EXPERIMENT STATION

OF THE

KANSAS STATE

AGRICULTURAL COLLEGE.

REPORT FOR 1893,

CONSISTING OF THE

SIXTH ANNUAL REPORT

AND

BULLETINS 38 TO 45.

MANHATTAN, KANSAS.
1894.

KANSAS STATE AGRICULTURAL COLLEGE.

BOARD OF REGENTS.

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*Term expires.

STATION STAFF.

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D. H. OTIS, B. Sc. . . . . *Agriculture.*
M. A. CARLETON, M. Sc. . . . . *Botany.*

KANSAS STATE AGRICULTURAL COLLEGE,
MANHATTAN, KAS., January 31, 1894.

To His Excellency Governor L. D. Lewelling:

DEAR SIR—I herewith transmit, as required by act of Congress approved March 7, 1887, the sixth annual report of the Experiment Station of the Kansas State Agricultural College, for the year 1893, including the financial statement to June 30, 1893.

Respectfully yours, GEO. T. FAIRCHILD,
Secretary Board of Regents.

EXPERIMENT STATION

OF THE

KANSAS STATE AGRICULTURAL COLLEGE,

MANHATTAN.

SIXTH ANNUAL REPORT—FOR THE YEAR 1893.

FINANCIAL STATEMENT.

REPORT OF THE TREASURER.

To the Board of Regents of the Kansas State Agricultural College:

GENTLEMAN— Herewith is submitted my report of receipts and expenditures on account of the Experiment Station, for the period between July 1, 1892, and June 30,1893:

Received from the treasurer of the United States $15,000 00
Paid approved vouchers. Nos. 1 to 310 ..... 15,000 00

Respectfully submitted, JOSHUA WHEELER, *Treasurer.*

REPORT OF THE SECRETARY.

To the Board of Regents of the Kansas State Agricultural College:

GENTLEMEN—Herewith is submitted the following report of the financial affairs of the Experiment Station of the Kansas State Agricultural College, for the year ending June 30, 1893. The several items of this account are covered by vouchers approved by the disbursing officer, certified by the Secretary, and allowed by the President and Board of Regents. The accounts covering the Station fund are kept in a separate set of books, as provided in the act of Congress under which the Station was organized, and duplicate vouchers covering every item of expenditure made during the year are on file in the office of the Secretary:

DR.

To appropriation for the year ending June 30, 1893, under act of Congress approved March 2, 1887 ..... $15,000 00

CR.

June 30. By Salaries....	$9,89676
Labor	1,592 13
Apparatus	630 09
Supplies	497 67
Printing	1,736 17
Stationery	20 17
Postage	50 42
Library	200 26
Live stock..	3 00
Traveling	150 80
Freight	201 28
Photographs	11 25
Membership A. A. A. C. & Ex. Sta	10 00
Tot al	$15,000 00

Respectfully submitted, I. D. GRAHAM, *Secretary.*

REPORT OF THE FINANCE COMMITTEE.

We, the Finance Committee of the Board of Regents of the Kansas State Agricultural College, having duly examined vouchers Nos. 1 to 310, for $15,000.00, received and expended on account of the Experiment Station during the fiscal year ending June 30, 1893, and having diligently compared the same with the books of the Secretary, hereby certify both books and vouchers to be correct.

Respectfully submitted, HARRISON KELLEY,
ED. SECREST,
W. D. STREET,
Committee.

To the Secretary of the Treasury, Washington, D. C.:

I, George T. Fairchild, Secretary of the Board of Regents of the Kansas State Agricultural College, hereby certify that the above-named persons hold the various offices designated, and that the signatures affixed above are genuine.

Witness my hand and the seal of the College, this 20th day of November, 1893.

[SEAL.] GEO. T. FAIRCHILD,
Secretary of the Board of Regents.

REPORT OF THE COUNCIL.

To the Board of Regents of the Kansas State Agricultural College:

GENTLEMEN —We present, as required by law, the following brief outline of experimental work for the sixth annual report of the Kansas Experiment Station, covering the calendar year 1893, to accompany a statement of accounts for the fiscal year ending June 30, 1893. To this we append a list of previous publications of the Station, a compendium of meteorological records for the past 36 years, the most complete in the state, and a full index to all the published matter of the year. For details of completed experiments, we refer to Bulletins Nos. 38 to 45, inclusive, paged consecutively, for binding with this report, but briefly outlined below, and fully indexed in the appendix. Other work in progress is barely mentioned by topics, the particulars being reserved till more complete investigation warrants the publication in bulletin form.

OUTLINE OF BULLETINS.

BULLETIN No. 38. March, 1893. Botanical Department.

Preliminary report on rusts of grains [pp. 1-14, plates I-III]: Containing life histories of three common rusts of grains, *Puccinia graminis, P. rubigo-vera,* and *P. coronata;* distribution of the rust in Kansas during the year 1892; conditions affecting the prevalence of rust; experiments in spraying to prevent rust; germination of rust spores in various fungicides; and observations on the wintering of rusts.

BULLETIN No. 39. August, 1893 Farm Department.

Experiments in feeding steers, II [pp. 15-50, plates IV-X]: Containing details of the feeding of 19 steers for 129 days. The steers were divided into five lots, as follows: Lot I, consisting of three steers, tied up in the barn, and fed on the so-called balanced ration, a mixture of corn meal, shorts, bran, and oil meal, with hay for roughness. Lot II, consisting of three steers, tied up in the barn, and fed on corn meal, molasses, and corn stover. Lot III, consisting of three steers, tied up in the barn, and fed exclusively on linseed-oil cake and orchard-grass hay. Lot IV, consisting of five steers, tied up in the barn, and fed on ear corn and corn stover. Lot V, consisting of five steers, loose in the open yard with open shed, fed on ear corn and corn stover. The bulletin gives the history of the steers, cost of steers, plan of experiment, cost of feed, preliminary feeding, weight of each steer at time of pur-

chase, weight at beginning of experiment, method of feeding, weekly and monthly summaries of feed eaten, water drunk, and gain made by each lot during the entire period of feeding; daily average temperature in barn and in yard, relation of feed and water to gain for each lot, a profit-and-loss account of each lot, shrinkage in shipping and slaughter test of each lot, with summary of results. The object was to ascertain the effects of the several feeds, and also a comparison of indoor and outdoor feeding.

BULLETIN No. 40. August, 1893. Farm Department.

Experiments with wheat [pp. 51-62]: Containing results for that year of experiments with wheat continuously without manure; methods of seeding—broadcasted, roller drill, listed, shoe drill, and hoe drill; drilling different quantities of wheat at different dates; effects of qualities of seed, qualities being graded as light, common and heavy seed; early and late plowing for wheat; test of varieties, with a list of varieties which had winterkilled.

BULLETIN No. 41. December, 1893. Botanical Department.

The effect of fungicides upon the germination of corn [pp. 63-79]: Containing a tabulated statement of about 400 experiments, showing the effect of 82 chemicals used in various strengths and for various periods of time; an analysis of the table; and the bibliography bearing upon the subject.

BULLETIN No. 42. December, 1893. Farm Department.

Experiment with oats [pp. 81-92]: Detailing results of the following experiments: Oats on land fall plowed, spring plowed, and not plowed; time of seeding oats; treating oats with hot water for smut; grading oats for seed; methods of seeding oats; amount of seed oats to sow per sore; and test of varieties.

BULLETIN No. 43. December, 1893. Chemical Department.

Experiments with sorghum as a sugar plant [pp. 93–111]: Weather of 1893; varieties of sorghums; analyses of general samples of sorghum; analyses of single stalks in selecting seed; improvement in seed selection; results in six years; effects of fertilizers on sorghum; results for four years; effects on quality of sorghum juice by cutting at different times of day.

Experiments with sugar beefs [pp.111-114]: Plan of experiments; unfavorable season; analyses of beets grown by the Station; analyses of beets grown for the Station in other parts of the state.

BULLETIN No. 44. December, 1893. Horticultural Department.

Further study of native grapes [pp. 115-127]: An examination of 100 varieties with reference to their specific origin, with results of four years' comparison as to hardiness, season, earliness, quality, and susceptibility to disease.

BULLETIN No. 45. December, 1893. Farm Department.

Experiments with corn [pp. 129-149]: Detailing results of the following experiments: Frequency of cultivation; effect of removing tassels from corn; planting corn at different distances for grain and fodder; butt, middle and tip kernels of corn for seed; listed and surface-planted corn; and varieties tested in 1893.

OTHER WORK.

HORTICULTURAL DEPARTMENT.—In addition to that reported upon, work in this department has been devoted to the continuation and extension of the experiments with regard to the comparative value of methods of working the apple with stocks and scions of different lengths, and with various treatment; to a study of different methods of storing grafts and cuttings during the winter; to further trial of winter protection of peach trees on plum and peach stocks; to a continuation of the study of the rooting capacity of various species and varieties of grapes from cuttings; to observations upon the susceptibility of varieties of the apple to scab; in strawberries, to a comparative test of fertilizers, to fall setting under irrigation, and to variety tests; among garden crops, to comparisons of growth under various fertilizers, and to variety tests of onions, leeks, and garlics.

In entomology, the work has included a continuation of the study of the grape-leaf hopper, with preventive treatment; the destruction of the apple-tree insects affecting nursery trees; observations upon the cow-horn fly, especially with respect to the effects of its presence with milch cows; observations upon the variations in weight of beehives during winter and during the period of activity; and the collection and breeding of insects, both of economic and other interest, in great variety.

FARM DEPARTMENT.—Besides the experiments reported in Bulletins Nos. 39, 40, 42, and 45, the farm department has done work in the following, some of which will be reported in due time:

Steer Feeding, III: Ten steers, divided into two lots of five each, and fed in the open yard, but provided with shedding for shelter at pleasure, one lot being fed on soaked shelled corn, the other on dry shelled corn, the object being to ascertain if soaking corn improves its feeding value for steers. This experiment will be reported on during the summer of 1894.

Experiments with Hogs: Two lots of hogs are following the two lots of steers just mentioned, with a view to ascertain the relative value of the droppings for pork making when steers are fed on dry and on soaked corn, respectively, as in the lots above named.

Steer Feeding, IV: Twenty steers, consisting of 10 pure-bred shorthorns and 10 natives, are being fed under the same conditions in comparison with each other, in order to ascertain what superior value, if any, must be attributed to pure blood in steers. It is contemplated to conclude this experiment in the spring of 1895.

Work with Wheat, not reported because of winterkilling: (1) Wheat under different rotations of cropping. (2) Seeding wheat at different dates. (3) How much wheat to sow to the acre. (4) Mixtures *versus* single varieties of wheat for seed. (5) Pasturing wheat in fall and spring. (6) Treating wheat with hot water for smut.

Work with Oats: Time to harvest oats.

Work with Corn: (1) Distance to plant corn for ensilage. (2) Improvement in quality of corn by use of a fertilizer.

Work with Fodder Crops: (1) Distances at which to plant red Kaffir corn for grain and fodder. (2) Distances at which to plant soy beans. (2) Method of seeding soy beans. (4) Soy beans and cowpeas for grain and hay. (5) Seeding alfalfa in corn. (6) Test of varieties of grasses.

VETERINARY DEPARTMENT.—The following subjects have been studied, though experiments have not been reported upon because of their incompleteness:

Continued study of actinomycosis, with special reference to its life history.

An outbreak of a very fatal disease, reported to be "cornstalk disease," investigated, and determined to be rabies, or hydrophobia.

Limited investigation of the cornstalk disease, because of no outbreak of the disease available for study.

Some experiments, in connection with the Texas experiment station, to determine whether cattle ticks hatched from eggs were capable of giving susceptible Northern cattle Texas fever.

Some experiments to determine how long the spermatic fluid of horses and cattle maintains its vitality outside of the animal body, because of its important bearing upon the subject of "artificial impregnation."

Some tests of cattle with tuberculin, with reference to its value in diagnosing tuberculosis (consumption) in cattle, which could not be recognized by other methods.

BOTANICAL DEPARTMENT.—The unpublished work which has been carried on during the year is as follows:

Observations concerning our common weeds, chiefly upon their germination and the characters of the seedlings.

Further experiments with spraying for the prevention of wheat rust, and notes upon the wintering of the fungus.

A study of the anthracnose of the raspberry and the spot disease of the strawberry.

