THE STATE BOARD OF AGRICULTURE OF COLORADO

THIRTY-THIRD AND THIRTY-FOURTH ANNUAL REPORTS

FOR THE

Fiscal Years Ending November 30, 1911 and November 30, 1912

THE STATE AGRICULTURAL COLLEGE

FORT COLLINS, COLORADO

1910-11---1911-12

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SERIES XIII. NUMBER 2

Entered at the Post Office at Fort Collins, Colorado, as Second-class Matter

THE STATE BOARD OF AGRICULTURE

HON. A. A. EDWARDS	Fort Collins, 1913
DR. R. W. CORWIN	Pueblo, 1913
HON. FRANKLIN E. BROOKS	Colorado Springs, 1915
HON. JARED L. BRUSH	Greeley, 1915
HON. E. M. AMMONS	Littleton, 1917
HON. JOHN C. BELL	Montrose, 1917
HON. T. J. EHRHART	Centerville, 1919
HON. CHAS. PEARSON	Durango, 1919
PRESIDENT CHAS. A. LORY GOVERNOR JOHN F. SHAFROTH	*Ex-officio.*

OFFICERS.

HON. A. A. EDWARDS	President
HON. JARED L. BRUSH	Vice-President
L. M. TAYLOR	Secretary
C. H. SHELDON	Treasurer

EXECUTIVE COMMITTEE

A. A. EDWARDS J. L. BRUSH E. M. AMMONS

LETTER OF TRANSMITTAL.

I herewith submit the Thirty-third and Thirty-fourth Annual reports of The State Board of Agriculture, containing detailed statements of the receipts and expenditures of the various institutions under the control of the Board, and the reports of the President of the State Agricultural College, the Director of the Agricultural Experiment Station, and the Superintendent of the Extension Service.

Respectfully,

A. A. EDWARDS, President.

To His Excellency

HON. JOHN F. SHAFROTH, Governor.

SECRETARY'S CASH COLLECTIONS.

December 1, 1910, to November 30, 1911.

Receipts:

College.

Animal Husbandry	$ 3,881.48	
Agronomy	11.50	
Botany and Forestry	1.00	
Building Superintendent	225.05	
Civil and Irrigation Engineering	33.35	
Chemical	116.07	
Entrance Fees	2,585.18	
English	1.09	
Electrical Supplies	273.34	
Farm	12,708.55	
Farm Mechanics	12.80	
Farmers' Institutes	134.00	
Fort Lewis School	1,030.84	
Grand Junction School	87.65	
Horticulture	352.21	
Library Fees	1,047.00	
Mechanical	100.19	
Miscellaneous Collections	291.56	
President's Office	8.75	
Rents	358.50	
School of Agriculture	.50	
Veterinary	307.40	$23,568.01

Experiment Station.

Animal Investigation	$ 5,604.90	
Fruit Investigation	188.90	
Horticultural Section	259.82	
Horse Investigation	3,122.50	
Miscellaneous Collections	729.47	
Plant Industry	318.82	
Potato Investigations	94.69	
Poultry Investigations	387.06	10,706.16

Disbursements:

College Special Fund Paid College Treasurer	23,568.01
Experiment Station Special Paid Station Treasurer	10,706.16
	$34,274.17 $34,274.17

FORT LEWIS SCHOOL—APPROPRIATION FUND.

Senate Bill No. 1.

Receipts and Disbursements for year ending November 30, 1911.

Receipts:

From State Treasurer		$ 2,500.00

Disbursements:

Apparatus	$ 109.50	
Feeding Stuffs	253.49	
Freight and Express	226.19	
Furniture and Fixtures	1,697.95	
Labor	2,134.54	
Laboratory Supplies	198.24	
Live Stock	1,764.00	
Permanent Improvements	1,972.20	
Postage and Stationery	107.50	
Publications	4.60	
Repairs	978.13	
Salaries	2,952.54	
Seeds and Plants	121.80	
Telephone and Telegraph	93.93	
Tools, Implements and Machinery	1,704.87	
Traveling Expenses	839.47	
Commissary Supplies	1,305.74	
Contingent Expenses	17.75	
Fuel	410.81	
Text Books	173.56	
Overdraft, November 30, 1911		14,566.81
	$17,066.81	$17,066.81

FORT LEWIS SCHOOL—CASH FUND.

Senate Bill No. 1.

Receipts and Disbursements, December 1, 1910, to November 30, 1911.

Receipts:

Board	$ 664.71	
Farm Produce	66.25	
Commissary Supplies	27.10	
Postage and Stationery	5.88	
Pasture Rents	159.85	
Room Rent	1.20	
Text Books	13.50	
Live Stock	47.00	
Miscellaneous Collections	13.15	
Telephone	.70	
Entrance Fees	25.00	
Mechanic Arts Fees	4.00	
Domestic Science Fees	2.50	$ 1,030.84

Disbursements:

No disbursements from this fund during the year ending November 30, 1911.

Balance in Fund November 30, 1911	$ 1,030.84	$ 1,030.84

TELLER SCHOOL APPROPRIATION FUND.

House Bill No. 365.

Receipts and Disbursements for year ending November 30, 1911.

Receipts:

No receipts during this year.

Disbursements:

Freight and Express	$ .45	
Furniture and Fixtures	239.50	
Labor	35.25	
General Supplies	2.45	
Repairs	52.40	
Salaries	725.00	
Telephone and Telegraph	36.18	
Tools, Implements and Machinery	57.65	
Traveling Expenses	66.80	
Contingent Expense	2.50	
Lights	18.38	
Fuel	93.50	
Overdraft, November 30, 1911		$ 1,330.06
	$ 1,330.06	$ 1,330.06

TELLER SCHOOL CASH FUND.

Receipts and Disbursements for the year ending November 30, 1911.

Receipts:

Farm Produce	$	$ 54.15
Pasture Rents		33.50

Disbursements:

No disbursements during the year		
Balance in Fund November 30, 1911	$ 87.65	
	$ 87.65	$ 87.65

FARMERS' INSTITUTES AND EXTENSION SERVICE APPROPRIATION FUND.

