.

*Galesburg, Ill.*—Month very fine; warm days following the storms, and but little frost.

*Bayfield, Wis.*—Heavy frost 6th; rain 11th, 12th, and 13th; light snow 31st.

*Madison, Wis.*—Snow 31st.

*Bloomfield, Wis.*—Fierce fires have raged through our northern counties, destroying everything in the section burned; five hundred persons are said to have perished.

*Mosinee, Wis.*—Smoky 3d and 4th; woods on fire in a great many places 5th; fire in the woods, everywhere about us, 8th. This has been a beautiful season, but rather too dry.

*Embarrass, Wis.*—Furious fire in the woods, southeast and southwest, destroying everything before it, 1st; soaking rain, that stops the devastating fire, 14th; snow 31st.

*Milwaukee, Wis.*—Smoky; fires all the way from Lake Michigan to

Dakota. Chicago and several towns burned 4th, 5th, 9th; ice, 18th; snow and ice 27th; a rainy day 31st.

*Baraboo, Wis.*—Fine weather; too dry to plow; snow 31st.

*New Ulm, Minn.*—Frost 6th; ice 17th, 27th, 30th, and 31st.

*Whitewater, Minn.*—Snow 14th and 15th.

*Litchfield, Minn.*—Prairie fires raging 1st, 2d, 3d, 4th; dense smoke 3d and 4th; snow 9th; ground frozen 12th.

*Bowen's Prairie, Iowa.*—Month very dry.

*Rockford, Iowa.*—A much-needed rain 13th; many wells dry that never failed before; frost 15th.

*Fontanelle, Iowa.*—Smoky 1st to 8th, and 18th to 25th; ice 15th, 16th, 26th, 27th, 28th, and 30th; snow 31st.

*Algona, Iowa.*—There has been but little rain; a slight snow-storm 14th, since which the weather has been delightful.

*Guttenburgh, Iowa.*—First railroad train arrived 1st; grade of track one foot per mile; rain to just lay the dust 9th, 25th, and 26th; soft snow 31st.

*Independence, Iowa.*—Very smoky 2d, 3d, 4th; prairie-fires doing great damage; hard frost 6th; hard gale from the south 8th; snow 31st.

*Hematite, Mo.*—A high wind from the north, lasting a few minutes, brought a dense cloud of smoke 5th.

*Cave Spring, Mo.*—Many springs and wells dry; creeks and small streams all dried up; stock on the prairies suffering for water; ground too hard to plow 5th; ground getting wet; waters rising 27th. Two pelicans captured, the first ever seen here, 10th.

*Corning, Mo.*—Rained and snowed, and froze as it fell, 31st.

*Douglass, Kans.*—Heavy frost 6th, 10th, 11th, and 31st.

*Williamstown, Kans.*—Rain 30th; hail, followed by snow; trees loaded with ice 31st.

*Holton, Kans.*—Quite dry most of the month.

*Council Grove, Kans.*—Extensive fires on the prairies 1st, 2d, 3d; frost 2d, 6th, and 15th; everything covered with ice; limbs of trees breaking 31st.

*Le Roy, Kans.*—Month warm and pleasant; rain plenty from the middle to the last; no ice till 31st.

*Santee Agency, Nebr.*—Frost 6th, 10th, 14th, 15th, 16th, 26th, 27th, 29th, and 30th.

*Omaha Agency, Nebr.*—Month dry and pleasant; frost 16th; half inch of snow 24th and 25th.

*Emerson, Nebr.*—First snow 14th.

*Denver, Colo.*—First killing frost 3d; first and only snow 13th and 14th.

*Harrisburgh, Utah.*—Month pleasant and very dry; creeks lower than ever known before at this season; farmers have lost their crops by grasshoppers and drought. Bread will have to be hauled three hundred miles.

*Missoula, Mont.*—Showery 1st, 7th, 8th, 27th, and 28th; first ice in creek 13th; storming in mountains 7th, 8th, 24th, 25th, and 26th.

*Laramie City, Wyo.*—First snow, with heavy thunder and lightning, 8th; one inch of snow fell on plains and two feet on mountains 12th. Coldest day 14th.

*Indian Valley, Cal.*—Heavy white frost 10th, 11th, 14th, 28th, 29th, 30th, and 31st, with ice half an inch thick; frequent showers and snow on the mountains 27th.

*Cathlamet, Wash. Ter.*—A pleasant month; only four rainy days; heavy showers night of 26th.