Notes on the botanical relationships of the various garden varieties of the onion.

THE STAFF.

The Council has had no changes during the year, and few changes have been made in the corps of assistants. D. H. Otis, B. Sc., was made second assistant in agriculture, in place of Wm. Shelton, foreman of the farm, whose resignation took effect March 1, 1893. M. A. Carleton, M. Sc., ac-

cepts place as assistant in the United States department of agriculture, division of vegetable pathology, and his place will be filled by a student already equipped for the work. Should the experiments proposed irrigation be undertaken, special expert assistants will be needed for that work.

GENERAL MATTERS.

The accounts of the Station have been kept by the Secretary, as elsewhere noted, and all expenditures have been made upon estimates of the Council, approved in advance by the Board of Regents, and audited upon receipted vouchers.

The bulletins have been issued in an edition of 7,500, which is smaller than seems desirable, but as large as can be afforded.

The Station was represented in all its departments at the Columbian Exposition, through the coöperative exhibit of the American agricultural colleges and experiment stations. The horticultural part of that exhibit was under direction of Professor Popenoe, and Professor Willard acted for a month as demonstrator in the chemical department. The general exhibit of the state and the special exhibit of the College were benefited by material supplied from the Station, special mention being made of variety displays of onions and grapes from the horticultural department, and of grains and nonsaccharine sorghums from the farm department. The 80 varieties of grapes shown secured an award for the State Horticultural Society.

The increasing correspondence of the Station is proof of the growing interest of farmers over the state. A considerable interest has been aroused in some of the varieties of forage crops and cereals introduced and tested. Especially notable has been the call for the soy beans, introduced from Japan, and grown successfully in various parts of the state as a drought-resisting crop.

The plans for 1894 include, besides a continuation of the lines of work which have proved so satisfactory in the past, a limited trial of irrigation in the western part of the state. Special attention will be given to tests of the needed water supply, the cost of securing it, and its economical application to various crops, including trials of crops suitable for such purposes. Careful observations upon the climatic conditions and the variable conditions of the soil will be made throughout the year. The experiments in sorghum and beet culture will be materially reduced, as not sufficiently promising to warrant large expenditure.

Appended to this report is a list of donations, and a summary of meteorological records accessible to the Station, but kept by the College. This summary, prepared by Prof. E. R. Nichols from the College records for the past 36 years, the most complete in the state, gives the temperature and the rainfall in periods of 10 days, together with indications of periods of drought between extremes of two periods, and will be found a most convenient table

of reference for explanation of variations in staple crops. It is published herewith as throwing light upon some of the experiments of the year, and furnishing a basis for judgment as to climatic conditions of all experiments.

Respectfully submitted,

GEO. T. FAIRCHILD,
GEO. H. FAILYER,
E. A. POPENOE,
C. C. GEORGESON,
N. S. MAYO,
A. S. HITCHCOCK,
Station Counsel.

ACKNOWLEDGMENT OF DONATIONS.

1893.

HORTICULTURAL DEPARTMENT.

From United States Department of Agriculture:
- Forest-Tree Seed.
- Muskmelon and Tobacco Seed.
- Apple Scions.

From Professor Georgeson:
- Cauliflower Seed.
- Potatoes.

From F. O. Huntington, Indianapolis, Ind.:
- Tomato Seed.

From L. L. Hay & Co., St. Paul, Minn.:
- Rutabaga Seed.

From Johnson & Stokes, Philadelphia, Pa.:
- Peas.

From Bush & Son & Weisner, Bushberg, Mo.:
- Four Grapevines.

From Stephen Hoyt's Sons, New Canaan, Conn.:
- Three Green Mountain Grapevines.

From August Luther, Leeds, Mo.:
- Twenty-five Strawberry Plants, "Luther."

From R. D. McGeehan, Atlantic, Iowa:
- Twenty-five Strawberry Plants, "Young's Seedling."

PREVIOUS PUBLICATIONS.

BULLETINS.

*No. 1, April, 1888, "Organization, Equipment, and Aims."
*No. 2, April, 1888, "Experience with Cultivated Grasses and Clovers."
*No. 3, June, 1888, "Life History of Two Orchard Pests."
*No. 4, September, 1888, "Experiments with Wheat."
*No. 5, December, 1888, "Sorghum and Sorghum Blight."
*No. 6, July, 1889, "Silos and Ensilage."
No. 7, August, 1889, "Experiments with Wheat."
No. 8, October, 1889, "Preliminary Report on Smut in Oats."
*No. 9, December, 1889, "Experiment in Pig Feeding."
No. 10, May, 1890, "Notes on Conifers for Kansas Planters."
No. 11, July, 1890, "Experiments with Wheat."
No. 12, August, 1890, "Preliminary Experiments with Fungicides for Stinking Smut of Wheat."
No. 13, August, 1890, "Experiments with Oats."
No. 14, December, 1890, "Winter Protection of Peach Trees, and Notes on Grapes."
No. 15, December, 1890, "Additional Experiments and Observations on Oat Smut made in 1890."
No. 16, December, 1890, "Experiments with Sorghum and Sugar Beets."
No. 17, December, 1890, "Crossed Varieties of Corn, Second and Third Years."
No. 18, December, 1890, "Experiments with Forage Plants."
No. 19, December, 1890, "Germination of Weeviled Peas—Garden Notes on Potatoes, Beans, and Cabbage."
No. 20, July, 1891, "Wheat."
*No. 21, August, 1891, "Stinking Smut of Wheat."
*No. 22, August, 1891, "Smut of Oats; Smut and Rust of Wheat."
No. 23, August, 1891, "Smut of Sorghum and Corn."
*No. 24, September, 1891, "Staggers of Horses."
*No. 25, December, 1891, "Sorghum for Sugar."
No. 26, December, 1891, "Varieties of the Strawberry."
No. 27, December, 1891, "Crossed Varieties of Corn."
No. 28, December, 1891, "The Experimental Vineyard."
*No. 29, December, 1891, "Oats."
No. 30, December, 1891, "Corn."
No. 31, December, 1891, "Sugar Beets."
No. 32, December, 1891, "Feeding Stuffs, and the Development of Grain Crops." "Soy Beans."
No. 33, August, 1892, "Experiments with Wheat."
*No. 34, September, 1892, "Experiments in Feeding Steers."
*No. 35, December, 1892, "Actinomycosis Bovis, or 'Lumpy Jaw' of Cattle." "Some Observations upon Loco."
No. 36, December, 1892, "Experiments with Sorghum and with Sugar Beets."

*Out of print. The annual reports for 1888 and 1889 contain the subject-matter of Bulletins Nos. 2 to 9, inclusive.

No. 37, December, 1892, "Experiments in Potato Culture."
No. 38, March, 1893, "Preliminary Report on Rusts of Grain."
No. 39, Angust, 1893, "Experiments in Feeding Steers.—II."
No. 40, August, 1893, "Experiments in Wheat."
No. 41, December, 1893, "Effect of Fungicides upon the Germination of Corn."
No. 42, December, 1893, "Experiments with Oats."
No. 43, December, 1893, "Experiments with Sorghum and Sugar Beets."
No. 44, December, 1893, "Further Study of Native Grapes."
No. 45, December, 1893, "Experiments with Corn."

REPORT FOR 1888.*– CONTENTS.

Waste of Manure in Summering Manures in the Yard. Experiments in the Corn Field. Experiments with Wheat, including Bulletin No. 4. Forage Crops. The Milk and Butter Product as Influenced by Feeding. The Pressure of Ensilage on the Walls of the Silo. Relation of Rainfall to the Corn Crop. Shrinkage of Hay in the Mow. A Comparison of Varieties of Sorghum, including part of Bulletin No. 5. A Test of the Keeping Qualities of Sorghum. An Examination of Individual Stalks of Sorghum, with a View to Improving the Plant. A Trial of Fertilizers on Sorghum. A New Method of Milk Analysis for the Use of Dairymen. Spraying in the Apple Orchard. Observations upon Injurious Insects, including Bulletin No. 3. Trials of Varieties of Potatoes. Trials of Varieties of Peas. Trials of Varieties of Tomatoes. Sorghum Blight, including part of Bulletin No. 5. Hackberry Knot. Experiments in Fertilization of Varieties of Corn. Germination of Weed Seeds. The Fungous Parasites of Weeds.

REPORT FOR 1889.—CONTENTS.

Experiments with Corn, Wheat, and Forage Crops, including Bulletin No. 7. Silos and Silage, including Bulletin No. 6. Pig-Feeding Experiment, including Bulletin No. 9. Pigs from Mature and Immature Parents. Work upon Sorghum. Analysis of Feeding Stuffs, Composition of Corn at Different Stages of Growth. Ammonia and Nitric Acid in Atmospheric Waters. Comparative Trials of Garden Beans, of Peas, of Potatoes, of Tomatoes. Some Insects Injurious to the Bean. Loose Smuts of Cereals, including Bulletin No. 8. Crossing Varieties of Corn, First Year. Receptivity of Corn Silk.

REPORT FOR 1890.—CONTENTS.

Summary of Bulletins 10 to 19, with index, and outline of other work undertaken.

REPORT FOR 1891.—CONTENTS.

Summary of Bulletins 20 to 32, with index, and outline of other work undertaken.

REPORT FOR 1892.—CONTENTS.

Summary of Bulletins 33 to 37, with index, and outline of other work undertaken.

SUMMARY OF METEOROLOGICAL RECORDS—THIRTY-SIX YEARS, 1858-1893.

TABLE I shows the rainfall, including melted snow, at the College for the 36 years from 1858 to 1893, inclusive. Each month is divided into three divisions of 10 days each, so far as possible. This arrangement shows quite well the periods of excessive rainfall and drought. The maximum rainfall for each 10 days is printed in bold-face type.

TABLE II shows the mean temperature for each of the 10-day periods. The maximum and minimum in each column is indicated by bold-face type. IL will be noticed that the coldest period is the second 10 days of January, and the warmest the second 10 days of July.

TABLE III combines the rainfall, mean, maximum and minimum temperatures, the object of this arrangement being to enable a comparison to be made between the rainfall and temperature. As in the other tables, the extremes are printed in bold-face type. The year 1860 gave the least rainfall, with the highest mean and maximum temperatures. The mean of the minimums for the second 10 days of April and October is just below freezing, and indicates the time of our latest and earliest frosts.

I.—Rainfall at the Kansas State Agricultural College, for Thirty-six Years, Divided into Ten-Day Periods.