Senate Bill No. 129. Section 6.

Receipts and Disbursements for year ending November 30th, 1911.

Receipts:

Nothing received during the year.

Disbursements:

Freight and Express	$ 13.20	
Labor	178.43	
General Supplies	94.35	
Postage and Stationery	49.17	
Publications	558.49	
Salaries	2,660.92	
Telephone and Telegraph	3.95	
Traveling Expenses	1,297.19	
Contingent Expense	39.25	
Overdraft, November 30, 1911		$ 4,894.95
	$ 4,894.95	$ 4,894.95

FARMERS' INSTITUTES CASH FUND.

Receipts and Disbursements for ending November 30, 1911.

Receipts:		
Refunded from various Colleg Departments.	$	$ 134.00
Disbursements:		
No disbursements during year.....		
Balance in Fund, Nov. 30, 1911.....$	134.00	
	$ 134.00	$ 134.00

RURAL EDUCATION APPROPRIATION FUND.

Senate Bill No. 129. Section 14.

Receipts and Disbursements for the year ending November 30, 1911.

Receipts:		
No receipts during the year.		
Disbursements:		
Labor .....$	.70	
Overdraft, November 30, 1911		$ .70
	$ .70	$ .70

GUGGENHEIM HALL APPROPRIATION FUND.

Senate Bill No. 129. Section 4.

Receipts and Disbursements for the year ending November 30, 1911.

Receipts:		
No receipts during the year.		
Disbursements:		
Furniture and Fixtures .....$	214.55	
Overdraft, November 30, 1911.....		$ 214.55
	214.55	$ 214.55

LAND AND WATER APPROPRIATION FUND.

Senate Bill No. 129. Section 5.

Receipts and Disbursements for the year ending November 30, 1911.

Receipts:		
No reciepts during the year.		
Disbursements:		
Interest on land .....$	3,808.42	
Overdraft, November 30, 1911.....		$ 3,808.42
	$ 3,808.42	$ 3,808.42

DISBURSEMENTS—COLLEGE FUNDS.

For the Year 1910-1911.

Account	Land Income	Tax	Special	United States	Appropriation	Total
Advertising and Publications....		2,316.96	$.....	$.....	$.....	$ 2,316.96
Agronomy		825.19	.....	.....	.....	825.19
Animal Husbandry	175.00	11,869.09	1,765.00	.....	.....	13,809.09
Botany and Forestry		533.39	.....	.....	.....	533.39
Campus		2,584.67	617.50	.....	.....	3,202.17
Chemical		490.25	.....	.....	.....	490.25
Civil and Irrigation Engineering..		1,034.85	.....	.....	.....	1,034.85
Current Expense		1,207.83	.....	.....	.....	1,207.83
Fuel		4,049.98	.....	.....	.....	4,049.98
Insurance		973.90	.....	.....	.....	973.90
Lights		760.35	.....	.....	.....	760.35
Power		492.50	.....	.....	.....	492.50
Secretary's Revolving Fund.			1,000.00	.....	.....	1,000.00
Water Assessments		1,176.05	.....	.....	.....	1,176.05
Electrical Supplies		1,105.08	.....	.....	.....	1,105.08
Farm	715.00	2,089.25	7,270.00	.....	.....	10,074.25
Farm Mechanics		83.90	.....	.....	.....	83.90
Farmers' Institutes		1.50	.....	.....	4,894.95	4,896.45
Firemen and Janitors	527.00	745.80	4,783.00	.....	.....	6,055.80
Building Superintendent:						
General Repairs		1,870.39	.....	.....	.....	1,870.39
Permanent Improvements ..		1,104.45	.....	.....	.....	1,104.45
Home Economics		1,091.42	.....	.....	.....	1,091.42
Horticulture	50.00	1,335.50	3 00.00	.....	.....	1,685.50
Land and Water			.....	.....	3,808.42	3,808.42

DISBURSEMENTS—COLLEGE FUNDS.

Account	Land Income	Tax	Special	United States	Appropriation	Total
Library		2,209.29	.....	.....	.....	2,209.29
Mathematics		214.26	.....	.....	.....	214.26
Mechanical		1,729.08	.....	.....	.....	1,729.08
Military		538.13	.....	.....	.....	538.13
Modern Languages		7.24	.....	.....	.....	7.24
Music		376.44	.....	.....	.....	376.44
Physical Training		45.15	.....	.....	.....	45.15
Physics and Electrical Engineering		419.22	.....	.....	.....	419.22
President's Office		1,306.99	.....	.....	.....	1,306.99
Registrar's Office		99.89	.....	.....	.....	99.89
English and History		131.71	.....	.....	.....	131.71
Salary	6,521.82	18,202.49	2,514.86	46,608.32	.....	73,847.59
School of Agriculture		579.00	.....	.....	.....	579.00
State Board of Agriculture		883.80	.....	.....	.....	883.80
Secretary's Office		658.99	.....	.....	.....	658.99
Veterinary		837.47	.....	.....	.....	837.47
Zoology and Entomology		764.92	.....	.....	.....	764.92
Rural Education		80.15	.....	.....	.70	80.85
Farmers' Congress		132.95	.....	.....	.....	132.95
Guggenheim Building		303.76	.....	.....	214.55	518.31
Student Life		157.70	.....	.....	.....	157.70
	$7,988.82	$67,420.93	$18,250.46	$46,608.32	$8,918.62	$149.187.15

SUMMARY OF THE RECEIPTS AND DISBURSEMENTS OF THE STATE BOARD OF AGRICULTURE FOR THE YEAR 1910-1911.

