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[Bulletins 164 to 175 constitute the Report for 1909. In binding, pages i-xii at the end of this bulletin should be detached and placed before Bulletin 164, which begins with page 1]

Maine Agricultural Experiment Station

BULLETIN No. 175.

DECEMBER, 1909.

FINANCES, METEOROLOGY, INDEX.

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MAINE
 AGRICULTURAL EXPERIMENT STATION
 ORONO, MAINE.

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AND THE HEADS AND ASSOCIATES OF STATION DEPARTMENTS

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HENRY A. MILLETT			<i>Meteorological Observer and Janitor</i>

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METEOROLOGICAL OBSERVATIONS.

Lat. $44^{\circ} 54' 2''$ N. Lon. $68^{\circ} 40' 11''$ W. Elevation 150 feet.

The instruments used at this Station are the same as those used in preceding years, and include: Wet and dry bulb thermometers; maximum and minimum thermometers; rain-gauge; self-recording anemometer, vane, and barometer. The observations at Orono now form an almost unbroken record of forty-one years.

METEOROLOGICAL SUMMARY FOR 1909.
Observations Made at the Maine Experiment Station.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Mean.	Total.
Highest temperature.....	53° 0	49° 0	48° 0	63° 0	79° 0	90° 0	91° 0	97° 0	80° 0	83° 0	63° 0	48° 0	.....	46.98
Lowest temperature.....	-24° 0	-17° 0	-1° 0	17° 0	27° 0	28° 0	42° 0	30° 0	33° 0	19° 0	16° 0	-12° 0	.....	43.70
Mean temperature.....	13° 20	20° 77	28° 72	40° 45	52° 00	63° 15	69° 50	66° 20	57° 55	49° 30	33° 10	23° 60	43° 88	.....
Mean temperature for 41 years.....	16° 20	18° 86	28° 01	40° 66	52° 46	61° 97	67° 05	65° 05	57° 51	45° 15	34° 35	20° 60	42° 32	.....
Total precipitation in inches.....	5.87	5.32	5.2	4.41	2.21	2.11	2.37	1.82	9.09	2.43	4.14	1.98	.....	46.98
Mean precipitation in 41 years.....	4.2	3.87	4.27	2.92	3.49	3.47	3.24	3.43	3.52	3.84	3.68	3.69	.....	43.70
No. of days with precip. of .01 in. or more	12	5	10	10	11	5	11	8	11	9	10	7	.....	109
Snow fall in inches.....	37	14	26.5	4.5	.....	.....	.....	.....	.....	Trace	0.5	15.25	.....	97.75
Mean snow fall in 41 years.....	23.0	21.1	16.3	5.6	0.24	.....	.....	.....	.....	0.8	7.8	16.9	.....	91.74
Number of clear days.....	11	11	12	10	6	9	8	15	13	12	8	10	.....	125
Number of fair days.....	4	7	6	1	8	16	9	9	4	8	6	8	.....	86
Number of cloudy days.....	16	10	13	19	17	5	14	7	13	11	15	13	.....	154
Total movement of wind in miles.....	7766	6342	6525	6688	5521	4885	4600	3778	4517	4699	5302	5858	.....	64490

Monthly and Annual Precipitation (as rain) for the Year 1909.