Year	Total	JANUARY.			FEBRUARY.			MARCH.			APRIL.			MAY.			JUNE.			JULY.			AUGUST.			SEPTEMBER.			OCTOBER.			NOVEMBER.			DECEMBER.			Year
		1–10	*11–20*	*21–31*	*1–10*	*11–20*	*21–28*	*1–10*	*11–20*	*21–31*	*1–10*	*11–20*	*21–30*	*1–10*	*11–20*	*21–31*	*1–10*	*11–20*	*21–30*	*1–10*	*11–20*	*21–31*	*1–10*	*11–20*	*21–31*	*1–10*	*11–20*	*21–30*	*1–10*	*11–20*	*21–31*	*1–10*	*11–20*	*21–30*	*1–10*	*11–20*	*21–31*	
1858	38.97	.70	.80	1.00	.13	.23	.10	.78	.72	.52	3.28	.79	.57	1.08	.27	3.77	3.12	.41	1.66	1.10	**4.92**	.48	1.87	.31	1.80	1.10	.00	.00	.40	1.00	**4.26**	.31	.36	.02	1.10	.00	.01	1858
1859	36.21	.25	.03	1.22	.20	.00	.41	1.86	.42	.60	.77	.55	1.22	3.32	3.75	2.35	.00	3.20	.37	2.30	.50	2.19	2.10	2.24	2.50	.31	1.01	.50	.00	.64	.00	.00	1.20	.00	.20	.00	.00	1859
1860	**15.17**	.00	.00	.60	.50	1.07	.27	.00	.00	.00	.00	.11	.01	.38	.00	.75	2.49	.00	.20	.00	.22	1.87	1.00	1.00	.85	.00	1.00	.35	.00	.00	.42	.73	.85	.00	.00	.00	.50	1860
1861	34.66	.00	**1.35**	.00	.00	.00	.00	.00	.00	.00	2.00	.00	.00	.97	2.43	.36	.61	1.38	**6.21**	1.28	3.30	1.50	.53	.43	.43	4.18	2.33	1.55	1.58	.54	.00	.00	.70	.00	.50	.00	.50	1861
1862	26.20	1.00	.30	.20	.00	.12	.00	.00	.00	.00	.80	2.13	.70	.41	2.27	.50	.00	.71	.66	2.53	.28	1.02	.97	1.23	.65	1.40	.89	1.86	1.55	.07	.00	.00	1.70	.00	.00	.10	**2.15**	1862
1863	40.65	.90	.57	.00	.03	1.40	**1.27**	.00	.00	.00	.00	2.00	**7.12**	.25	1.50	1.38	2.78	.02	3.15	1.24	.81	2.49	6.12	.00	.09	.01	.37	.35	.00	.06	2.34	1.60	.23	.40	.80	.54	.83	1863
1864	20.25	.03	.00	.41	.30	.40	.40	.81	.02	1.29	.74	.00	.94	1.43	.00	.86	.63	1.20	.23	1.50	1.48	.04	.75	1.09	.00	.41	.00	1.89	.41	.08	.19	1.56	.02	.03	.33	.78	.00	1864
1865	35.13	.03	.00	.30	.00	2.02	.39	.02	.32	1.93	1.23	.50	1.20	.56	.73	.75	3.21	3.73	1.04	.76	2.42	3.24	2.61	2.43	.00	.73	.50	.00	......	......	......	......	......	......	......	......	......	1865
1866	25.91	......	......	......	......	......	......	......	......	......	......	......	......	.85	.20	**1.78**	1.10	2.49	.01	.72	2.40	.15	.07	.00	.03	4.92	1.30	.01	.13	.00	.30	.25	.18	.94	.80	1.10	.12	1866
1867	26.50	.00	.05	.60	.00	2.01	.00	.16	.32	.15	1.15	1.29	.00	.00	2.72	.87	2.73	2.85	.07	2.35	2.61	.46	.00	.26	.44	.85	2.65	.00	.06	.13	.72	.00	.00	.49	.00	.51	.00	1867
1868	30.09	.00	.30	.01	.00	.00	.18	.61	.30	.02	.02	1.17	.77	.00	.52	.86	.73	1.70	1.05	.21	4.28	.21	1.63	1.00	3.31	.06	**4.10**	.56	.53	1.98	.00	.54	.99	.64	.55	.00	.26	1868
1869	27.86	.63	.34	.18	.62	.35	.20	.00	.10	.96	.09	.64	1.47	.29	.14	.69	1.14	1.64	6.07	.27	4.90	1.10	.88	1.29	.26	.15	1.60	.08	.38	.00	.05	.22	.79	.18	.12	.04	.00	1869
1870	22.10	.00	.05	.00	.00	.00	.00	.42	.59	.44	.14	.07	.29	.25	.15	.51	.32	.32	.15	.06	2.77	.15	1.61	2.83	.77	1.02	1.29	2.26	.89	.40	3.77	.08	.00	.05	.07	.38	.00	1870
1871	28.84	.00	.33	.20	.28	1.15	1.05	.13	.33	.56	1.45	.89	.66	.44	3.73	.90	.52	1.42	.11	2.58	.97	1.48	2.60	.16	1.47	1.17	.75	.00	.04	.73	.43	1.26	.53	.17	.00	.00	.35	1871
1872	35.78	.00	.12	.01	.15	.10	.23	.12	.00	.80	.61	.34	1.11	3.28	1.41	2.12	.17	1.51	.05	**3.15**	1.38	4.39	.03	4.12	1.17	**5.13**	.02	.55	.34	.00	2.42	.00	.00	.00	.10	.20	.65	1872
1873	25.98	.50	.02	.32	.00	.05	.25	.15	.33	.23	.61	.28	.78	1.41	3.56	3.57	1.67	1.18	1.83	.90	1.00	.94	1.32	.32	.00	.07	.00	1.78	.00	.42	.00	.06	.00	.76	1.02	.65	.00	1873
1874	18.51	.00	.00	.50	1.00	.05	.00	.00	.00	.30	.00	1.02	.38	.30	2.51	.17	2.00	2.27	.04	.00	.18	.00	.04	.19	.02	1.13	3.25	.15	.12	.06	.04	.28	1.06	.78	.00	.37	.30	1874
1875	18.16	.06	.00	.16	.42	.25	.20	.11	.00	1.10	.12	.15	1.33	.81	1.52	.13	.90	.00	1.16	2.84	.05	.44	.93	.11	.36	1.10	1.75	.00	.74	.00	.30	.30	.02	.02	.15	.00	.63	1875
1876	**45 86**	.00	.00	.00	.00	.63	.02	.38	1.13	2.45	.70	**2.83**	3.99	**4.13**	.61	.99	1.75	1.25	1.60	.25	1.90	3.58	.20	**8.72**	1.78	.30	2.66	.15	.00	1.51	.10	1.65	.10	.00	.00	.00	.50	1876
1877	41.28	.10	.10	.45	.41	.10	.40	.25	.00	2.45	.40	2.28	1.40	.23	3.87	1.10	**5.48**	.00	1.28	1.77	1.75	.64	1.00	.45	1.33	.55	.00	.97	**3.64**	**3.75**	1.68	.43	1.24	.23	.80	.30	.45	1877
1878	39.12	.00	.94	**1.41**	.77	.67	.00	.69	.15	.93	.44	.88	.70	1.85	1.71	.50	1.26	1.76	2.00	2.45	1.44	**8.82**	2.16	.00	.50	2.44	.30	.48	.25	.69	.12	.30	.00	**1.60**	.18	.53	.18	1878
1879	36.99	......	......	......	.25	.25	.25	.00	.00	.00	.25	.92	2.04	.06	1.07	.66	1.07	**3.88**	3.53	1.05	3.20	.66	.32	1.08	.21	.45	3.03	1.82	.35	2.28	.00	**2.31**	**4.94**	.58	.53	.00	.09	1879
1880	29.59	.27	.00	.29	.00	.00	.05	.00	.10	.40	.26	.00	.82	.27	.00	3.47	3.10	.00	1.00	1.87	.56	1.35	.00	1.60	7.21	1.50	.18	.84	1.26	.94	.00	1.94	.00	.03	.00	.00	.28	1880
1881	28.99	.20	.25	.10	2.06	.69	.00	.75	.00	.00	.13	.80	.63	.96	4.44	1.27	.71	.33	2.34	.00	.30	1.02	.00	.43	.00	1.65	.00	**3.27**	.15	3.34	.78	.10	1.76	.00	.33	.03	.17	1881
1882	28.43	.10	.22	.10	.00	.40	.02	.75	.05	.00	3.19	.02	.26	1.56	1.67	1.97	.62	2.74	.03	1.09	1.62	5.02	.29	.38	.20	.00	.00	1.70	2.07	1.47	.00	.00	.93	.02	.05	.28	.11	1882
1883	36.87	.08	.25	.00	.02	.81	.92	.30	.00	.75	.75	.72	.89	.50	2.40	1.93	4.18	1.45	3.95	1.29	.30	2.56	.11	3.83	.00	.00	1.26	.00	1.76	3.15	2.14	.30	.00	.00	.25	.00	.02	1883
1884	33.72	.30	.00	.00	.38	.20	.00	.00	1.14	1.22	.04	1.72	1.47	.78	1.75	2.10	1.93	.00	1.81	1.00	4.00	.64	.00	.80	2.41	.07	.00	3.26	1.87	.10	.25	.00	.01	1.06	.02	.22	.09	1884
1885	24.89	.63	.10	.35	.10	.15	.30	.00	.00	.00	.10	1.13	2.80	.10	3.13	1.07	.02	.74	.91	2.71	.13	2.15	.02	.32	.55	3.80	.16	.42	.00	1.65	.07	.19	.00	.00	.60	.15	.34	1885
1886	30.10	.60	.71	.05	.27	.00	.08	1.05	.25	.25	**3.67**	1.34	.25	1.50	1.90	1.37	.00	2.36	3.07	.00	.80	2.04	1.32	.23	.51	.74	.00	.40	.00	.59	1.83	.00	1.24	.00	.05	**1.53**	.00	1886
1887	30.12	.63	.00	.05	.28	.43	.47	.20	.00	.42	.00	.85	2.00	.00	1.14	1.40	.98	2.99	.54	.75	.10	.05	**3.18**	1.74	1.75	4.93	.00	1.95	2.20	.00	.00	.29	.00	.00	.75	.00	.05	1887
1888	31.29	.25	.40	.00	.40	**2.27**	.00	.93	.50	1.05	.38	.13	.87	.22	.77	1.26	.07	1.67	3.49	.92	3.27	.22	2.18	.24	2.04	.00	2.28	.58	1.28	1.12	.34	.94	.00	.00	.00	.12	1.10	1888
1889	30.97	.00	.78	.00	.00	.33	.21	.00	**1.44**	.55	1.09	.25	.40	.51	**5.04**	.60	.83	1.89	.84	.73	2.51	4.90	1.71	.75	.02	.51	.96	.45	.00	.66	.76	1.97	.18	.08	.01	.01	.00	1889
1890	23.02	1.24	.75	.32	.12	.00	.12	.04	.00	.09	.67	.67	.40	.05	1.01	.75	.39	1.46	.00	.17	.41	2.31	2.71	.80	2.22	.64	2.01	.59	.05	1.94	.00	.64	.27	.00	.00	.00	.18	1890
1891	30.56	**1.34**	.00	.29	.16	.68	.00	.28	.42	1.54	.41	1.45	.00	1.16	1.18	2.45	2.71	1.40	3.34	1.02	1.02	3.47	.53	.19	.26	1.43	.00	.03	2.02	.43	.00	.04	.14	.08	.55	.54	.00	1891
1892	30.47	.32	.46	.00	**2.17**	.05	.73	**2.03**	.06	**2.51**	.92	1.41	.58	3.14	1.94	1.55	.00	2.28	.04	1.86	1.42	.60	.81	.43	3.08	.36	.00	.00	.00	1.23	.09	.00	.65	.00	**1.18**	.30	.27	1892
1893	27.05	.00	.00	.02	.05	.53	.01	.24	.02	.73	.03	.83	.42	.42	.86	**4.45**	2.24	.37	3.65	.76	1.20	2.33	.18	1.67	1.07	.06	.22	2.17	.05	.66	.00	.00	.79	.02	.60	.00	.10	1893
Means	30.17	.30	.27	.27	.32	.51	.24	.37	.25	.69	.78	.86	1.10	.93	1.72	1.42	1.43	1.41	1.60	1.21	1.68	1.79	1.16	1.27	1.09	1.20	.97	.85	.69	.90	.67	.52	.60	.23	.33	.25	.29	Means

II.—Mean Temperature at the Kansas State Agricultural College, for Thirty-six Years, Divided into Ten-Day Periods.