	Balance Nov. 30, 1910.	Receipts.	Transfer to	Transfer from	Disbursements.	Balance Nov. 30,1911
COLLEGE FUNDS:						
Tax (Mill Levy)	†$32,679.21	$ 80,000.00	$.....	$.....	$ 67,420.93	$20,100.14†
Land Income	326.73	11,372.00	.....	.....	7,988.82	3,709.91
Special (Cash)	531.40	23,568.40	.....	1,000.00	17,250.46	5,848.95
U. S. Mechanic Arts	26,164.56	50,000.00	.....	.....	46,608.32	29,556.24
Revolving Fund	1,500.00	.....	1,000.00	.....	.....	2,500.00*
State Appropriation:						
Farmers' Institute	.....	.....	.....	.....	4,894.95	4,894.95†
Land and Water	.....	.....	.....	.....	3,808.42	3,808.42†
Fort Lewis School	.....	2,500.00	.....	.....	17,066.81	14,566.81†
Grand Junction School	.....	.....	.....	.....	1,330.06	1,330.06†
Guggenheim Building	.....	.....	.....	.....	214.55	214.55†
Rural Education	.....	.....	.....	.....	.70	.70†
EXPERIMENT STATION FUNDS:						
Hatch	2,583.81	14,755.58	244.42	.....	14,914.29	2,669.52
Adams	2,020.56	13,882.71	1,117.29	.....	15,409.10	1,611.46
Special (Cash)	6,389.74	10,706.16	.....	1,361.71	5,863.18	9,898.01
State Appropriation:						
Fruit Investigation	.....	.....	.....	.....	2,926.70	2,926.70†
Plant Industry	.....	.....	.....	.....	3,040.35	3,040.35†
Potato Investigation	.....	.....	.....	.....	3,297.50	3,257.50†
Horse Investigation	.....	.....	.....	.....	3,570.53	3,570.53†
Poultry Investigation	.....	.....	.....	.....	1,692.38	1,692.38†
Animal Investigation	.....	.....	.....	.....	2,672.21	2,672.21†
Dry Farm Investigation	.....	.....	.....	.....	824.70	824.70†
Irrigation Investigation	.....	.....	.....	.....	394.03	394.03†
	$ 6,837.59	$206,784.46	$2,361.71	$2,361.71	$221,161.99	$ 7,539.94†

†Overdraft.
*In Secretary's Hands.

PAY ROLL.

THE STATE AGRICULTURAL COLLEGE AND COLORADO EXPERIMENT STATION.

1910-1911.

ADMINISTRATION—		College.	Station.	Total.
Lory, Chas. A.	President	$ 4,865.05	$	$ 4,865.05
Gillette, C. P.	Prof. and Director	100.08	2,899.92	3,000.00
Taylor, L. M.	Sec. State Bd. of Ag	1,690.00	499.92	2,189.92
Dwyre, Chas. G.	Bookkeeper, Secy. Of.	1,526.59	.....	1,526.59
Murray, Margaret	Stenog., Dir.'s Office	374.99	625.00	999.99
Reed, Julia	Stenog., Pres. Office	855.00	30.00	885.00
		$ 9,411.71	$ 4,054.84	$13,466.55

INSTRUCTION AND SPECIAL INVESTIGATIONS—		College.	Station.	Total.
Johnson, S. Arthur	Professor and Dean	$ 1,574.97	$ 100.00	$ 1,674.97
Allison, Inga M. K.	Professor	1,549.98	.....	1,549.98
Baker, Charlotte A.	Librarian	1,124.94	.....	1,124.94
Barnes, C. L.	Associate Professor	1,466.65	.....	1,466.65
Bennett, E. R.	Professor	866.62	1,058.33	1,924.95
Blinn, P. K.	Alfalfa Specialist	.....	1,200.00	1,200.00
Coen, B. F.	Professor	1,724.94	.....	1,724.94
Cone, V. M.	Specialist	.....	974.98	974.98
Corbett, Vriginia H.	Associate Professor	1,624.95	.....	1,624.95
DeLay, F. A.	Professor	1,824.99	.....	1,824.99
Douglass, Earl	Chemist	.....	1,524.99	1,524.99
Emslie, Alexander	Director of Music	900.00	.....	900.00
Fitch, C. L.	Potato Specialist	.....	1,500.00	1,500.00
Glover, Geo. H.	Professor	2,024.94	.....	2,024.94
Headden, W. P.	Professor	183.26	2,629.18	2,812.44
House, E. B.	Professor	1,883.30	.....	1,883.30
Kaupp, B. F.	Associate Professor	1,999.92	.....	1,999.92
Kettle, Sarah I.	Professor	1,224.99	.....	1,224.99
Keyser, Alvin	Professor	849.96	1,400.04	2,250.00
Kingman, H. E.	Associate Professor	1,158.26	.....	1,158.26
Lawrence, J. W.	Professor	2,499.96	.....	2,499.96
Longyear, B. O.	Professor	1,474.94	250.00	1,724.94
Macdonald, S. L.	Professor	1,724.94	.....	1,724.94
Morton, G. E.	Professor	1,449.93	300.00	1,749.93
Netherton, T. M.	Prin., School of Ag	1,824.99	.....	1,824.99
Newsom, I. E.	Associate Professor	1,624.95	.....	1,624.95
Parshall, R. L.	Assistant	1,324.95	108.34	1,433.29
Person, F. G.	Assistant Professor	1,299.96	.....	1,299.96
Thomas, W. R.	Associate Professor	1,624.95	.....	1,624.95
Vail, C. E.	Assistant Professor	1,233.27	.....	1,233.27
Adams, J. W.	Field Agent	.....	675.00	675.00
Alford, F. C.	Assistant Professor	54.16	.....	54.16
Bascom, D. C.	Assistant	499.92	.....	499.92
Bishopp, B. G. D.	Instructor	749.97	.....	749.97
Bogdahn, Otto	Armorer	43.00	.....	43.00
Bonebright, H. B.	Instructor	183.32	.....	183.32
Bragg, L. C.	Assistant	200.00	566.62	766.62
Brockett, Zula M.	Instructor	1,024.95	.....	1,024.95
Burnett, W. L.	Curator	392.50	.....	392.50
Cammack, A.	Instructor	1,200.00	.....	1,200.00
Carpenter, C. E.	Instructor	249.99	.....	249.99
Cassiday, G. M.	Dir. Phy. Training	749.97	.....	749.97
Copps, Phoebe	Assistant	500.00	.....	500.00
Crabbe, J. B.	Instructor	976.65	.....	976.65
Dilts, Arlene	Assistant	550.00	.....	550.00
Durward, Margaret	Instructor	949.98	.....	949.98
Dvorachek, H. E.	Instructor	583.31	.....	583.31
Elwell, Anna	Assistant	536.00	.....	536.00
Erdman, Julius	Florist	1,200.00	.....	1,200.00
Frear, D. W.	Instructor	1,158.26	16.66	1,174.92
Gilbert, G. A.	Instructor	249.99	.....	249.99
Haggart, M. H.	Instructor	249.99	.....	249.99
Hertwig, Raymond	Instructor	225.00	.....	225.00
Hughes, W. H.	Dir. Phy. Training	249.99	.....	249.99
Langridge, F. N.	Instructor	1,200.00	.....	1,200.00
		$52,042.46	$12,304.14	$64.346.60