STATIONS	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Bar Harbor	7 10	6 07	5 85	5 11	4 28	1 15	2 06	1 53	8 35	1 81	5 77	2 03	51 71
Cornish	5 08	5 79	4 38	3 92	4 03	2 56	3 13	2 34	5 51	1 17	3 03	3 65	43 68
Eastport	7 05	4 76	5 10	3 86	1 56	1 59	3 37	1 61	6 40	2 54	3 62	1 48	43 10
Fairfield	5 91	3 94	2 73	3 05	2 43	2 34	1 77	1 17	5 16	1 14	3 02	1 48	43 10
Farmington	5 79	6 32	3 92	3 94	1 90	1 90	2 05	2 60	7 74	1 54	3 82	3 02	42 79
Gardiner	5 96	4 95	3 97	3 81	2 55	2 90	2 19	1 59	6 33	1 85	3 85	2 02	42 79
Greenville	4 51	4 80	4 76	4 22	2 72	3 60	3 34	3 00	10 12	1 73	4 57	2 59	43 96
Houlton	3 64	3 70	2 95	4 09	2 72	3 20	2 15	1 65	6 14	1 25	2 34	2 05	43 96
Lewiston	6 75	5 59	4 14	3 59	2 75	2 23	2 47	1 25	6 14	1 84	2 79	2 99	42 50
Madison	6 57	5 36	3 80	3 91	2 73	2 36	2 25	2 08	10 04	1 06	4 07	2 65	48 33
Millinocket	5 24	5 36	4 24	4 64	3 05	2 91	3 03	3 07	9 70	1 80	4 92	2 07	50 09
North Bridgton	6 12	5 79	3 78	3 68	3 55	2 42	2 09	1 51	6 13	1 34	2 71	2 95	41 98
Orono	5 87	5 32	5 25	4 41	2 21	2 11	2 37	1 82	9 01	2 43	4 14	1 98	46 99
Patten	5 80	4 75	4 16	5 14	1 79	2 50	6 42	3 91	9 71	2 38	4 19	1 95	52 70
Portland	4 71	5 07	2 76	3 13	2 95	2 33	2 14	1 68	4 68	1 50	2 83	2 06	35 84
Rumford Falls	5 34	6 12	4 04	3 49	3 51	2 34	1 79	7 08	7 08	1 03	3 31	2 13	42 34
Van Buren	2 80	2 60	1 09	3 09	1 00	3 30	5 00	9 10	6 71	1 88	4 35	1 48	40 26
Winslow	5 16	4 80	3 17	3 87	2 59	2 54	1 95	1 76	6 71	1 88	4 35	1 48	40 26

With the exception of readings from the Orono station, the above table is compiled from the monthly bulletin of the U. S. Weather Bureau.

REPORT OF TREASURER FOR FISCAL YEAR
ENDING JUNE 30, 1909.

NATIONAL FUNDS.

RECEIPTS.	Hatch Fund.	Adams Fund.	Gen'l Acct.
Balanc July 1, 1908.....			\$1,830 41
Treasurer of United States.....	\$15,000 00	\$11,000 00	
Sales, etc.....			2,902 00
Total.....	\$15,000 00	\$11,000 00	\$4,732 41
DISBURSEMENTS.			
Salaries.....	\$8,647 97	\$7,659 13	\$1,404 50
Labor.....	244 74	24 60	112 23
Publications.....	10 35		1 00
Postage and stationery.....	367 58	7 70	60 01
Freight and express.....	247 99	10 87	57 77
Heat, light and power.....	481 89		306 65
Chemical supplies.....	77 32	28 26	45
Seeds, plants and sundry supplies.....	340 68	955 74	152 83
Fertilizers.....		8 25	321 79
Feeding stuffs.....	1,002 04		693 09
Library.....	523 03	441 77	
Tools, implements and machinery.....	594 11	1 49	14 11
Furniture and fixtures.....	74 07		10 37
Scientific apparatus.....	134 75	889 02	62 96
Live stock.....	531 45	6 90	5 25
Traveling expenses.....	712 05	436 41	78 06
Contingent expenses.....	259 98		
Buildings.....	750 00	529 86	313 51
Balance June 30, 1909.....			1,137 83
Total.....	\$15,000 00	\$11,000 00	\$4,732 41

REPORT OF TREASURER FOR STATE FISCAL YEAR
ENDING DECEMBER 31, 1909.

STATE FUNDS.

RECEIPTS.	Printing.	Inspections.
State appropriation	\$4,500 00	\$9,000 00
Analyses, fees, etc		1,457 36
Total	\$4,500 00	\$10,457 36
DISBURSEMENTS.		
Salaries		\$7,672 17
Traveling expenses		1,290 15
Freight and express		57 31
Office supplies		607 52
Light and heat		132 33
Laboratory supplies		560 39
Printing bulletins and reports	2,932 44	
Balance Dec. 31, 1909	1,567 56	137 49
Total	\$4,500 00	\$10,457 36

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THIRTY-FIFTH ANNUAL REPORT

OF THE

Maine Agricultural Experiment Station

ORONO, MAINE.

1909

STATE OF MAINE.