*Portland, Oreg.*—Slight frosts 8th, 9th, 10th, 13th, 16th, 17th, 29th, 30th, and 31st.

NOVEMBER, 1871.

*Lisbon, Me.*—Unusually cold for November 28th, 29th and 30th; Androscoggin frozen so that men cross on foot.

*Gardiner, Me.*—Good sleighing 11th, 12th, 13th, and 14th; river closed 29th.

*Oxford, Me.*—Sleighing 10th to 17th, and 24th to 27th; terribly cold and windy 30th.

*Mount Desert, Me.*—Severe gale all last night, heavy rain, some snow and hail, highest tide for many years 16th; very cold 28th, 29th, and 30th.

*Contoocookville, N. H.*—Ten inches of snow fell 10th and 11th; heavy rain 16th; three of the coldest days ever experienced in November; mill-wheels stopped by anchor ice from the river 28th, 29th, and 30th. A cold month, rain and melted snow nearly twice the usual amount; ground frozen 8 inches.

*Stratford, N. H.*—Snow on seventeen days: the coldest November in seventeen years.

*Tamworth, N. H.*—Ground continued frozen throughout the day 5th; aurora brilliant and blood-red 9th; ponds closed over 28th; ground covered with snow from the 10th.

*Shelburne, N. H.*—The last three days said to be the coldest ever known here in November; Androscoggin River frozen over the earliest for more than twenty-five years.

*Dunbarton, N. H.*—An unusual amount of rain this month.

*Woodstock, Vt.*—Brilliant aurora borealis 9th; ponds frozen over 12th; boys skating 13th; river cleared of ice 16th; ponds frozen and boys skating again 28th.

*Norwich, Vt.*—Remarkably cold for the season 30th.

*Craftsbury, Vt.*—A cold November, remarkable for the extreme cold of its last three days; sleighing since the 25th.

*Lunenburg, Vt.*—A meteor observed east-northeast about half the diameter of the moon, and so bright as to cast a shadow, though the moon was shining at the time.

*Near St. Albans, Vt.*—A little snow 3d, 7th, 8th, and 11th.

*Panton, Vt.*—Sharp winter weather, but little snow, 30th.

*Randolph, Vt.*—Water froze one and one-half inch thick 5th; seven inches of snow fell 10th; rain carried off the snow 15th and 16th; weather mild from 15th to 21st; nine inches of snow fell 24th; weather very mild 25th to 28th; the coldest November in seven years.

*West Charlotte, Vt.*—Seven and a half inches of snow fell 11th; month unusually cold.

*Lunenburg, Mass.*—The 28th and 30th were the coldest mornings that have occurred in November in thirty-three years—the thermometer below zero in some places—a high wind, blowing at times a gale; these days have been seldom exceeded in severity in the depth of winter.

*New Bedford, Mass.*—An exceedingly cold day on account of the violence of the wind 30th. Ice prevented in the harbor by the wind.

*Richmond, Mass.*—Snow, hail, and rain, which froze on the trees and gave them a beautiful appearance for several days, 11th. Coldest November days we have ever known—ponds, &c., firmly frozen—28th, 29th, and 30th.

*Southington, Conn.*—A furious wind from 2 to 4 a. m., prostrating trees

and fences; the last three days of the month the coldest November days within the memory of the oldest inhabitants.

*Cooperstown, N. Y.*—Colder than any November in twenty-one years; the last three days severely cold; ground frozen 6 inches deep; very little rain; lake and streams as low as in August.

*Newark Valley, N. Y.*—Very cold and blustering 30th; streams low.

*Lockport, N. Y.*—Canal closed with ice 29th.

*North Hammond, N. Y.*—Mornings very cold 28th, 29th, and 30th; St. Lawrence River exceedingly low.

*Middleburgh, N. Y.*—The last three days of the month the coldest for the time of year remembered here; ground nearly bare.

*Palermo, N. Y.*—The coldest November in eighteen years.

*Canton, N. Y.*—First snow 7th.

*Garrison's, N. Y.*—Gale from northeast night of 14th and 29th; gale from northwest 30th; ponds frozen 8 inches.

*Brooklyn, N. Y.*—Gale from eastward with heavy rain 14th; first snow 16th.

*Depauville, N. Y.*—First snow of the season 2d; coldest weather in November remembered for forty years 30th.