THE STATE AGRICULTURAL COLLEGE AND COLORADO EXPERIMENT STATION.

1910-1911.

FIREMEN AND JANITORS—		College.	Station.	Total.
Allan, Colin	Fireman and Janitor...	$ 600.00	.....	$ 600.00
Chatfield, I. N.	Fireman and Janitor...	390.00	330.00	720.00
Kelly, William	Fireman and Janitor...	900.00	.....	900.00
Marshall, W. H.	Fireman and Janitor...	600.00	.....	600.00
Monninger, A. T.	Fireman and Janitor...	50.00	.....	50.00
Selsberry, Jos.	Fireman and Janitor...	450.00	.....	450.00
Sullivan, W. H.	Fireman and Janitor...	600.00	.....	600.00
Veazey, J. L.	Fireman and Janitor...	720.00	.....	720.00
Walker, J. E.	Fireman and Janitor...	100.00	.....	100.00
22 Student Janitors		1,655.00	.....	1,655.00
		$ 6,065.00	$ 330.00	$ 6,395.00

HERDSMEN—		College.	Station.	Total.
Auld, A. C.	Herdsman	$.....	$ 240.00	$ 240.00
Dalrymple, J.	Herdsman	240.00	.....	240.00
Howarth, Herbert	Horse Trainer	.....	229.15	229.15
Nicholson, Alex.	Herdsman	720.00	.....	720.00
Russell, L. L.	Herdsman	480.00	.....	480.00
Thompson, Wm.	Herdsman	675.00	.....	675.00
		$ 2,115.00	$ 469.15	$ 2,584.15

FARM AND CAMPUS—		College.	Station.	Total.
Ames, R. S.	Laborer, Farm	$ 39.00	.....	$ 39.00
Bales, J. W.	Laborer, Farm	600.00	.....	600.00
Brown, H. J.	Laborer, Farm	570.00	.....	570.00
Coulson, E. C.	Laborer, Farm	600.00	.....	600.00
Coutts, Fred	Laborer, Farm	180.00	.....	180.00
Coutts, Thos.	Laborer, Farm	570.00	.....	570.00
Cunningham, W. I.	Laborer, Farm	188.00	.....	188.00
Dallas, J. W.	Laborer, Farm	570.00	.....	570.00
Fraser, James	Laborer, Farm	200.00	.....	200.00
Fry, Alvin	Laborer, Farm	600.00	.....	600.00
Gifford, E. W.	Campus Supt.	130.50	.....	130.50
Grundy, C. S.	Laborer, Farm	540.00	.....	540.00
Grundy, E. L.	Laborer, Farm	540.00	.....	540.00
Lawson, S. J.	Laborer, Farm	600.00	.....	600.00
Matthews, Frank	Laborer, Farm	400.00	.....	400.00
Munn, William	Laborer, Farm	500.00	.....	500.00
O'Brien, William	Farm Superintendent...	1,200.00	.....	1,200.00
Pease, R. H.	Laborer, Farm	160.00		160.00
Portner, J. M.	Laborer, Farm	540.00	.....	540.00
Portner, S. S.	Laborer, Farm	600.00	.....	600.00
Turner, J. W.	Laborer, Farm	360.00		360.00
		$ 9,687.50	$.....	$ 9,687.50

THE STATE AGRICULTURAL COLLEGE AND COLORADO EXPERIMENT STATION.

1910-1911.