1910.

MAINE
 AGRICULTURAL EXPERIMENT STATION
 ORONO, MAINE.

ORGANIZATION JANUARY TO JUNE 1909.

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 AGRICULTURAL EXPERIMENT STATION
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ORGANIZATION JULY TO DECEMBER, 1909.

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		HENRY A. MILLETT	<i>Meteorological Observer and Janitor</i>

The publications of this Station will be sent free to any address in Maine.
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Agricultural Experiment Station,
Orono, Maine.

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ANNOUNCEMENTS.

THE AIM OF THE STATION.

Every citizen of Maine concerned in agriculture has the right to apply to the Station for any assistance that comes within its province. It is the wish of the Trustees and Station Council that the Station be as widely useful as its resources will permit.

In addition to its work of investigation, the Station is prepared to make chemical analyses of fertilizers, feeding stuffs, dairy products and other agricultural materials; to test seeds and creamery glassware; to identify grasses, weeds, injurious fungi and insects, etc.; and to give information on agricultural matters of interest and advantage to the citizens of the State.

All work proper to the Experiment Station and of public benefit will be done without charge. Work for the private use of individuals is charged for at the actual cost to the Station. The Station offers to do this work only as a matter of accommodation. Under no condition will the Station undertake analyses, the results of which cannot be published, if they prove of general interest.

CORRESPONDENCE.

As far as practicable, letters are answered the day they are received. Letters sent to individual officers are liable to remain unanswered, in case the officer addressed is absent. All communications, should, therefore, be addressed to the Director or to the

Agricultural Experiment Station,
Orono, Maine.

The post-office, railroad station, freight, express and telegraph address is Orono, Maine. Visitors to the Station can take the electric cars at Bangor and Old Town.

The Station is connected by telephone.



MEETING MAINE POMOLOGICAL SOCIETY, HIGHMOOR FARM, OCTOBER, 7, 1909





HIGHMOOR FARM BUILDINGS



HISTORICAL NOTES FOR 1909.

HIGHMOOR FARM.

The Legislature of 1909 appropriated \$10,000 for the purchase of a farm on which the Maine Agricultural Experiment Station shall conduct experiments in orcharding and with corn and other farm crops. The committee on selection have decided upon Highmoor Farm situated in the counties of Kennebec and Androscoggin, and largely in the town of Monmouth. The farm consists of 225 acres, about 200 of which are in orchards, fields and pastures. There are in the neighborhood of 4,000 apple trees upon the place which have been set from 10 to 20 years. The fields that are not in orchard are well adapted to experiments with corn, potatoes and similar general farm crops. The house is two-storied with a large wing and contains about 15 rooms and is well arranged for Experiment Station offices and the home of the farm superintendent. The barn is large; arranged for 32 head of cattle and 6 horses. The buildings are supplied with running water from a never failing spring situated on the farm. The Farmington branch of the Maine Central Railroad bounds the farm on the west and it is expected that a flag station will be made at the farm.

The farm is purchased in the name of the State but by law "the Director of the Maine Agricultural Experiment Station shall have the general management, supervision and control of the said farm and of all investigations thereon."

The property was acquired so late in the season that no investigational work could be undertaken in 1909. It is planned to begin another season studies upon orchard management, corn and oat breeding and potato culture. The farm will be used not merely for practical field experiments in horticulture and agriculture but also for studies of practical problems by the entomologists, plant pathologists and biologists of the Station.

PUBLICATIONS.

The Station is organized so that the work of investigation is distinct from the work of inspection. The results of investigation are published in the bulletins of the Station. These make up the annual report for the year. The results of the work of inspection are printed in publications known as Official Inspections. These are paged independently of the bulletins and are bound in with the annual report as an appendix thereto. Miscellaneous publications consisting of newspaper notices of bulletins, newspaper bulletins and circulars which are not paged consecutively and are not included in the annual report are issued during each year.

All of the bulletins issued by the Station are sent to the names upon the official mailing list prepared by the Office of Experiment Stations, to all newspapers in Maine and to libraries and to agricultural exchanges. Bulletins which have to do with general agriculture and the Official Inspections which bear upon the feeding stuffs, fertilizer and seed inspections are sent to a general mailing list composed chiefly of farmers within the State. The publications having to do with the food and drug inspection are sent to a special list including all dealers in Maine and other citizens who request them. The annual report is sent to directors of experiment stations and to libraries. Copies of all publications are sent to the newspapers within the State and to the press on the exchange list outside of the State.