*South Trenton, N. Y.*—A remarkable smoke, following immediately upon a change of wind to the west, filled the entire canopy; the odor was that of burning buildings 11th.

*South Hartford, N. Y.*—Colder than any November for the last ten years.

*Trenton, N. J.*—First ice 6th; first snow 16th.

*Vineland, N. J.*—Rains 1st, 10th, 20th, and 24th; most violent wind and rain storm 14th; snow in the night 21st; month colder than usual.

*Ephrata, Pa.*—First snow of the season 16th.

*Carlisle, Pa.*—The atmosphere this month has been particularly pure and salubrious, and general good health prevails among the people.

*Plymouth Meeting, Pa.*—A cold month, and the windiest on record; first snow 16th; violent storm of wind and rain, many trees prostrated, 14th; last three days severely cold.

*Dyberry, Pa.*—The coldest November for the past fifteen years; the last three days remarkably cold, forming ice 4 inches thick.

*Greensburg, Pa.*—First permanent snow 15th.

*Germantown, Pa.*—First slight snow 16th.

*Tioga, Pa.*—Very dry; streams, wells, and springs very low, 30th.

*Milford, Del.*—Gale with violent rain 14th; violent wind night of 15th; snow night of 28th.

*Dover, Del.*—First snow, light, 16th.

*Frederick City, Md.*—Ground frozen 3 inches deep, 30th.

*Fallston, Md.*—A few flakes of snow 24th and 28th.

*Sam's Creek, Md.*—Frost 12th; first snow 16th; snow and hail 24th; ground frozen 3 inches deep 30th.

*Wytheville, Va.*—The season has been remarkably fine, not enough snow at any time to cover the ground; ground frozen for the first time 30th; rain is much needed; springs are failing.

*Lynchburgh, Va.*—First killing frost 12th.

*Piedmont, Va.*—First snow 2d; heavy rain 14th; cold, with high wind, 15th and 16th.

*Statesville, N. C.*—First killing frost 15th—three weeks later than usual; two inches of snow 30th; early for the latitude.

*Gowdysville, S. C.*—Killing frosts, freezing the ground 1-inch 16th, 17th, and 18th; Very warm 27th; snow 30th.

*Greenville, S. C.*—First ice 15th; first snow 30th.

*Atlanta, Ga.*—First killing frost 16th.

*Macon, Ga.*—Thin ice 23d.

*La Fayette, Ga.*—First snow 30th.

*Moulton, Ala.*—The month damp, but mild and pleasant; first ice 16th; two inches of snow 30th.

*Carloville, Ala.*—The month has been very wet, but not cold—nothing killed on the uplands.

*St. Augustine, Fla.*—The month somewhat remarkable for cloudy and misty weather.

*Jacksonville, Fla.*—The only frost, 17th.

*Ocala, Fla.*—Frost 15th and 16th.

*Austin, Texas.*—Frost 19th, 20th, and 22d.

*Delhi, La.*—Frost 10th, 15th, 19th, 20th, 21st, and 22d; heat oppressive 25th, 26th, and 27th; cool 29th; storm of rain and sleet 30th.

*Shreveport, La.*—The rains have been very light; frosts very heavy; boating on the river good 30th.

*Grenada, Miss.*—Severe frost 10th and 15th; strong southeast wind with thunder, lightning, and rain 23d.

*Holly Springs, Miss.*—Deep snow for the latitude 30th.

*Pocahontas, Ark.*—First snow, succeeded by a sudden rise of the thermometer and a heavy rain, storm 23d.

*Mineral Springs, Ark.*—Frost 2d.

*Elizabethton, Tenn.*—There has been but little rain during the month, and the streams are unusually low for the season.

*Knoxville, Tenn.*—First killing frost 18th.

*Clarksville, Tenn.*—Frost 3d, 12th, 16th, 17th, 20th, and 21st.

*Blandville, Ky.*—First ice 11th; northwest gale with rain, which changed to snow 13th; ground, trees, and fences covered with ice 24th.

*Johnsonburgh, Ohio.*—First ice 11th.

*North Bass Island, Ohio.*—Heavy frost 3d; ice one-fourth inch 7th; first hard freezing of the ground 16th.

*Salem, Ohio.*—A very dry month; wells and springs have failed; water scarce.

*Kenton, Ohio.*—First snow this fall 14th.

*Litchfield, Mich.*—Snow to cover the ground 22d; springs very low; rain enough to prevent fires from running, but in many localities the muck is still on fire and undermining the timber 30th.