INSTRUCTION AND SPECIAL INVESTIGATIONS—

		College.	Station.	Total.
Marshall, J. D.	Instructor	$ 1,016.62	$ 8.33	$ 1,024.95
Mathais, D. H.	Assistant	.....	300.00	300.00
McNulty, J. B.	Instructor	277.77	.....	277.77
Palmer, M. A.	Assistant	108.33	766.62	874.95
Payne, J. E.	Field Agent	.....	875.00	875.00
Peek, W. A.	Instructor	390.00	.....	390.00
Pesman, Michiel	Assistant	400.00	.....	400.00
Pierce, Hiram	Instructor	1,200.00	.....	1,200.00
Propst, Maud A.	Instructor	749.97	.....	749.97
Rankin, F. J.	Instructor	1,024.95	.....	1,024.95
Robbins, W. W.	Instructor	333.32	.....	333.32
Robinson, Annie	Instructor	1,024.95	.....	1,024.95
Rood, Elwood D.	Assistant	.....	223.04	223.04
Rosencrants, F. H.	Instructor	274.98	.....	274.98
Smith, S. Van	Instructor	974.95	50.00	1,024.95
Staudt, J. S.	Instructor	583.31	.....	583.31
Summers, J. S.	Assistant	.....	595.79	595.79
Trimble, R. E.	Assistant	.....	1,224.99	1,224.99
Upson, C. Agnes	Assistant	541.12	.....	541.12
Vaplon, W. E.	Poultryman	.....	1,215.00	1,215.00
Walker, Ida	Assistant	570.00	.....	570.00
Weldon, Geo. P.	Assistant	264.00	933.31	1,197.31
Brockway, T. C.	Student Assistant	14.00	.....	14.00
Butler, Jessie	Student Assistant	20.00	.....	20.00
Byerley, D. C.	Student Assistant	60.00	.....	60.00
Dixon, Beryl	Student Assistant	20.00	.....	20.00
Farrar, Frances	Student Assistant	50.00	.....	50.00
Johnson, Alfred	Student Assistant	140.00	.....	140.00
McMurdo, Geo. A.	Student Assistant	30.00	.....	30.00
Montgomery, Dorothy	Student Assistant	13.50	.....	13.50
Ralston, G. S.	Student Assistant	30.00	.....	30.00
Walters, G. D.	Student Assistant	.....	450.00	450.00
Willis, H. W.	Student Assistant	172.00	.....	172.00
Barnhart, A. T.	Plant Inv. Laborer	.....	600.00	600.00
Barnhart, Warren	Plant Inv. Laborer	.....	100.50	100.50
Blair, M. G.	Plant Inv. Laborer	.....	19.50	19.50
Chace, R. E.	Plant Inv. Laborer	.....	156.00	156.00
Dey, Marcus	Plant Inv. Laborer	.....	85.50	85.50
Hankins, C. E.	Plant Inv. Laborer	.....	450.00	450.00
Pierce, Morris	Plant Inv. Laborer	.....	161.33	161.33
Total salaries for Instruction		$62,326.23	$.....	$.....
Total salaries for Special Investigation		$.....	$20,519.05	$82,845.28

EXTENSION—

		College.	Station.	Total.
Hinman, C. H.	Superintendent	$ 1,999.92	$.....	$ 1,999.92
Danford, Mazie	Stenographer	300.00	.....	300.00
Smith, Ida L.	Stenographer	636.00	.....	636.00
		$ 2,935.92	$.....	$ 2,935.92

STENOGRAPHERS AND CLERKS—

		College.	Station.	Total.
Albee, Susie	Clerk	$.....	$ 615.00	$ 615.00
Bohnenkemper, Daisy	Stenographer	385.00	385.00	770.70
Lewis, Mabel	Clerk	293.33	.....	293.33
Short, Jennie	Clerk	300.00	.....	300.00
Weldon, Edith	Stenographer	508.33	.....	508.33
Worcester, Mabel	Stenographer	50.00	50.00	100.00
Zenor, Nora	Stenographer	.....	500.00	500.00
		$ 1,536.66	$ 1,550.00	$ 3,086.66

PAY ROLL.

FORT LEWIS SCHOOL OF AGRICULTURE.
1910-1911.

		Special Appropriation.
Graves, G. W.	Instructor	$ 375.00
Hill, K. O.	Laborer	171.67
Holthoff, Mabel	Instructor	75.00
Meyer, E. J.	Instructor	300.00
McCartney, E. F.	Engineer and Janitor	116.66
Schryver, A. J.	Dairyman	100.00
Snyder, G. F.	Principal	900.00
Tritz, W. H.	Custodian	555.00
Weston, Delia B.	Instructor	116.66
		$ 2,709.99

TELLER SCHOOL OF AGRICULTURE.

			Station.	Total.
Herrick, R. S.	Custodian	$ 225.00	$ 975.00	$ 1,200.00
Sporer, J. A.	Laborer	250.00	.....	250.00
		$ 475.00	$ 975.00	$ 1,450.00

SUMMARY OF PAY ROLL FOR YEAR 1910-1911, AGRICULTURAL COLLEGE AND EXPERIMENT STATION, FORT LEWIS SCHOOL, TELLER SCHOOL.

Administration	$13,466.55	
Instruction	62,326.23	
Special Investigation	20,519.05	
Extension	2,935.92	
Stenographers—College	1,536.66	
Stenographers—Station	1,550.00	
Firemen and Janitors	6,395.00	
Herdsmen	2,584.15	
Farm and Campus	9,687.50	
Total for Agricultural College and Experiment Station		$121,001.06
Total for Fort Lewis School of Agriculture		2,709.99
Total for Teller School of Agriculture		1,450.00
Grand Total		$125,161.05

U. S. GOVERNMENT—HATCH FUND.

Receipts and Disbursements for the Year Ending Nov. 30, 1911.

Receipts:

Balance on hand Nov. 30, 1910		$ 2,583.81
Transfer from Station Cash Fund		244.42
From United States Treasurer		14,755.58

Disbursements:

Salaries	$ 8,425.82	
Labor	881.00	
Publications	2,919.13	
Postage and Stationery	396.32	
Freight and Express	63.09	
Seeds, Plants and Supplies	692.75	
Library	205.10	
Tools, Implements and Machinery	74.28	
Furniture and Fixtures	547.25	
Scientific Apparatus	238.80	
Traveling Expenses	351.82	
Contingent Expenses	25.00	
Buildings and Repairs	93.93	
Balance in Fund Nov. 30, 1911	2,669.52	
	$17,583.81	$17,583.81

U. S. GOVERNMENT—ADAMS FUND.

Receipts and Disbursements for the Year Ending Nov. 30, 1911.

Receipts:

Balance on hand Nov. 30, 1910		$ 2,020.56
Transfer from Station Cash Fund		1,117.29
From United States Treasurer		13,882.71

Disbursements:

Salaries	$11,064.49	
Labor	672.80	
Postage and Stationery	132.81	
Freight and Express	156.37	
Chemical Supplies	1,060.95	
Seeds, Plants and Supplies	318.66	
Library	95.20	
Tools, Implements and Machinery	339.61	
Furniture and Fixtures	55.00	
Scientific Apparatus	925.81	
Traveling Expenses	393.50	
Buildings and Repairs	193.90	
Balance in Fund Nov. 30, 1911	1,611.46	
	$17,020.56	$17,020.56

EXPERIMENT STATION—SPECIAL FUND.