1858	53.25	40.00	33.90	**41.00**	24.75	22.50	30.03	36.33	51.90	53.50	47.83	48.33	58.77	54.55	56.50	68.05	71.40	72.25	81.78	79.90	81.25	81.36	81.08	78.10	65.65	69.55	70.50	68.83	59.98	56.67	52.84	38.38	28.55	34.50	**14.13**	26.22	36.48	1858
1859	53.46	28.62	**38.00**	26.89	24.33	34.45	39.66	47.05	43.53	47.16	41.50	50.10	56.70	65.70	64.08	68.75	68.05	77.37	78.28	81.48	84.00	76.41	80.35	78.22	73.27	64.90	67.88	64.80	58.10	54.05	45.05	53.10	40.08	**43.12**	16.60	25.90	20.27	1859
1860	**57.66**	25.28	34.36	30.64	27.78	36.67	37.53	**51.25**	51.00	50.43	58.00	**63.69**	52.92	67.25	70.03	70.22	72.68	81.45	**86.75**	**88.63**	86.03	**86.04**	**86.00**	85.00	84.00	72.44	69.63	74.70	69.08	46.80	53.34	38.08	41.42	31.27	34.03	26.50	33.14	1860
1861	54.17	28.08	24.62	18.64	23.95	36.08	42.94	41.44	41.20	41.02	44.86	52.37	64.38	63.28	60.11	69.11	77.27	81.00	76.58	79.75	74.75	79.66	85.65	76.43	72.68	74.08	72.02	58.60	59.90	58.58	49.25	49.20	46.90	29.39	34.28	37.93	25.09	1861
1862	53.21	21.65	11.20	20.89	20.34	19.19	34.09	27.03	39.56	45.22	48.87	**46.08**	55.69	64.39	63.75	67.78	66.17	73.60	79.08	83.81	79.18	76.77	81.18	73.31	78.07	77.00	68.32	69.30	67.25	56.10	53.60	48.35	41.03	40.87	34.43	38.65	**44.73**	1862
1863	54.26	40.97	32.65	36.38	18.63	39.19	33.87	34.65	**52.38**	49.86	60.36	57.55	60.93	68.19	67.13	71.02	65.40	74.92	70.88	79.22	70.98	76.91	80.13	84.05	70.48	77.05	69.08	71.33	53.14	55.73	36.23	44.86	**48.62**	23.44	39.22	20.36	24.20	1863
1864	52.24	**1.67**	27.63	39.05	30.00	32.17	34.88	42.77	32.61	39.05	43.22	46.73	52.60	59.45	64.75	69.70	69.92	73.03	83.83	83.02	83.63	79.50	77.98	74.67	80.27	82.48	73.93	64.32	53.48	48.62	45.05	**36.35**	34.20	38.05	23.88	25.72	28.73	1864
1865	53.54	31.88	33.50	16.77	31.95	38.60	33.19	**22.85**	42.45	48.32	45.12	53.50	54.55	61.75	64.33	74.66	**77.38**	74.10	76.92	81.33	70.78	74.20	76.03	74.45	74.45	74.98	73.47	......	......	......	......	......	......	......	......	......	......	1865
1866	52.73	......	......	......	......	......	......	......	......	......	......	......	......	59.25	65.08	62.23	68.35	69.60	74.68	73.25	79.18	83.50	80.10	78.68	70.70	64.70	59.63	59.80	66.15	61.68	45.89	**56.78**	43.57	36.60	33.48	28.40	25.18	1866
1867	51.45	22.43	26.20	19.41	31.12	33.93	29.62	24.90	19.70	**26.91**	42.25	54.35	52.58	61.20	58.48	**56.70**	71.10	71.40	76.65	75.25	71.55	77.13	76.70	78.13	76.25	67.33	72.72	67.30	59.55	62.80	47.47	52.40	45.05	36.00	37.90	33.15	35.25	1867
1868	50.98	22.65	13.40	17.45	15.70	38.43	34.55	40.47	47.38	55.07	44.42	47.03	53.30	66.73	63.05	68.25	70.45	77.75	70.83	83.80	83.28	81.73	74.77	67.58	69.11	66.93	**58.82**	**55.10**	56.93	50.37	50.20	44.53	36.65	33.07	22.78	27.40	24.43	1868
1869	**49.14**	30.95	29.77	30.64	32.70	37.30	**18.44**	28.65	30.65	45.43	43.60	49.40	51.25	60.98	54.45	61.64	**63.20**	66.60	68.75	73.58	74.30	70.75	74.63	75.67	75.42	64.13	61.57	58.07	54.30	**43.35**	**35.36**	43.25	33.35	34.03	37.05	28.38	25.20	1869
1870	53.71	28.05	21.92	31.64	33.57	29.58	38.94	32.67	28.13	42.86	48.50	47.15	62.25	63.27	70.78	68.73	67.63	70.62	83.55	81.80	**86.33**	85.07	77.22	**65.60**	72.84	70.60	69.23	62.05	60.33	54.02	55.82	50.65	42.75	41.00	41.85	26.28	22.41	1870
1871	53.91	38.83	17.50	30.11	32.00	32.38	**45.03**	46.48	48.70	45.70	59.42	54.58	57.20	55.15	69.88	69.66	76.28	76.45	79.05	77.40	80.10	74.82	79.77	75.93	70.57	73.68	64.57	61.05	60.92	53.13	53.61	53.20	36.93	**20.57**	27.25	27.33	17.58	1871
1872	51.22	30.45	31.70	13.68	23.83	33.92	39.81	36.60	33.60	41.41	53.08	54.07	62.10	52.83	56.00	67.32	74.15	74.40	76.73	76.85	77.13	79.79	76.68	75.62	78.34	72.48	62.02	60.52	59.93	52.27	48.41	45.92	28.78	26.33	33.65	17.75	12.50	1872
1873	51.52	19.60	27.88	**12.25**	31.73	35.30	22.97	39.00	47.38	39.91	49.30	45.33	**47.30**	54.38	63.17	67.41	70.35	74.88	77.20	77.35	77.35	77.35	75.85	76.30	81.16	70.65	66.45	60.80	60.45	57.75	36.93	49.45	39.73	35.70	27.53	28.75	29.75	1873
1874	53.22	30.25	22.90	26.10	23.95	31.43	19.25	35.90	40.80	37.34	39.85	46.85	53.58	64.25	66.35	75.39	76.45	72.58	79.82	82.03	80.48	84.41	84.50	84.70	80.45	71.40	61.30	62.78	60.78	54.22	53.68	54.30	33.65	27.83	38.55	29.98	28.93	1874
1875	50.19	7.60	8.50	27.30	15.78	24.80	28.03	28.25	31.45	49.61	48.85	**46.08**	50.42	57.78	62.50	71.45	68.23	78.67	78.15	75.23	77.05	73.59	72.45	67.50	76.02	**77.20**	63.30	57.15	56.32	51.83	51.16	45.55	35.75	26.60	37.30	34.50	42.45	1875
1876	51.63	37.00	37.40	27.77	36.70	38.28	35.78	38.00	**25.35**	34.43	48.97	54.98	63.14	**52.20**	70.75	68.14	67.10	**63.38**	77.40	77.85	79.03	74.52	75.20	77.17	76.45	72.40	62.98	59.60	**50.90**	51.77	57.59	44.03	33.77	33.73	26.93	27.57	15.00	1876
1877	54.14	25.68	15.85	33.26	41.60	37.65	39.50	29.17	41.23	45.55	49.35	58.58	51.37	55.70	67.38	68.93	64.93	76.80	78.81	82.20	74.98	75.32	76.57	72.25	76.20	66.47	70.75	74.28	54.45	52.33	51.91	37.28	47.32	31.53	36.93	**49.30**	39.07	1877
1878	54.43	27.80	36.55	34.77	34.60	**41.83**	41.31	45.33	50.72	52.30	51.13	60.15	62.05	60.00	**54.40**	70.79	65.65	69.30	**65.13**	75.23	83.72	76.98	79.70	77.88	75.36	70.55	64.95	65.88	61.83	59.95	43.36	50.73	43.25	36.35	33.25	17.80	13.79	1878
1879	53.54	......	......	......	**6.75**	23.58	40.13	49.78	33.45	**55.75**	48.80	56.22	62.18	63.60	67.50	74.10	73.53	70.96	73.42	82.35	80.38	77.43	76.63	74.30	81.41	67.40	63.15	68.75	**71.65**	64.15	47.97	45.18	42.70	40.30	34.03	21.42	19.34	1879
1880	53.50	**47.19**	37.55	33.00	32.61	36.85	40.94	42.00	29.43	51.30	52.18	58.37	59.83	68.33	**75.67**	67.50	72.10	75.65	75.55	76.35	76.18	75.56	71.95	80.77	75.30	67.80	67.18	59.95	61.20	48.50	47.14	43.80	**26.08**	23.40	25.72	34.63	13.86	1880
1881	53.93	14.70	21.25	21.75	29.58	12.70	26.03	31.90	34.58	41.61	**38.13**	54.30	63.85	66.63	69.27	68.80	75.50	**82.35**	76.28	82.98	85.72	75.27	83.50	81.85	**85.86**	76.45	66.25	73.68	64.75	**66.25**	**66.98**	45.00	35.78	36.95	38.78	42.32	34.70	1881
1882	54.32	34.40	27.88	32.59	**41.72**	37.43	42.38	39.10	49.20	51.41	61.27	50.43	56.73	61.02	56.68	57.43	66.40	71.40	83.83	75.65	**68.33**	73.77	71.45	75.98	73.68	71.70	**76.78**	63.22	64.80	55.13	53.61	52.55	35.05	34.17	30.00	33.00	26.91	1882
1883	50.80	17.23	16.20	20.39	10.40	31.95	35.97	40.92	40.68	36.27	52.23	59.87	54.62	63.73	59.95	60.57	64.64	74.40	74.50	77.49	77.96	76.94	71.08	75.34	72.53	66.84	65.39	57.10	60.45	47.65	46.75	48.53	36.85	38.97	41.90	31.30	26.65	1883
1884	51.61	6.85	26.10	31.40	24.70	21.52	31.83	27.13	41.19	51.41	43.35	51.17	54.05	58.75	62.40	63.50	64.95	75.10	75.02	76.69	77.00	76.92	**69.60**	73.60	73.09	78.79	68.17	71.00	66.80	65.20	49.27	48.05	41.48	37.47	39.38	**14.52**	**12.07**	1884
1885	50.94	25.68	5.42	17.57	28.00	**10.83**	27.00	39.22	40.03	41.64	53.28	53.95	53.95	53.80	58.75	68.89	74.85	75.30	70.77	71.44	78.55	82.20	77.30	75.53	70.06	**60.99**	71.02	68.11	54.50	49.53	46.31	44.48	44.65	39.22	27.68	27.30	43.05	1885
1886	52.78	10.55	9.72	16.36	22.03	34.35	39.53	29.98	45.17	40.80	41.15	62.35	60.03	66.23	66.37	**75.64**	71.35	75.86	70.41	81.10	78.10	77.41	76.08	**85.37**	76.64	78.11	67.54	69.49	65.46	65.33	52.82	45.60	33.58	38.10	26.05	33.30	14.77	1886
1887	52.75	3.72	28.87	33.19	21.63	29.82	33.12	43.83	46.65	38.50	61.05	53.60	59.78	**69.03**	67.77	68.77	71.91	78.40	72.55	77.17	84.59	80.48	80.36	75.90	65.74	74.63	67.27	59.00	61.67	50.45	42.00	50.57	43.03	29.05	34.68	29.14	15.52	1887
1888	51.28	17.98	**1.81**	28.02	27.05	34.75	34.83	25.45	42.26	39.25	55.63	55.82	58.70	59.63	55.30	65.07	70.03	78.65	71.62	81.15	78.50	80.56	76.88	74.97	70.82	70.97	63.78	59.33	54.67	49.05	52.55	44.23	35.70	32.05	36.93	31.72	31.68	1888
1889	52.20	29.15	27.48	26.98	28.82	24.73	22.41	35.53	45.77	47.29	53.98	55.07	56.85	64.50	64.05	61.00	65.28	72.37	73.53	74.70	78.93	**72.32**	73.30	75.05	73.91	67.35	62.98	58.25	51.58	52.30	47.25	39.02	33.58	32.90	**42.95**	41.25	40.41	1889
1890	52.86	27.10	11.10	30.50	38.85	30.00	18.84	28.85	38.13	43.89	53.03	57.25	58.47	59.03	59.17	69.66	70.53	77.27	83.85	81.83	84.40	79.75	79.10	70.50	73.47	69.60	63.98	55.55	59.23	54.15	47.23	41.28	43.95	40.50	30.25	35.05	34.23	1890
1891	51.91	26.65	26.98	34.20	24.28	31.35	26.94	34.43	35.80	39.45	42.78	61.40	**64.55**	58.38	66.52	58.02	65.40	70.33	74.12	**71.35**	71.90	72.80	77.23	79.20	**65.34**	64.95	75.68	69.20	52.60	52.43	54.25	49.25	31.75	35.07	39.22	38.38	36.45	1891
1892	51.74	23.78	4.15	37.32	32.13	32.32	39.94	39.13	29.67	46.00	49.27	49.63	56.18	53.80	57.43	61.77	70.03	77.52	75.40	71.43	79.92	80.32	82.40	73.35	68.43	69.40	64.68	**74.95**	60.35	62.40	45.29	41.80	42.33	35.17	34.40	21.18	17.14	1892
1893	52.08	27.40	18.55	22.98	14.63	33.07	33.78	36.87	34.48	46.86	**61.82**	50.63	50.58	55.13	65.97	61.39	69.95	77.58	74.30	78.68	79.90	77.36	77.73	72.02	67.50	70.68	73.42	62.90	61.45	53.63	51.54	45.08	34.30	31.92	25.90	34.88	40.90	1893
Means	52.82	25.05	23.19	27.08	26.81	31.40	33.52	36.08	39.91	44.64	49.63	53.34	56.96	60.83	63.44	67.45	69.96	74.54	76.25	78.54	78.70	77.91	77.70	76.14	73.38	71.02	67.23	64.19	60.32	54.75	49.08	46.31	38.92	33.86	32.53	29.92	27.20	Means

III.—Rainfall (R); Mean (T), Maximum (H) and Minimum (L) Temperature for Each Ten Days of the Thirty-six Years.