*Alpena, Mich.*—End of the month very cold. The fall has been very stormy.

*Rising Sun, Ind.*—Northeast gale for an hour 10th; the only hard frosts 11th and 12th; air sultry, rocks and walls of houses dripping with moisture 26th; Ohio River rising 30th.

*Vevay, Ind.*—Frost 1st, 3d, and 4th; hard frost 6th, 11th, 16th, 17th, and 30th.

*Fort Wayne, Ind.*—Hard frost and thick ice 11th, 12th, and 17th; first snow 21st; warm, snow all gone 26th.

*Spiceland, Ind.*—First snow since March 11th, 21st.

*Galesburgh, Ill.*—The first of the month was pleasant, but the last ten days were unusually cold and wintry.

*Belvidere, Ill.*—First of the month moderate; after 23d unusually severe; less than a week of Indian summer.

*Dubois, Ill.*—First snow-storm: commenced feeding cattle 14th.

*Quincy, Ill.*—Extreme height of the Mississippi River during the month 2 feet 9½ inches above low-water mark, 19th; lowest stage of

water 3 inches above low-water mark, 29th; floating ice in the river 3 inches thick, 30th.

*Andalusia, Ill.*—Mississippi River quite low; froze over 28th; earlier than for twelve years previous.

*Oquawka, Ill.*—Mississippi River closed 29th; the first time in November since 1842.

*Hennepin, Ill.*—The last week of the month smoky, with little snow-falls. Water (stock) scarce.

*Aurora, Ill.*—The coldest November in seven years.

*Augusta, Ill.*—First snow 22d.

*Mount Sterling, Ill.*—First snow of the season, immediately succeeding a heavy rain, 19th.

*Milwaukee, Wis.*—Milwaukee River covered with ice, which was broken by steam-tugs 23d.

*Rocky Run, Wis.*—A year of extremes in droughts and floods. The ground has never been washed and gullied so badly before since the settlement of the country as this year.

*Embarrass, Wis.*—Snow 6th, 9th, 19th, 20th, 21st, 23d, 25th, and 26th; rain 13th; ground frozen hard 16th; wells and brooks very low; Wolf River frozen, men crossing on the ice 26th; cattle foddered throughout the month.

*New Ulm, Minn.*—Minnesota River frozen over 21st; average depth of snow 4 inches 30th.

*Algona, Iowa.*—The coldest November since the settlement of the country.

*Council Bluffs, Iowa.*—Missouri River closed 23d; ground frozen one foot deep 28th.

*Oregon, Mo.*—Prairies burning northwest and southwest 6th; drizzling rain 7th and 12th; showers 17th and 18th; snow 18th, 19th, 23d, and 28th.

*Rolla, Mo.*—A little snow 19th and 22d; a fine mist all day 26th and 27th.

*Mount Vernon, Mo.*—Hard frost 10th; drizzling rain 13th; first snow, melting as it fell, 17th; snow to the depth of 6½ inches 23d; coldest weather for November in several years; ground froze to the depth of three inches 26th to 30th.

*Nevada, Mo.*—Winter unusually early for this latitude; month goes out with moderating signs.

*Le Roy, Kans.*—Snow 21st; month wet and cloudy; colder toward the last than usual.

*Burlingame, Kans.*—The last thirteen days of the month the most severe known to the oldest inhabitants; wind all the time from northwest, with slight snow 20th, 26th, 27th, and 29th; ground frozen four inches deep 30th.

*Lawrence, Kans.*—The coldest November on record; first eighteen days warmer than usual, the last thirteen colder; Kansas River closed 27th; never before in November.

*Omaha Agency, Nebr.*—Winter has set in unusually early; sleighing from the 18th to 30th.

*De Soto, Nebr.*—Missouri River frozen over 22d.

*New Castle, Nebr.*—Greatest snow-storm in five years 17th, 18th, and 19th; pleasant 21st.

*Emerson, Nebr.*—Coldest November on record.

*Santee Agency, Nebr.*—Rain and first snow 12th; floating ice in the river 11th; snow-fall of 14 inches 18th; Missouri River closed 19th.

*Harrisburg, Utah.*—Wide cracks in the ground caused by drought,



1st; ice, 1st, 8th, 16th, 29th; the last half of the month unusually cold; the mountains covered with snow, which has not occurred before February for the last three years; ground frozen 30th.