Receipts and Disbursements for the Year Ending Nov. 30, 1911.

Receipts:		
Balance on hand Nov. 30, 1910		$ 6,389.74
Animal Investigations		5,604.90
Fruit Investigations		188.90
Horticultural Section		259.82
Horse Investigations		3,122.50
Miscellaneous Collections		729.47
Plant Industry		318.82
Potato Investigation		94.69
Poultry Investigations		387.06
Disbursements:		
Transfer to Hatch Fund	$ 244.42	
Transfer to Adams Fund	1,117.29	
Salaries	695.00	
Labor	1,620.99	
Publications	130.00	
Postage and Stationery	169.56	
Freight and Express	87.73	
Heat, Light, Water and Power	1.90	
Seeds, Plants and Supplies	224.96	
Feeding Stuffs	2,554.71	
Library	6.00	
Tools, Implements and Machinery	2.00	
Furniture and Fixtures	13.25	
Traveling Expenses	153.05	
Contingent Expenses	27.00	
Buildings and Repairs	150.03	
Balance in Fund Nov. 30, 1911	9,898.01	
	$17,095.90	$17,095.90

EXPERIMENT STATION—APPROPRIATION FUND.

Receipts and Disbursements for the Year Ending Nov. 30, 1911.

Receipts:		
No receipts for the year.		
Disbursements.		
Salaries	$ 9,704.30	
Labor	2,309.70	
Publications	48.75	
Postage and Stationery	276.14	
Freight and Express	221.60	
Heat, Light, Water and Power	4.80	
Seeds, Plants and Supplies	571.90	
Fertilizers	26.10	
Feeding Stuffs	3,712.27	
Tools, Implements and Machinery	222.34	
Furniture and Fixtures	125.50	
Scientific Apparatus	3.50	
Live Stock	8.60	
Traveling Expenses	823.85	
Contingent Expenses	105.00	
Building and Repairs	254.05	
Overdraft, Fruit Inv. Nov. 30, 1911		$ 2,926.70
" Plant Inv. Nov. 30, 1911		3,040.35
" Potato Inv. Nov. 30, 1911		3,297.50
" Horse Inv. Nov. 30, 1911		3,570.53
" Poultry Inv. Nov. 30, 1911		1,692.38
" Animal Inv. Nov. 30, 1911		2,672.21
" Dry Farming Inv. Nov. 30, 1911		824.70
" Irrigation Inv. Nov. 30, 1911		394.03
	$18,418.40	$18,418.40

DISBURSEMENTS—EXPERIMENT STATION.

For the Year 1910-1911.

Account	Hatch	Adams	Special Cash	Appropriation	Total
Salary	$ 8,425.82	$11,064.49	$ 695.00	.....	$20,185.31
Animal Investigation	.....	.....	1,601.13	2,672.21	4,273.34
Arkansas Valley Field Agent	417.76	.....	1.30	.....	419.06
Bulletins and Reports	3,612.18	.....	102.65	.....	3,714.83
Chemical Section	18.75	1,318.17	2.15	.....	1,339.07
Director and General	408.35	30.00	118.08	.....	556.43
Entomological Section	182.44	141.26	32.79	.....	356.49
Horticultural Section	79.14	15.88	326.84	.....	421.86
Irrigation Section	415.64	2,087.72	6.30	394.03	2,903.69
Library	198.30	82.55	2.60	.....	283.45
Veterinary Section	2.75	.....	5.69	.....	8.44
Fruit Investigation	.....	.....	111.40	2,926.70	3,038.10
Bacteriological Investigation	.....	666.03	.....	.....	666.03
Secretary's Office	24.75	3.00	5.00	.....	32.75
Plant Industry	1,128.41	.....	378.91	3,040.35	4,547.67
Horse Investigation	.....	.....	2,078.11	3,570.53	5,648.64
Potato Investigation	.....	.....	91.30	3,297.50	3,388.80
Poultry Investigation	.....	.....	118.14	1,692.38	1,810.52
Tree Planting Experiments	.....	.....	158.79	.....	158.79
Dry Farming Investigation	.....	.....	.....	824.70	824.70
	$14,914.29	$15,409.10	$5,836.18	$18,418.40	$54,577.97

INVENTORY OF PROPERTY, 1911.

AGRICULTURAL COLLEGE AND EXPERIMENT STATION:		
College Farm, 320 acres	$ 128,000	
East Farm, 152 acres	76,000	
Pasture, 1,350 acres	21,000	
Cheyenne Wells, 160 acres (substation)	4,000	
Rocky Ford, 40 acres (substation)	10,000	
Total lands		$ 239,000
Buildings	$ 368,900	
College equipment	162,900	
Experiment Station equipment	46,778	
Total buildings and equipment		578,578
FORT LEWIS SCHOOL OF AGRICULTURE:		
Lands, 6,400 acres	$ 160,000	
Buildings	140,000	
Equipment	8,000	
Total		308,000
GRAND JUNCTION SCHOOL OF AGRICULTURE:		
Lands, 178 acres	$ 8,900	
Buildings	140,000	
Equipment	10,000	
Total		158.900
TOTAL		$1,284,476