Year.....		Annual...	JANUARY.			FEBRUARY.			MARCH.			APRIL.			MAY.			JUNE.			JULY.			AUGUST.			SEPTEMBER.			OCTOBER.			NOVEMBER.			DECEMBER.			Year.....
			1–10	11–20	21–31	1–10	11–20	21–28	1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20	21–31	1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20	21–31	
1858	R	38.97	.70	.80	1.00	.13	.23	.10	.78	.72	.52	3.28	.79	.57	1.08	.27	3.77	3.12	.41	1.66	1.10	**4.92**	.48	1.87	.31	1.80	1.10	.00	.00	.40	1.00	**4.26**	.31	.36	.02	1.10	.00	.01	1858
	T	53.25	40.00	33.90	**41.00**	24.75	22.50	30.03	36.33	51.90	53.50	47.83	48.33	58.77	54.55	56.50	68.05	71.40	72.25	81.78	79.90	81.25	81.36	81.08	78.10	65.65	69.55	70.50	68.83	59.98	56.67	52.84	38.38	28.55	34.50	**14.13**	26.22	36.48	
	H	100	.....	.....	.....	44	48	71	72	78	82	74	74	87	80	88	91	93	96	98	98	98	100	99	100	96	92	98	94	92	86	75	50	45	52	44	48	56	
	L	−16	.....	.....	.....	−1	0	−1	10	30	32	32	30	31	44	44	53	52	56	74	71	74	68	70	64	50	54	50	58	32	30	34	19	11	17	**−16**	2	21	
1859	R	36.21	.25	.03	1.22	.20	.00	.41	1.86	.42	.60	.77	.55	1.22	3.32	3.75	2.35	.00	3.20	.37	2.30	.50	2.19	2.10	2.24	2.50	.31	1.01	.50	.00	.64	.00	.00	1.20	.00	.20	.00	.00	1859
	T	53.46	28.62	**38.00**	26.89	24.33	34.45	39.66	47.05	43.53	47.16	41.50	50.10	56.70	65.70	64.08	68.75	68.05	77.37	78.28	81.48	84.00	76.41	80.35	78.22	73.27	64.90	67.88	64.80	58.10	54.05	45.05	53.10	40.08	**43.12**	16.60	25.90	20.27	
	H	104	52	59	48	52	57	63	71	64	74	90	85	84	86	84	88	93	97	94	104	103	94	98	95	89	82	96	88	84	78	64	84	68	66	62	60	50	
	L	−8	−3	16	−2	7	−5	25	35	30	30	22	29	32	55	44	42	54	62	62	70	70	62	68	66	58	50	42	36	30	28	30	28	10	28	−8	0	−6	
1860	R	**15.17**	.00	.00	.60	.50	1.07	.27	.00	.00	.00	.00	.11	.01	.38	.00	.75	2.49	.00	.20	.00	.22	1.87	1.00	1.00	.85	.00	1.00	.35	.00	.00	.50	.73	.85	.00	.00	.00	.50	1860
	T	**57.66**	25.28	34.36	30.64	27.78	36.67	37.53	**51.25**	51.00	50.43	58.00	**63.69**	52.92	67.25	70.03	70.22	72.68	81.45	**86.75**	**88.63**	86.03	**86.04**	**86.00**	85.00	84.00	72.44	69.63	74.70	69.08	46.80	53.34	38.08	41.42	31.27	34.03	26.50	33.14	
	H	**115**	52	62	**70**	55	56	64	73	74	81	90	78	79	93	95	97	**98**	99	**109**	**115**	**109**	**112**	.....	.....	.....	.....	96	100	91	73	76	58	68	53	52	45	50	
	L	−6	−3	−4	−6	−6	22	18	32	30	24	34	38	30	30	53	57	59	67	76	73	73	65	.....	.....	.....	.....	43	55	36	29	34	25	26	10	20	18	21	
1861	R	34.66	.00	**1.35**	.00	.00	.00	.00	.00	.00	.00	2.00	.00	.00	.97	2.43	.36	.61	1.38	**6.21**	1.28	3.30	1.50	.53	.43	.43	4.18	2.33	1.55	1.58	.54	.00	.00	.70	.00	.50	.50	25.09	1861
	T	54.17	28.08	24.62	18.64	23.95	36.08	42.94	41.44	41.20	41.02	44.86	52.37	64.38	63.28	60.11	69.11	77.27	81.00	76.58	79.75	74.75	79.66	85.65	76.43	72.68	74.08	72.02	58.60	59.90	58.50	49.25	49.20	46.90	29.39	34.28	37.93	25.09	
	H	99	60	47	55	50	60	70	79	75	80	81	92	93	88	81	90	94	98	94	93	88	94	99	92	92	95	90	80	84	84	74	78	70	48	61	65	63	
	L	−9	12	−5	−9	−9	18	18	28	20	20	31	32	50	55	48	48	66	70	67	68	66	64	76	65	62	64	57	41	42	42	32	30	30	16	10	15	0	
1862	R	26.20	1.00	.30	.20	.00	.12	.00	.00	.00	.00	.80	2.13	.70	.41	2.27	.50	.00	.71	.66	2.53	.28	1.02	.97	1.23	.65	1.40	.89	1.86	1.55	.07	.00	.00	1.70	.00	.00	.10	**2.15**	1862
	T	53.21	21.65	11.20	20.89	20.34	19.19	34.09	27.03	39.56	45.22	48.87	**46.08**	55.69	64.39	63.75	67.78	66.17	73.60	79.08	83.81	79.18	76.77	81.18	73.31	78.07	77.00	68.32	69.30	67.25	56.10	53.60	48.35	41.03	40.87	34.43	38.65	**44.73**	
	H	103	39	34	42	47	42	54	48	70	85	75	76	78	84	89	85	88	93	101	103	100	95	101	90	100	97	94	91	94	**91**	84	72	66	69	62	63	65	
	L	−6	1	−6	−5	0	4	18	8	28	31	31	33	36	48	46	48	56	52	59	72	68	65	66	64	66	64	54	51	40	37	16	31	25	23	14	20	20	
1863	R	40.65	.90	.57	.00	.03	1.40	**1.27**	.00	.00	.00	.00	2.00	.....	.25	1.50	1.38	2.78	.02	3.15	1.24	.81	2.49	6.12	.00	.09	.01	.37	.35	.00	.06	2.34	1.60	**4.23**	.40	.80	.54	.83	1863
	T	54.26	40.97	32.65	36.38	18.63	39.19	33.87	34.65	**52.38**	49.86	60.36	57.55	60.93	68.19	67.13	71.02	65.40	74.92	70.88	79.22	70.98	76.91	80.13	84.05	70.48	77.05	69.08	71.33	53.14	55.73	36.23	44.86	**48.62**	23.44	39.22	20.36	24.20	
	H	96	60	**69**	53	39	53	50	70	81	86	88	**93**	77	88	86	91	79	91	92	92	87	89	91	96	96	95	93	91	72	79	61	62	68	46	57	39	59	
	L	−13	24	−4	18	−4	14	26	20	31	32	40	39	51	48	55	50	56	59	53	70	58	67	71	71	54	63	39	49	36	34	**11**	28	29	1	26	−4	**−13**	
1864	R	20.25	.03	.00	.41	.30	.40	.40	.81	.02	1.29	.74	.00	.94	1.43	.00	.86	.63	1.20	.23	1.50	1.48	.04	.75	1.09	.00	.41	.00	1.89	.41	.08	.19	1.56	.02	.03	.33	.78	.00	1864
	T	52.24	**1.67**	27.63	39.05	30.00	32.17	34.88	42.77	32.61	39.05	43.22	46.73	52.60	59.45	64.75	69.70	69.92	73.03	83.83	83.02	83.63	79.50	77.98	74.67	80.27	82.48	73.93	64.32	53.48	48.62	45.05	**36.35**	34.20	38.05	23.88	25.72	28.73	
	H	101	22	43	60	.....	.....	.....	59	44	68	65	79	79	81	85	89	90	99	100	101	101	100	99	96	98	**104**	100	95	71	73	67	58	53	58	58	42	52	
	L	−13	−13	0	19	.....	.....	.....	33	27	19	27	28	34	31	35	51	50	58	72	68	70	61	63	56	64	67	50	42	31	29	25	21	22	10	5	−6	2	
1865	R	35.13	.03	.00	.30	.00	2.02	.39	.02	.32	1.93	1.23	.50	1.20	.56	.73	.75	3.21	3.73	1.04	.76	2.42	3.24	2.61	2.43	.00	.73	.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1865
	T	53.54	31.88	33.50	16.77	31.95	38.60	33.19	**22.85**	42.45	48.32	45.12	53.50	54.55	61.75	64.33	74.66	**77.38**	74.10	76.92	81.33	70.78	74.20	76.03	74.45	74.45	74.98	73.47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	H	93	48	49	49	52	58	54	53	74	67	68	76	75	90	88	86	90	84	90	93	88	88	88	87	90	90	89	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	L	−8	19	11	−5	17	25	13	**−8**	20	31	23	32	**27**	32	32	64	64	66	59	66	50	61	66	66	59	58	49	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
1866	R	25.91	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.85	.20	1.78	1.10	2.49	.01	.72	2.40	.15	.07	.00	.03	4.92	1.30	.01	.13	.00	.30	.25	.18	.94	.80	1.10	.12	1866
	T	52.73	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	59.25	65.08	62.23	68.35	69.60	74.68	73.25	79.18	83.50	80.10	78.68	70.70	64.70	59.63	59.80	66.15	61.68	45.89	**56.78**	43.57	36.60	33.48	28.40	25.18	
	H	98	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	75	90	85	86	87	94	84	94	96	98	98	98	90	80	87	85	88	72	81	74	62	57	36	46	
	L	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45	48	45	58	54	58	64	67	68	64	68	55	53	42	40	49	38	30	34	24	20	7	8	4	
1867	R	26.50	.00	.05	.60	.00	2.01	.00	.16	.32	.15	1.15	1.29	.00	.00	2.72	.87	2.73	2.85	.07	2.35	2.61	.46	.00	.26	.44	.85	2.65	.00	.06	.13	.72	.00	.00	.49	.00	.51	.00	1867
	T	51.45	22.43	26.20	19.41	31.12	33.93	29.62	24.90	19.70	**26.91**	42.25	54.35	52.58	61.20	58.48	**56.70**	71.10	71.40	76.65	75.25	71.55	77.13	76.70	78.13	76.25	67.33	72.72	67.30	59.55	62.80	47.47	52.40	45.05	36.00	37.90	33.15	35.25	
	H	96	44	47	42	57	53	57	36	42	52	71	75	75	93	74	71	91	85	90	91	90	95	91	94	90	92	92	86	92	78	72	**96**	70	72	62	61	58	
	L	−12	−4	8	−12	4	4	−2	10	**−9**	6	31	32	41	41	44	48	58	58	64	64	59	65	64	62	59	52	55	49	42	40	29	20	24	7	19	16	15	
1868	R	30.09	.00	.30	.01	.00	.00	.18	.61	.30	.02	.02	1.17	.77	.00	.52	.86	.73	1.70	1.05	.21	4.28	.21	1.63	1.00	3.31	.06	**4.10**	.56	.53	1.98	.00	.54	.99	.64	.55	.00	.26	1868
	T	50.98	22.65	13.40	17.45	15.70	38.43	34.55	40.47	47.38	55.07	44.42	47.03	53.30	66.73	63.05	68.25	70.45	77.75	70.83	83.80	83.28	81.73	74.77	67.58	69.11	66.93	**58.82**	**55.10**	56.93	53.37	50.20	44.53	36.65	33.07	22.78	27.40	24.43	
	H	98	61	37	43	41	69	68	65	69	**87**	67	83	78	88	78	83	92	97	95	97	98	98	92	85	86	87	84	78	79	73	75	71	60	45	34	48	57	
	L	−16	−5	−5	−12	−6	5	11	19	33	33	27	34	39	52	50	55	60	64	53	71	72	67	62	59	54	52	39	34	32	33	34	24	21	16	−9	**−16**	5	
1869	R	27.86	.63	.34	.18	.62	.35	.20	.00	.10	.96	.43	.09	.64	1.47	.29	.14	.69	1.14	1.64	6.07	.27	4.90	1.10	.88	1.29	.26	.15	1.60	.08	.38	.00	.05	.22	.79	.18	.12	.04	.00	1869
	T	**49.14**	30.95	29.77	30.64	32.70	37.30	**18.44**	28.65	30.63	45.43	63.60	49.40	51.25	60.98	54.45	61.64	**63.20**	66.60	68.75	73.58	74.30	70.75	74.63	75.67	75.42	64.13	61.57	58.07	54.30	**43.35**	**35.36**	43.25	33.35	34.03	37.05	28.38	25.20	
	H	93	49	42	54	55	65	44	53	62	72	76	77	77	88	75	86	82	84	86	86	88	88	90	89	91	83	83	75	79	73	72	65	51	48	58	43	42	
	L	−4	9	15	9	16	12	−4	3	−2	32	22	28	41	44	43	51	47	**46**	58	62	63	58	64	65	62	46	46	41	39	29	19	26	20	20	19	9	−3	
1870	R	22.10	.00	.05	.00	.00	.00	.00	.42	.59	.44	.14	.07	.29	.25	.15	.51	.32	.32	.15	.06	2.77	.15	1.61	2.83	.77	1.02	1.29	2.26	.89	.40	3.77	.08	.00	.05	.07	.38	.00	1870
	T	53.71	28.05	21.92	31.64	33.57	29.58	38.94	32.67	28.13	42.86	48.50	47.15	62.25	23.27	70.78	68.73	67.63	70.62	83.55	81.80	**86.33**	85.07	77.22	**65.60**	72.84	70.60	69.23	62.05	60.33	52.02	55.82	50.65	42.75	41.00	41.85	26.28	22.41	
	H	102	58	58	58	68	69	65	63	62	68	80	80	85	86	92	93	89	93	102	100	102	100	99	92	94	92	84	74	75	74	78	69	70	**74**	63	45	48	
	L	−11	−2	−3	9	13	−3	18	9	0	28	36	19	44	49	55	61	55	56	69	73	70	70	59	52	64	55	60	52	55	34	30	28	24	17	26	4	−11	
1871	R	28.84	.00	.33	.20	.28	1.15	1.05	.13	.33	.56	1.45	.89	.66	.44	3.73	.90	.52	1.42	.11	2.58	.97	1.48	2.60	.16	1.47	1.17	.75	.00	.04	.73	.43	1.26	.53	.17	.00	.00	.35	1871
	T	53.91	38.83	17.50	30.11	32.00	32.38	**45.03**	46.48	48.70	45.70	59.42	54.58	57.20	55.15	69.88	69.66	76.28	76.45	79.05	77.40	80.10	74.82	79.77	75.93	70.57	73.68	64.57	61.05	60.92	53.13	53.61	53.20	36.93	**20.57**	27.25	27.33	17.58	
	H	100	**62**	37	45	57	69	71	77	**83**	75	91	81	82	74	88	82	93	92	100	95	96	90	94	94	94	91	90	86	91	81	81	72	58	38	52	53	48	
	L	−7	19	−7	10	10	3	28	25	22	29	33	32	36	45	55	57	67	63	63	64	62	64	70	60	53	54	48	39	36	36	31	30	18	4	−5	8	−6	
1872	R	35.78	.00	.12	.01	.15	.10	.23	.12	.00	.80	.61	.34	1.11	3.28	1.41	2.12	.17	1.51	.05	**3.15**	1.38	4.39	.03	4.12	1.17	**5.13**	.02	.55	.34	.00	2.42	.00	.00	.00	.10	.20	.65	1872
	T	51.22	30.45	31.70	13.68	23.83	33.92	39.81	36.60	33.60	41.41	53.08	54.07	62.10	52.83	56.00	67.32	74.15	74.40	76.73	76.85	77.13	78.39	76.68	75.62	78.34	72.48	62.02	60.52	59.92	52.27	48.41	45.92	28.78	26.33	33.65	17.75	12.50	
	H	98	51	49	40	54	59	68	57	61	73	77	83	89	77	81	90	96	96	93	98	92	93	95	93	96	96	90	86	91	87	72	70	55	57	60	48	34	
	L	−11	10	18	−8	−10	6	26	23	18	25	30	37	39	30	37	54	60	60	67	62	70	68	66	67	57	57	37	41	27	35	29	32	6	2	8	−10	−11	
1873	R	25.98	.50	.02	.32	.00	.05	.25	.15	.33	.23	.61	.28	.78	1.41	3.56	3.57	1.67	1.18	1.83	.90	1.00	.94	1.32	.32	.00	.07	.00	1.78	.00	.42	.00	.06	.00	.76	1.02	.65	.00	1873
	T	51.52	19.60	27.88	**12.25**	31.73	35.30	22.97	39.00	47.38	39.91	49.30	45.33	**47.30**	54.38	63.17	67.41	70.35	74.88	77.20	77.35	77.35	77.35	75.85	76.30	81.16	70.65	66.45	60.80	60.45	57.75	36.93	49.45	39.73	35.70	27.53	28.75	29.75	
	H	104	33	49	−5	**−14**	57	10	12	66	21	74	65	85	**27**	76	86	85	88	96	97	.....	.....	.....	93	98	104	62	94	90	84	83	67	79	72	61	65	48	
	L	−14	−8	−5			10	12	10	21	**3**	23	27	**27**	44	51	57	60	60	60	.....	.....	.....	62	59	62	46	**38**	40	30	32	14	29	13	12	6	5	10	