BULLETINS PUBLISHED IN 1909.

No. 164.	Notes on Plant Diseases, 1908.....	28 pages
No. 165.	Poultry Notes.....	20 pages
No. 166.	Inheritance of Fecundity in Poultry.....	36 pages
No. 167.	Field Experiments in 1906-8.....	20 pages
No. 168.	The Fertility and Hatching of Eggs.....	60 pages
No. 169.	Two Epidemics of Potato Blight and Rot.	20 pages
No. 170.	Apple Diseases caused by <i>Coryneum folli-</i> <i>colum</i> and <i>Phoma mali</i>	16 pages
No. 171.	Pine Leaf and Green Winged Chermes...	8 pages
No. 172.	Fungus Gnats, Part I.....	68 pages
No. 173.	Chermes of Maine Conifers.....	32 pages
No. 174.	Blackleg: A Bacterial Disease of Potatoes	20 pages
No. 175.	Meteorology, Finances, Index.....	12 pages

MISCELLANEOUS PUBLICATIONS IN 1909.

No. 338.	Fertilizer manufacturers affidavit.....	1 page
No. 339.	Official Inspections 7.....	8 pages
No. 340.	Abstract of Bulletin 166.....	4 pages
No. 341.	Official Inspections 8.....	8 pages
No. 342.	Official Inspections 9.....	16 pages
No. 343.	Notice of hearings.....	1 page
No. 344.	Official Inspections 10.....	28 pages
No. 345.	Crown Gall of the Apple.....	1 page
No. 346.	Newspaper Notice, Bulletin 164.....	1 page
No. 347.	List of Bulletins.....	1 page
No. 348.	Newspaper Notice, Bulletin 165.....	1 page
No. 349.	Newspaper Notice, Bulletin 166.....	1 page
No. 350.	Official Inspections 11.....	12 pages
No. 351.	Newspaper Notice, Bulletin 167.....	1 page
No. 352.	How to Keep Poultry Free From Lice... 4 pages	
No. 353.	Official Inspections 12.....	20 pages
No. 354.	Newspaper notice, Circular 353.....	1 page
No. 355.	Deformed Apples in Maine.....	1 page
No. 356.	Not printed.	
No. 357.	Official Inspections 13.....	8 pages
No. 358.	Official Inspections 14.....	40 pages
No. 359.	Tiger Moths and Woolly Bear Caterpillars	4 pages
No. 360.	Seed letter.....	1 page
No. 361.	Official Inspections 15.....	12 pages
No. 362.	Field Day at Highmoor Farm.....	1 page
No. 363.	Abstract Bulletin 168.....	8 pages
No. 364.	Not printed.	
No. 365.	Official Inspections 16.....	12 pages
No. 366.	Form for describing seed samples.....	1 page
No. 367.	Newspaper Notice, Bulletin 169.....	1 page
No. 368.	Official Inspections 17.....	16 pages
No. 369.	Poultry work of the Station.....	8 pages
No. 370.	Official Inspections 18.....	12 pages

BIOLOGY PUBLICATIONS, 1909.

No. 9. The Use of Atropin Sulphate in Anesthetizing Birds for Surgical Experiments. By R. Pearl and F. M. Surface. Journ. Amer. Med. Assoc. Vol. LII, pp. 382, 383. 1909.

No. 10. Studies on the Physiology of Reproduction in the Domestic Fowl. II. Data on the Inheritance of Fecundity Obtained from the Records of Egg Production of the Daughters of "200-egg" Hens. By R. Pearl and F. M. Surface. Maine Agr. Expt. Station, Bulletin No. 166, pp. 48-84. 1909.

No. 11. Selection Index Numbers and their Use in Breeding. By R. Pearl and F. M. Surface. Amer. Nat. Vol. XLIII, pp. 385-400. 1909.