ADMINISTRATION, INSTRUCTION AND MAINTENANCE BUDGET FOR YEAR ENDING NOVEMBER 30, 1911

	Apparatus.	Feeding Stuffs.	Freight & Express.	Furniture and Fixtures	Labor	Laboratory Supplies	Fuel	Live Stock	Permanent Improvements	Postage and Stat'y.	Publications.	Repairs	Salaries	Seeds and Plants	Telephone and Telegraph	Tools' Implements and Machinery	Traveling Expense	Contingent Expense	Insurance	Light & Power	Water Assess'ts.	Total
Advertising and Publications	$.....	$.....	$ 7.94	$	$ 10.00	$ 4.71	$	$	$	$ 128.63	$1,726.70	$.....	$.....	$.....	$.....	$	$ 432.98	$.....	$.....	$.....	$.....	$ 2,816.96
Agronomy	1.80		64.39	161.00	164.85	219.91				48.76	3.00	77.85	3,898.16	3.64	28.03	44.60	12.80					4,633.84
Animal Husbandry	63.91	7,503.02	205.29	126.66	3,870.73	296.45		850.00	252.33	121.51	20.45	47.19	3,695.97	66.46	33.92	27.35	160.35	62.54				17,505.06
Botany and Forestry	416.08		24.53	21.25	7.90	17.18				9.75	12.05	3.80	2,258.26	18.00	.45	2.50						2,791.65
Building Superintendent	.....	.....	.....	.....	.....	.....			1,104.45			1,870.39		.....	.....	.....	.....	.....	.....	.....	.....	2,974.84
Campus	.....		25 80	.....	2,388.54	109.13			197.85			53.46		83.90		341.60						3,202.17
Chemical Department	.....		27.34	13.40	19.12	224.80			10.00	16.82		110.78	1,795.01	.....	41.16	18.35	8.40					2,285.26
Civil & Irrigation Eng. Dept	411.31		78 40	5.00	20.92	63.24			179.87	25.61		27.15	3,508.24			31.75	185.60					4,543.09
Current Expense			1,020 65	9.05	711.59	149.77	2,530.99		.....	3.75	111.00	4.60	70.83			79.10	146.30	1,490.41	973.90	1,252.85	1,176.05	9,731.44
Electrical Supplies			39.28		279.00	795.80																1,105.08
English and History	.....		8.99	7.00	37 15	1.80				52.64	23.78	.45	5,970.62									6,102.83
Farm	39.69	81.05	7.55	.....	8,788.80	176.58			261.96	33.16		236.98	.....	120.39	38.00	82.26		199.35				10,074.25
Farm Mechanics	.....	.....	37.23	.....	.....	26.27						16.80	578.32	.....	4.60	.....						857.22
Farmers' Congress	.....	.....	.....	.....	.....	.....									.....	.....	132.95					132.95
Farmers' Institutes	.....	.....	1.50	.....	.....	.....										.....						1.50
Firemen & Janitors	.....	.....	.....	.....	6,055.80											.....						6,055.80
Guggenheim Building	.....		80	5.11	23.55				274.00													303.76
Home Economics	.....		28 76	136.05	174.50	611.11			25.56	60.04		4.00	4,278.38		39.90	35.45	14.00	61.46				5,369.80
Horticulture	.....		73.33	10.00	1,212.19	47.06			.....				3,066.57	128.63	36.20	178.00	.....	.....				4,752.07
Library	.....		74 46	37.85	3.10	2.40			.....	108.91	1,858.75	3.42	2,274.94	.....	45.40	76.00						4,484.23
Mathematical Department	155.00		10.92	5.00	4.15	1.75			.....	13.87	.....	23.57	2,688.92		.....	.....						2,903.18
Mechanical Department			51 17	8.50	143.22	1,071.86			138.58	40.20		86.17	7,126.32		38.10	122.38	2.50					8,820.00
Military	09 50		52.74	.....	140.85	16.64			218.80	6.00		3.00	43.00		.....	.....	.....					581.13
Modern Language	.....		.....	5.00	.....	.....			.....	2 24		.....	1,224.99		.....	.....	.....					1,232.23
Music Department	.....	.....	.....	200.00	10.94	.....				6.50	5.00	.....	900.00		.....	.....		154.00				1,276.44
Physical Training	.....		.85	.....	10.50	11.55				3.00	.....		1,857.74		.....	.....	19.25	.....				1,702.89
Physics and Electrical Engineering	97.05		54 58	11.00	.45	176.32				25.97		32.10	4,649.02			11.15	10.60					5,009.14
President's Office	.....		10.47	238.20	89.50	.....				311.00			6,070.05		276.67	.....	878.15					7,377.04
Registrar's Office	.....		1 75	.....	.....	.....				98.14			593.33		.....	.....	.....					693.22
Rural Education	.....		1.35		25.00	.....				32.45			.....		.80		20.55					80.15
School of Agriculture	.....		1.50	50.00	65.00	.....				192.95	242.95		2,484.99		.....		26.60					3,063.99
Secretary's Office	.....		16.01	5 60	102.50	61.43				114.01	.....	1.40	3,216.59		144.34		223.70					3,875.58
State Board of Agriculture	.....	.....	.....	.....	.....	.....							208.00		.....		675.80					883.80
Student Life	.....	.....	.....	3.50	.....	.....				25.50			779.08				126.00	2.70				936.78
Veterinary Science	56.64	134.07	29 23	55 12	78 11	170.27			17.00	32.35	147.60	2 25	8,644 72		81.40	80.03		5.50				9,482 19
Zoology and Entomology	633.25		26.37	8 65	1.00	10.50				35.07		4.20	2,404.05		40.13		5.00	.75				3,268.97
	$1,973.23	$7,718.74	$1,980.25	$1,122.94	$24,544.78	$4,166.64	$2,530.99	$ 850.00	$2,680.38	$1,530.01	$4,152.68	$2,608.15	$74,081 90	$ 422.02	$ 843.69	$1,079.32	$2,580 23	$1,976.71	$ 973.90	$1,252 85	$1,176.05	$140,268.53

PRESIDENT'S REPORT.

To the State Board of Agriculture:

In reviewing the work of the school year it is a source of gratification to me that I can report actual progress along all lines of our work. It has been a good year; in education, in the Experiment Station, and in our extension efforts the record is good. The year has been one of great activity; it has brought a great deal of work to all of us. The calls made upon each department, upon each executive officer, have been many, and often difficult to meet; it has been a year of splendid co-operation, of high devotion to duty, of good service. Though rich in problems, the year has brought nothing to break the spirit of good fellowship and of co-operation among our workers. In general our new plan of organization has worked out well. It has made it possible to meet the many demands coming to the Institution and to equalize the load fairly well.