*Denver, Col.*—The most snow and coldest November known in Colorado since its settlement, thirteen years.

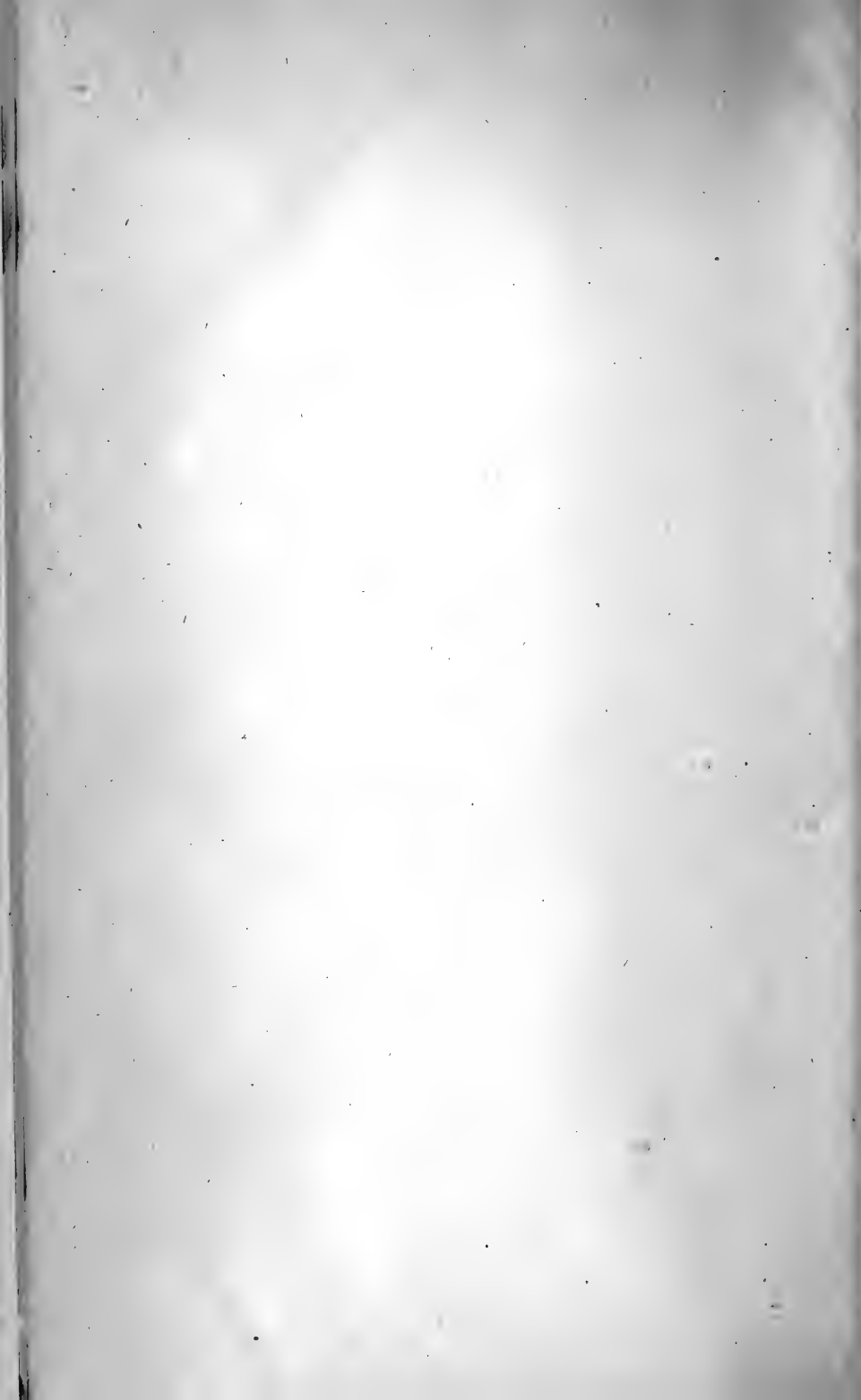
*Astoria, Oreg.*—Southern gales 1st, 3d, 13th, 14th, 15th, and 23d; slight snow 26th; light frost 16th and 30th.

*Laramie, Wyo.*—The worst November ever known here—trains often delayed by drifted snow.

*St. John's, New Brunswick.*—Brilliant aurora borealis 9th; navigation closed on river St. John's 23d.

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