(*Continued on sheet* xix.)

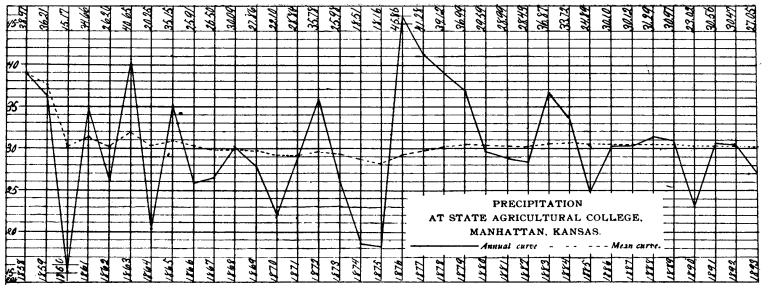
III.—Rainfall (R); Mean (T), Maximum (H) and Minimum (L) Temperature for Each Ten Days of the Thirty-six Years—*Continued.*

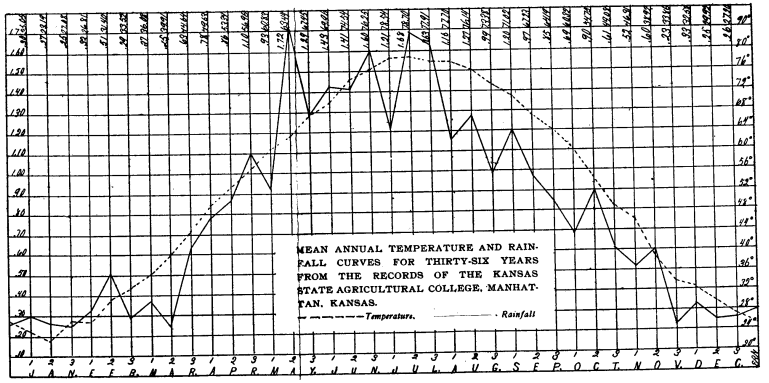
Year.....		Annual.....	JANUARY.			FEBRUARY.			MARCH.			APRIL.			MAY.			JUNE.			JULY.			AUGUST.			SEPTEMBER.			OCTOBER.			NOVEMBER.			DECEMBER.			Year.....
			1-10	11-20	21-31	1-10	11-21	21-28	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	
1874	R	18.51	.00	.00	.50	1.00	.05	.00	.00	.00	.30	.00	1.02	.38	.30	2.51	.17	2.00	2.27	.04	.00	.18	.00	.04	.19	.02	1.13	3.25	.15	.12	.06	.04	.28	1.06	.78	.00	.37	.30	1874
	T	53.22	30.25	22.90	26.10	23.95	31.43	19.25	35.90	40.80	37.34	39.85	46.85	53.58	64.25	66.35	75.39	76.45	72.58	79.82	82.03	80.48	84.41	84.50	84.70	80.45	71.40	61.30	62.78	60.78	54.22	53.68	54.30	33.65	27.83	38.55	29.98	28.93	
	H	110	60	40	50	41	48	44	62	68	67	66	74	84	88	80	93	94	90	93	102	103	110	**109**	108	104	98	86	84	84	78	79	78	60	49	58	46	45	
	L	-4	1	3	-4	2	13	6	18	21	20	25	30	32	40	49	55	50	47	54	57	60	57	63	66	58	49	39	42	39	31	15	26	**3**	5	19	10	0	
1875	R	18.16	.06	.00	.16	.42	.25	.20	.11	.00	1.10	.12	.15	1.33	.81	1.52	.13	.90	.00	1.16	2.84	.05	.44	.93	.11	.36	1.10	1.75	.00	.74	.00	.30	.30	.02	.02	.15	.00	.63	1875
	T	50.19	7.60	8.50	27.30	15.78	24.80	28.03	28.25	31.45	49.61	48.85	**46.08**	50.42	57.78	62.50	71.45	68.23	78.67	78.15	75.23	77.05	73.59	72.45	67.50	76.02	**77.20**	63.30	57.15	56.32	51.83	51.16	45.55	35.75	26.60	37.30	34.50	42.45	
	H	98	31	38	48	46	48	63	53	67	80	74	72	74	92	85	98	88	95	98	93	93	92	89	83	93	97	94	85	83	88	80	69	70	60	61	66	72	
	L	-17	-17	-16	-2	-10	8	3	5	12	23	19	23	32	**29**	39	43	42	49	57	57	63	60	51	**47**	55	54	38	36	36	29	23	22	4	-2	14	4	17	
1876	R	**45.86**	.00	.00	.00	.00	.63	.02	.38	1.13	2.45	.70	**2.83**	3.99	**4.13**	.61	.99	1.75	1.25	1.60	.25	1.90	3.58	.20	**8.72**	1.78	.30	2.66	.15	.00	1.51	.10	1.65	.10	.00	.00	.00	.50	1876
	T	51.63	37.00	37.40	27.73	36.70	38.28	35.78	38.00	**25.35**	34.43	48.97	54.98	63.14	**52.20**	70.75	68.14	67.10	**63.38**	77.40	77.85	79.03	74.52	75.20	77.17	76.45	72.40	62.98	59.60	**50.90**	51.77	57.59	44.03	33.77	33.73	26.93	27.57	15.00	
	H	95	60	62	53	68	69	68	66	58	49	74	83	84	78	84	86	88	80	90	92	95	92	92	90	91	93	85	87	74	77	83	70	68	52	57	69	48	
	L	-11	10	13	-1	-4	14	12	9	-3	13	26	30	41	34	50	50	**37**	50	60	55	62	51	55	61	56	48	41	**25**	27	**21**	32	21	9	0	2	-3	-11	
1877	R	41.28	.10	.10	.45	.41	.10	.40	.25	2.00	2.45	.40	2.28	1.40	.23	3.87	1.10	**5.48**	.00	1.28	1.77	1.75	.64	1.00	.45	1.33	.55	.00	.97	**3.64**	**3.75**	1.68	.43	1.24	.23	.80	.30	.45	1877
	T	54.14	25.68	15.85	33.26	41.60	37.65	39.50	29.17	41.23	45.55	49.35	58.58	51.37	55.70	67.38	68.93	64.93	76.80	78.81	82.20	74.98	75.32	76.57	72.25	76.20	66.47	70.75	74.28	54.45	52.33	51.91	37.28	47.32	31.53	36.93	**49.30**	39.07	
	H	100	50	35	64	62	65	60	50	75	76	84	79	80	76	83	84	81	93	90	100	90	94	93	89	96	85	93	90	80	69	73	63	65	54	61	67	64	
	L	-11	-8	-11	-2	21	16	24	3	14	11	20	36	28	31	52	51	40	**46**	59	60	47	49	53	**47**	43	48	38	50	27	27	29	**12**	28	2	13	24	14	
1878	R	39.12	.00	.94	**1.41**	.77	.67	.00	.69	.15	.93	.44	.88	.70	1.85	1.71	.50	1.26	1.76	2.00	2.45	1.44	**8.82**	2.16	.00	.50	2.44	.30	.48	.25	.69	.12	.30	.00	**1.60**	.18	.55	.18	1878
	T	54.43	27.80	36.55	34.77	34.60	**41.83**	41.31	45.33	50.72	52.30	51.13	60.15	62.05	60.00	**54.40**	70.79	65.65	69.30	**65.13**	75.23	83.72	76.98	79.70	77.88	75.36	70.55	64.95	65.88	61.83	59.95	43.36	50.73	43.25	36.35	33.25	17.80	13.79	
	H	97	55	54	53	58	68	66	75	78	81	81	77	85	85	72	85	88	86	86	90	95	92	94	94	97	93	88	91	89	89	68	75	67	63	57	**36**	30	
	L	-7	0	11	18	6	25	16	17	24	24	27	39	35	34	34	45	43	52	50	51	64	59	55	52	47	**37**	37	39	41	30	17	23	28	15	18	−6	−7	
1879	R	36.99	.00	.00	.00	.25	.25	.25	.00	.00	.00	.25	.92	2.04	.06	1.07	.66	1.07	**3.88**	3.53	1.05	3.20	.66	.32	1.08	.21	.45	2.03	1.82	.35	2.28	.00	**2.31**	**4.94**	.58	.53	.00	.09	1879
	T	53.54	.....	.....	.....	**6.75**	23.58	40.13	49.78	33.45	**55.75**	48.80	56.22	62.18	63.60	67.50	74.10	73.53	70.96	73.42	82.35	80.38	77.43	76.63	74.30	81.41	67.40	63.15	68.75	**71.65**	64.15	47.97	45.18	42.70	40.30	34.03	**21.42**	19.34	
	H	99	.....	.....	.....	28	36	58	**85**	69	85	76	80	80	93	89	99	97	89	91	98	93	93	97	94	99	90	82	92	86	86	75	68	58	70	56	42	**74**	
	L	-14	.....	.....	.....	-14	3	29	17	10	28	18	35	42	40	50	53	52	59	63	70	68	68	65	61	69	52	49	52	59	39	24	18	16	15	13	3	−10	
1880	R	29.59	.27	.00	.29	.00	.00	.05	.00	.10	.40	.26	.00	.82	.27	.00	3.47	3.10	.00	1.00	1.87	.56	1.35	.00	1.60	**7.21**	1.50	.18	.84	1.26	.94	.00	1.94	.00	.03	.00	.00	.28	1880
	T	53.50	**47.19**	37.55	33.00	32.61	36.85	40.94	42.00	29.43	51.30	52.18	58.37	59.83	68.33	**75.67**	67.50	72.10	75.65	75.55	76.35	76.18	75.56	71.91	80.77	75.30	67.80	67.18	59.95	61.20	48.50	47.14	43.80	**26.08**	23.40	25.72	34.63	13.86	
	H	97	60	61	44	56	65	67	70	56	80	75	89	85	94	89	91	90	88	89	78	92	88	92	97	79	84	86	79	81	72	73	67	53	37	49	65	33	
	L	-16	24	15	17	11	13	4	17	−2	27	30	32	32	44	52	48	45	53	52	61	56	55	50	60	61	45	41	40	35	27	23	20	7	7	0	**17**	−16	
1881	R	28.99	.20	.25	.10	2.06	.69	.00	.75	.00	.00	.13	.80	.63	.96	4.44	1.27	.71	.33	2.34	.00	.30	1.02	.00	.43	.00	1.65	.00	**3.27**	.15	3.34	.78	.10	1.76	.00	.33	.03	.17	1881
	T	53.93	14.70	21.25	21.75	29.58	12.70	26.03	31.90	34.58	41.61	**38.13**	54.30	63.85	66.63	69.27	68.80	75.50	**82.35**	76.28	82.98	85.72	75.27	83.50	81.85	**85.86**	76.45	66.25	73.68	64.75	**66.25**	**66.98**	45.00	35.78	36.95	38.78	42.32	34.70	