No. 12. Is there a Cumulative Effect of Selection? Data from the Study of Fecundity in the Domestic Fowl. By R. Pearl and F. M. Surface. Zeitschr. f. Abst.-u. Vererb.-Lehre. (In press).

No. 13. Studies on the Physiology of Reproduction in the Domestic Fowl. III. A Case of Incomplete Hermaphroditism. By R. Pearl and M. R. Curtis. Biol. Bulletin, Vol. XVII, pp. 271-286. Pl. I & II, 1909.

No. 14. Studies on the Physiology of Reproduction in the Domestic Fowl. IV. Data on Certain Factors Influencing the Fertility and Hatching of Eggs. By R. Pearl and F. M. Surface, Maine Agr. Expt. Station, Bulletin 168, pp. 105-164. 1909.

No. 15. A Triple Yolked Egg. By R. Pearl. Zool. Anz. (In press).

ENTOMOLOGY PUBLICATIONS, 1909.

No. 33. Homologies of the Wing Veins of the Aphididæ, Psyllidæ, Aleurodidæ, and Coccidæ. Annals of the Entomological Society of America. Vol. II. No. 2. pp. 101-129. 1909.

No. 34. *Pemphigus venafuscus* n. sp. Entomol. News. p. 319. 1909.

No. 35. The Desmodium Aphid, *Microparsus variabilis* n. sp. Entomol. News. p. 337. 1909.

No. 36. Downy Psyllid of Alder, *Psylla floccosa* n. sp. Canadian Entomol. p. 301. 1909.

No. 37. The Pine-leaf Chermes. The Green-winged Chermes. Maine Agr. Expt. Sta. Bulletin 171. 1909.

No. 38. The Fungus Gnats of North America. Me. Agr. Expt. Station Bulletin 172.

No. 39. Chermes of Maine Conifers. Me. Agr. Expt. Sta. Bulletin 173.

OFFICIAL INSPECTIONS, 1909.

- No. 7. Standards for beverages.
- No. 8. Bleached flour, benzoate of soda, sulphur dioxide, ice cream standards, flavoring extracts.
- No. 9. Fertilizer Inspection. Analyses of Manufacturers Samples.
- No. 10. Feeding Stuff Inspection.
- No. 11. Soda and cream of tartar, sweet corn, maple sugar, spices and pepper, sweet spirit of nitre, rice, alcohol.
- No. 12. Text of the laws regulating the sale of: Agricultural seeds, apples, creamery glassware, feeding stuffs, fertilizers, and foods and drugs.
- No. 13. Coffee, gelatine, sweet oil, honey.
- No. 14. Food and Drug Law Standards and Regulations.
- No. 15. Apples, catchup, cocoa, extracts, spirit of nitrous ether, oysters.
- No. 16. Thickeners for ice cream, jams, jellies, preserves, chemicals in food, whiskey, and rice.
- No. 17. Seed Inspection, 1909.
- No. 18. Analyses of drugs. The druggist and the law.

CHANGES IN STAFF.

June 30, 1909, Prof. F. L. Russell, resigned from the Station Staff to devote his whole time to teaching in the University. Doctor Russell had been a member of the Experiment Station staff since its reorganization and enlargement in 1888.

Frank D. Sterry, Laboratory Assistant in Plant Pathology resigned from the Experiment Station June 1, 1909. Miss Joanna C. Colcord, Assistant Chemist; Miss Annie M. Snow, Clerk and Stenographer to the Director; Mr. R. C. Gellerson, Inspector, resigned from the Experiment Station staff June 30, 1909, and Mr. Joseph F. Merrill, Assistant Chemist, resigned December 6, 1909.

July 1, 1909, Mr. Albert G. Durgin, M. S., was appointed Assistant Chemist; Mr. Harry M. Woods, A. B., Assistant to the Director; Mr. Wellington Sinclair, Superintendent of Highmoor Farm; and Mr. John Summers as Laboratory Assistant in Plant Pathology.

September 1, 1909, Oscar A. Johannsen, Ph.D., came to the Station as Associate Entomologist, and Mr. Walter W. Bonas, B. S., as Associate Horticulturist.

September 1, 1909, Mr. Charles J. Dunn of Orono succeeded Hon. I. K. Stetson of Bangor as Treasurer of the Station.