	H	103	40	44	49	47	32	44	58	55	72	57	82	81	84	87	82	90	95	95	100	103	96	99	102	103	101	92	93	88	77	70	68	64	64	65	56	53	
	L	-13	-13	-8	4	0	-13	8	13	19	21	**13**	**18**	44	46	55	55	63	72	61	69	75	64	73	65	70	49	36	51	42	36	38	27	10	7	23	**18**	16	
1882	R	28.43	.10	.22	.10	.00	.40	.02	.75	.05	.00	3.19	.02	.26	1.56	1.67	1.97	.62	2.47	.03	1.09	1.62	5.02	.29	.38	.20	.00	.00	1.70	2.07	1.42	.00	.00	.93	.02	.05	.28	.11	1882
	T	54.32	34.40	27.88	32.59	**41.72**	37.43	42.38	39.10	49.20	51.41	61.27	50.43	56.73	61.02	56.68	57.43	66.40	71.40	83.83	75.65	**68.33**	73.77	71.45	75.98	73.68	71.70	**76.78**	63.22	64.80	55.13	53.61	52.55	35.05	34.17	30.00	33.00	26.91	
	H	102	58	56	60	63	69	61	70	77	78	86	78	85	86	77	72	86	89	96	98	88	94	91	90	90	93	102	83	83	77	82	79	71	56	62	57	44	
	L	-7	15	-1	10	16	10	7	12	30	23	40	32	36	36	38	**37**	40	56	73	52	49	52	52	55	55	50	49	47	45	32	33	31	15	20	−7	6	9	
1883	R	36.87	.08	.25	.00	.02	.81	.92	.30	.00	.75	.75	.72	.89	.50	2.40	1.93	4.18	1.45	3.95	1.29	.30	2.56	.11	3.83	.00	.00	1.26	.00	1.76	3.15	2.14	.30	.00	.00	.25	.00	.26	1883
	T	50.80	17.23	16.20	20.39	10.40	31.95	35.97	40.92	40.68	36.27	52.23	59.87	54.62	63.73	57.95	60.57	64.64	74.40	74.50	77.49	77.96	76.94	71.08	75.34	72.53	66.84	65.39	57.10	60.45	47.65	46.75	48.53	36.85	38.97	41.90	31.30	26.65	
	H	98	47	55	49	38	63	65	69	73	71	81	**93**	85	90	78	81	90	94	96	95	98	96	88	91	93	94	86	89	87	69	66	69	62	66	66	**61**	53	
	L	-17	-3	-15	**-14**	**-17**	3	24	14	13	24	31	38	33	41	39	**37**	46	51	55	57	60	61	57	59	50	46	44	43	42	31	31	25	11	15	22	9	2	
1884	R	33.72	.30	.00	.00	.38	.20	.00	.00	1.14	1.22	.04	1.72	1.47	.78	1.75	2.10	1.93	.00	1.89	1.00	4.00	.64	.00	3.80	2.41	.07	.00	3.26	1.87	.10	.25	.00	.01	1.06	.02	.22	.09	1884
	T	51.61	6.85	26.10	31.40	24.70	21.52	31.83	27.13	41.19	51.41	43.35	51.17	54.05	58.75	62.40	63.50	64.95	75.10	75.02	76.69	77.00	76.92	**69.60**	73.60	73.09	78.79	68.17	71.00	66.80	65.20	49.27	48.05	41.48	37.47	39.38	**14.52**	**12.07**	
	H	98	55	54	63	63	61	60	60	66	75	73	83	85	84	85	79	86	91	95	98	95	94	93	92	94	92	88	93	87	84	68	70	65	57	57	**31**	36	
	L	-22	-22	0	-10	-3	-6	1	8	17	28	27	32	32	35	41	45	47	53	63	54	63	58	**48**	57	51	57	48	53	35	54	33	27	19	12	29	−6	−7	
1885	R	24.89	.63	.10	.35	.10	.15	.30	.00	.00	.00	.10	1.13	2.80	.10	3.13	1.07	.02	.74	.91	2.71	.13	2.15	.02	.32	.55	3.80	.16	.42	.00	1.65	.07	.19	.00	.00	.60	.15	.34	1885
	T	50.94	25.68	5.42	17.57	28.00	**10.83**	27.00	39.22	40.03	41.61	53.28	53.95	53.95	53.80	55.75	68.89	74.85	75.30	70.77	71.44	78.55	82.20	77.30	75.53	70.06	**60.99**	71.02	68.11	54.50	49.53	46.31	44.48	44.65	39.22	27.68	27.30	43.05	
	H	100	34	36	43	59	30	60	70	69	73	69	81	69	77	74	86	94	94	97	92	97	100	98	98	97	83	91	96	85	89	74	83	**84**	62	62	59	64	
	L	-18	-18	-18	-13	-15	-18	11	23	15	18	28	28	45	35	43	60	50	56	52	54	62	70	55	49	41	41	45	42	**20**	25	25	23	22	22	4	−5	24	
1886	R	30.10	.60	.71	.05	.27	.00	.08	1.05	.25	.25	**3.67**	1.34	.25	1.50	1.90	1.37	.00	2.36	3.07	.00	.80	2.04	1.32	.23	.51	.74	.00	.40	.00	.59	1.83	.00	1.24	.00	.05	**1.53**	.00	1886
	T	52.78	10.55	9.72	16.36	22.03	34.35	39.53	29.98	45.17	40.80	41.15	62.35	60.03	66.23	66.39	**75.64**	71.36	75.86	70.41	81.10	78.10	77.41	76.08	**85.37**	76.64	78.11	67.54	69.49	65.46	65.33	52.82	45.60	33.58	38.10	26.05	33.30	14.77	
	H	110	41	37	51	58	54	69	50	82	80	71	87	88	88	95	**100**	97	101	91	105	106	102	97	**110**	**105**	101	99	**101**	91	90	79	79	65	64	62	54	40	
	L	-19	-19	-16	-10	-7	17	22	9	23	22	18	41	38	45	42	54	46	55	53	59	60	55	52	67	49	58	40	37	31	44	25	22	12	12	−3	11	−5	
1887	R	30.12	.63	.00	.05	.28	.43	.47	.20	.00	.42	.00	.85	2.00	.00	1.14	1.40	.98	2.99	.54	.75	.10	.05	**3.18**	1.74	1.75	4.93	.00	1.95	2.20	.00	.00	.29	.00	.00	.75	.00	.05	1887
	T	52.75	3.72	28.87	33.19	21.63	29.82	33.12	43.84	46.65	38.50	61.05	53.60	59.78	**69.03**	67.77	68.77	71.91	78.40	72.55	77.17	84.59	80.48	80.36	75.90	65.74	74.63	67.27	59.00	61.67	50.45	42.00	50.57	43.03	29.05	34.68	29.14	15.52	
	H	110	38	57	62	67	58	**72**	80	**83**	73	**98**	82	**94**	**99**	**96**	91	92	**104**	99	103	108	110	106	100	86	98	95	94	91	77	83	85	83	66	55	**56**	47	
	L	-23	**-23**	3	2	-9	2	0	24	24	20	23	34	32	37	40	53	44	50	**40**	**40**	**45**	**40**	50	54	44	56	45	42	42	29	16	24	11	**-9**	18	4	-9	
1888	R	31.29	.25	.40	.00	.40	**2.27**	.00	.93	.50	1.05	.38	.13	.87	.22	.77	1.26	.07	1.67	3.49	.92	3.27	.22	2.18	.24	2.04	.00	2.28	.58	1.28	1.12	.34	.94	.00	.00	.00	.12	1.10	1888
	T	51.28	17.98	**1.81**	28.02	27.05	34.75	34.83	25.45	42.26	39.25	55.63	55.82	58.70	59.63	55.30	65.07	70.03	78.65	71.62	81.15	78.50	80.56	76.80	74.97	70.82	70.97	63.78	59.33	54.67	49.05	52.55	44.23	35.70	32.05	36.93	31.72	31.68	
	H	107	57	38	63	53	**71**	65	64	**83**	68	77	87	88	88	82	86	90	99	95	101	105	107	104	98	92	96	92	83	81	72	82	78	57	60	62	**64**	61	
	L	**-26**	-6	**-26**	-13	-4	4	7	6	12	14	32	28	35	36	37	40	40	53	54	65	58	60	58	55	49	48	42	40	32	23	23	21	16	14	13	15	10	
1889	R	30.97	.00	.78	.00	.00	.33	.21	.00	**1.44**	.55	1.09	.25	.40	.51	**5.04**	.60	.83	1.89	.84	.73	2.51	4.90	1.71	.75	.02	.51	.92	.45	.00	.66	.76	1.97	.18	.08	.01	.01	.00	1889
	T	52.20	29.15	27.48	26.98	28.82	24.73	22.41	31.53	45.77	47.29	53.98	55.07	56.85	64.50	64.05	61.00	65.28	72.37	73.53	74.70	78.73	**72.32**	73.30	75.05	73.91	67.35	62.98	58.25	57.58	52.30	47.25	39.02	33.58	32.90	**42.95**	41.25	40.41	
	H	101	47	53	50	57	64	48	68	77	66	92	82	86	92	90	94	96	97	94	96	98	94	93	97	95	101	93	87	**96**	86	71	66	64	61	**74**	**75**	**74**	
	L	-10	**12**	-1	**4**	-7	-10	**-5**	15	23	26	26	38	36	30	**45**	39	41	49	58	53	66	50	52	62	51	38	36	30	28	29	26	21	13	11	23	**18**	0	

(*Concluded on sheet* xx.)

III.—Rainfall (R); Mean (T), Maximum (H) and Minimum (L) Temperature for Each Ten Days of the Thirty-six Years — *Concluded.*

Year.....		Annual.....	JANUARY.			FEBRUARY.			MARCH.			APRIL.			MAY.			JUNE.			JULY.			AUGUST.			SEPTEMBER.			OCTOBER.			NOVEMBER.			DECEMBER.			Year.....
			1–10	11–20	21–31	1–10	11–20	21–28	1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20	21–31	1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20	21–31	
1890	R	23.02	1.24	.75	.32	.12	.00	.12	.04	.00	.09	.67	.67	.40	.05	1.01	.75	.39	1.46	.00	.17	.41	2.31	2.71	.80	2.22	.64	2.01	.59	.05	1.94	.00	.64	.27	.00	.00	.00	.18	**1890**
	T	52.86	27.10	11.10	30.50	38.85	30.00	18.84	28.85	38.14	43.89	53.03	57.25	58.47	59.03	59.17	69.66	70.53	77.27	83.85	81.83	84.70	79.75	79.10	70.50	73.47	69.60	63.98	55.55	59.23	54.15	47.23	41.28	43.95	40.50	30.25	35.05	34.23	
	H	107	61	41	62	**70**	66	53	60	77	75	93	91	93	90	86	92	89	96	103	105	107	103	102	93	92	95	93	81	84	86	79	76	73	68	72	62	66	
	L	–19	3	–19	**–14**	16	5	**–5**	2	12	24	26	38	31	30	36	49	44	60	65	54	70	59	50	50	56	41	**30**	34	34	32	23	20	19	16	3	12	9	
1891	R	30.56	**1.34**	.00	.29	.16	.68	.00	.28	.42	1.54	.41	1.45	.00	1.16	1.18	2.45	2.71	1.40	3.34	1.02	1.02	3.47	.53	.19	.26	1.43	.00	.03	2.02	.43	.00	.04	.14	.08	.55	.54	.00	**1891**
	T	51.91	26.65	26.98	34.20	24.28	31.35	26.94	24.43	35.80	39.45	42.78	61.40	**64.55**	58.38	66.52	58.02	65.40	70.33	74.12	**71.35**	71.90	72.80	77.23	79.20	**65.34**	64.95	75.68	69.20	52.60	52.43	54.25	49.25	31.75	35.07	39.22	38.38	38.45	
	H	102	47	48	52	56	62	68	53	69	68	75	83	91	88	84	89	88	90	93	91	93	94	100	102	96	94	97	96	89	81	**87**	86	54	65	67	56	66	
	L	–4	2	8	15	0	18	0	–4	11	26	21	27	36	41	**30**	39	53	51	54	50	57	55	55	63	**40**	40	51	31	24	25	22	23	8	12	7	20	5	
1892	R	30.47	.32	.46	.00	**2.17**	.05	.73	**2.03**	.06	**2.51**	.92	1.41	.58	3.14	1.94	1.55	.00	.28	.04	1.86	1.42	.60	.81	.43	3.08	.36	.00	.00	.00	1.23	.09	.00	.65	.00	**1.18**	.30	.27	**1892**
	T	51.74	23.78	4.15	37.32	32.13	32.32	39.94	39.13	29.67	46.00	49.27	49.63	56.18	53.80	57.43	61.77	70.03	77.52	75.40	71.43	79.92	80.32	82.40	73.35	68.43	69.40	64.68	**74.95**	60.35	62.40	45.29	41.80	42.33	35.17	34.40	31.18	17.14	
	H	106	47	44	64	57	63	61	71	77	77	76	85	83	90	74	84	97	97	102	94	102	106	105	95	94	92	93	97	93	85	76	64	72	68	67	38	35	
	L	**–26**	9	**–26**	6	12	12	20	14	10	20	26	32	31	38	41	39	43	56	50	50	60	56	60	56	54	54	37	54	25	30	23	13	24	16	–3	–7	–9	
1893	R	27.05	.00	.00	.02	.05	.83	.01	.24	.02	.73	.03	.83	.42	.42	.86	**4.45**	2.24	.37	3.65	.76	1.20	2.33	.18	1.67	1.07	.06	.22	2.17	.05	.66	.00	.00	.79	.02	.60	.00	.10	**1893**
	T	52.08	27.40	18.55	22.98	14.63	33.07	33.78	36.87	34.48	46.86	**61.82**	50.63	50.58	55.13	65.97	66.39	69.95	77.58	74.30	78.68	79.90	77.36	77.73	72.02	67.50	70.68	73.42	62.90	61.45	53.63	51.54	45.08	34.30	31.92	25.90	34.88	40.90	
	H	109	49	46	53	56	61	60	70	75	**87**	**98**	84	86	90	91	91	94	98	100	97	101	98	101	97	97	103	**109**	99	95	81	**87**	79	68	70	54	61	68	
	L	–6	8	–1	3	–6	12	12	7	6	20	32	26	28	31	40	44	50	60	55	45	59	54	55	53	41	40	34	36	33	25	24	14	14	9	4	10	16	
Means,	R	30.17	.30	.27	.27	.32	.51	.24	.37	.25	.69	.78	.86	1.10	.93	1.72	1.42	1.43	1.41	1.60	1.21	1.68	1.79	1.16	1.27	1.09	1.20	.97	.85	.69	.90	.67	.52	.60	.23	.33	.25	.29	Means.
	T	52.82	25.05	23.19	27.08	26.81	31.40	33.52	36.08	39.91	44.04	49.63	53.34	56.96	60.83	63.44	67.45	69.96	74.54	76.25	78.54	78.70	77.91	77.70	76.14	73.38	71.02	67.23	64.19	60.32	54.75	49.08	46.31	38.92	33.86	32.53	29.92	27.20	
	H	101.4	49.27	47.91	52.61	53.85	57.91	60.38	62.46	69.91	74.43	78.57	81.46	83.03	86.03	84.53	85.11	90.47	93.14	95.11	96.54	97.17	96.77	96.25	94.83	94.49	93.34	91.58	88.60	85.74	80.40	72.74	72.49	64.89	58.97	59.17	53.26	52.83	
	L	–12.7	.33	–2.30	–.67	.44	7.15	11.82	13.89	16.86	23.00	26.86	31.63	35.91	39.61	44.53	49.36	51.22	56.36	59.50	60.66	62.83	60.17	60.00	59.23	54.80	50.74	43.31	42.63	35.54	31.83	25.80	23.91	17.03	11.54	9.83	6.37	2.69	





ANNUAL PRECIPITATION FOR THIRTY-SIX YEARS.

The diagram under table III, page xx, shows the annual precipitation at the college for the past 36 years. The vertical lines represent years. At the bottom of the lines will be found the year, and at the top the rainfall in inches and hundredths. The horizontal lines represent inches of rainfall, in which the multiples of five are made heavier, and the number of inches placed at the left. The annual precipitation is indicated by the continuous line. It will be noticed that the least rain fell in 1860 and the most in 1876. Probably the most noticeable feature is the wide variations from year to year in the first part of the curve and the much less variations in the last part. The greatest variation from normal in the last 15 years was 7.23 inches; in the preceding 15 years this was exceeded 7 times, the greatest variation from normal being 16.76 inches.

The mean or normal curve, indicated by the dotted line, is obtained by dividing the total rainfall to the end of any year by the number of years. The total rainfall for the first eight years was 247.24 inches, which, divided by eight,, gives a mean of 30.91 inches. This normal curve seems to be the best test of increase or decrease of rainfall. The normal curve was the lowest in 1875, when it reached 28.17 inches. There was a gradual increase to 1884, when it was 30.66 inches. This is the highest normal, if we except the first eight years, when no satisfactory normal could be established. Since 1884, there has been a nearly uniform decrease of normal until, in 1893, it was 30.17 inches.

ANNUAL RAINFALL AND TEMPERATURE.

In the diagram under table III, page xx, the continuous line shows the mean annual rainfall, divided into 10-day periods. The vertical lines indicate the 10-day periods, the figures 1, 2 and 3 at the bottom of the lines indicating respectively the first 10, second 10, and remaining days of the month abbreviated just below. The horizontal lines represent tenths of an inch of rainfall, with the number of tenths at the left or four degrees of temperature, with the number of degrees at the right. The dotted line is the mean annual temperature curve. The upper row of figures at the top gives the mean temperature in degrees and hundredths for each of the 10 days, the row below giving the rainfall in inches and hundredths. The

rainfall for the last division of each month that contains other than 30 days has been reduced to the 10-day mean, for the sake of comparison. Both of these curves are the normals obtained from the college records for the past 36 years.

The temperature curve is quite regular, being the lowest in the second decade of January, with a mean of 23.19 deg., and the highest the second decade of July, when the mean reached 78.70 deg. There is a cold spell the first decade of February, made somewhat more prominent by warm periods the last of January and the middle of February.

In general, it may be said that the rain-fall varies with the temperature. This is shown in the general outline of the two curves. The irregularities in the rain-fall curve seem to be accidental, such as would be obtained from a single year; when, however, it is remembered that this curve is the mean of 36 years, it will be seen that these irregularities are quite certain to occur. Assuming that the rain-fall should follow the temperature, three serious dry periods, of more or less extent may be noted, the first beginning with the 21st of February and continuing to the 20th of March. This is the period so trying to winter wheat, and much of the" winter-killed" wheat can be traced to this lack of rain-fall, rather than to extremes of temperature. The next threatening dry period is the first decade of July. This is a short period, and the previous wet period makes it less noticeable. This period is accompanied by a rapidly rising temperature to almost the maximum, and frequently by hot winds. This may result in so much injury to growing corn that the following wet period cannot covercome it.

The most serious dry period, on account of its duration, runs through August, September, and the first 10 days in October. It is this period that is especially trying to corn, late potatoes, and fall fruits. Two and one-quarter inches of rainfall during this period would bring the rainfall curve up to the temperature curve. Probably one inch of rain properly distributed would carry crops safely over this period. This suggests the good that might be done with a small amount of water applied at the right time.

The wet period in the middle of May frequently prevents the proper cultivation of crops, especially if continued to the end of June. The advantage that might naturally be expected from our wet years is often lost. by this season becoming too wet and cold, the cold being indicated by a slight depression of the temperature curve. It is not claimed that any or all of these periods are present each year. Noted examples in recent years of injury to winter wheat by the spring drought are 1879, 1880, 1881, 1885, and 1887. Great injury to corn resulted from the July drought of 1881, 1887, 1890, and 1893. The tendency to form the dry periods mentioned is clearly seen in 1882, but a cool July and August, with a warm spring and fall, gave the unusually large crops of that year on two inches less rainfall than normal.