In education we show a healthy growth. The total enrollment in the College shows an increase of 16.6 per cent over that of last year, while that of the School of Agriculture shows an increase of 36.6 per cent over that of last year. The new course of study adopted in the College a year ago, has worked out very satisfactorily. The opportunities for electives in the Junior and the Senior years give the student a chance to shape his own course to a certain extent. It makes the work more flexible, more satisfactory. The spirit of the student body has been good, they have met the work well and have given a good account of themselves in the class-rooms and have carried on their many student activities with vigor. For a small student body these outside activities constitute a heavy burden, a burden, however, of much educational value. The school paper, the Junior Annual, the literary societies, the technical societies and athletics all receive a great deal of attention. All offer our students opportunities for valuable training, all require of them considerable self-sacrifice and a great deal of work to keep them up to their present standard. Nor must we neglect the splendid opportunities for character and religious training afforded by the Christian Associations. Unfortunately the Young Men's Christian Association has had hard work financially this year, and the work has been especially arduous for the officers and the Secretary.

The attitude of the students toward their class-room work has been good. The Freshman class is especially strong. The Sophomore class is small, but has done good work. A very grati-

fying feature of the year's work is the splendid co-operation that has developed between the two lower classes. With the two upper classes we have reason to be well satisfied. The Junior class has taken its full share of work in classroom and general student activities. The *Silver Spruce* of this year is one of the best we have ever had.

I am sure you will take pride in the graduating class this year. The Seniors in all divisions—Agriculture, Engineering, Home Economics, General Science and Veterinary Science—are a credit to the College. We have been fortunate this year; we have been building in the various departments. This is especially true in Civil and Irrigation Engineering, in Electrical Engineering, and in Home Economics. The opportunities for work, for trying out what they could do, for testing their ability in design and execution, offered by the installation of the Irrigation Laboratory, was eagerly seized by the students in this course, and it has given them better opportunities than they have had for years. The installation of the new Electrical Laboratory, the increased facilities offered for better work by the new building, were not overlooked by the Seniors in Electrical Engineering, and we have a class of young men there that will prove a credit to the Institution. The girls were quick to take up the increased opportunities offered by the new Household Arts Building, and if Senator Simon Guggenheim could see the splendid way in which these young women have developed it would be the best possible proof of the value of the splendid gift to the women of Colorado. The prospect of building a new central heating plant has put new zest into the Mechanical Engineering students. The Seniors have done an immense amount of work on the design of this new equipment.

Especially gratifying has been the many offers for work that have come to the graduates this year. All the Seniors in the Civil and Irrigation Engineering course are already at work, and all but one were called away to take important positions, positions in irrigation that had to be taken by the first of May. These boys carried extra work in order to finish their course by that time and are now in the field. Each one of the Electrical Engineers has a position waiting for him, and the Mechanical Engineers have had good offers. The Seniors in the Horticultural course and in the Entomological course have positions, and two of the Veterinary students are at work. Miss Florence Riddle, of the Domestic Science Course, has been elected teacher of Domestic Science, at Cripple Creek, and the prospects for others that wish to teach Domestic Science, General Science and Agriculture are very promising.

SCHOOL OF AGRICULTURE.

Although this is the second year of the work in the School of Agriculture, and it was not expected that we would have any graduates, four boys who had come to us with advanced credits from high school were able to complete the work and were given their certificates. The work here, like that of the College, has shown improvement—improvement along lines that are desirable and gratifying. The work in the class rooms was much stronger this year, the general attitude and co-operation between the School and the College is very much improved, the attitude of the School toward its work is good, and the life outside of the school room is remarkably free from the spirit of mischief that is often found in young students away from home for the first time. Naturally much careful supervision is necessary, not supervision of the policing kind, but the kind that stirs up the right attitude in the students and encourages them to become largely self-governing. With the growth of the school new problems naturally arise and the work of the Principal, especially, becomes heavier, his responsibility greater. He has met both of these well this winter and has worked out his problems with courage, ability, and with a high devotion to the interests of the students and the school. The work in the classroom is received with favor. The students are anxious to work and are willing to be kept busy, especially those that come to us from the rural districts. We have had some problems with boys from the city—boys that have found it hard to get along in their schools —boys who were sent here by their parents in the hope that this practical line of instruction would appeal to them. Some of these responded in a gratifying manner, others were very difficult to control. I look upon this part of the work with apprehension. It is known that we look after these young people very carefully, so there will be a growing tendency to send boys who are causing trouble at home to the school here; as a result, our difficulties in discipline are bound to increase.

HELP OF NEW BUILDINGS.

The two new buildings have made our work far easier this year; in fact it would have been impossible to carry on the work without them. The new Civil and Irrigation Engineering Building offers splendid facilities for the work in Civil and Irrigation Engineering; also excellent office rooms for the Experiment Station and rooms for special lines of work and increased office and lecture room facilities for the department of Veterinary Science. It has made it possible to devote the old building entirely to the work in Electrical Engineering and Physics and relieve the terrible congestion we had in this department. The new Household

Arts Building has made it possible to meet the growing classes in this line of work with ease and has placed the old Domestic Science Building at the service of the Conservatory of Music. It has brought the work in Music again on the Campus, where it rightfully belongs, and has made it more satisfactory in every way.

The increase in the equipment of the forge room and the wood working room in the Mechanical Building has made it possible to work larger classes and thus decrease the number of divisions necessary. Since this work is taken by the first year students in the School of Agriculture, and also by the Freshmen in the College, the number of students that must be met is large and large classes are necessary. It works for economy, also, in teaching force, because with the aid of student assistants the instructor in charge can look after these large classes and get nearly as good results as can be gotten with classes small enough for individual attention from instructors alone. The need for an agricultural building is daily growing stronger, the need for better quarters for the veterinary work is urgent. We are practically without library facilities because our entire room in the library building is used for the storage of books. So that we must begin to look forward to at least two new buildings. Help is also needed to take care of the physical training work for young women. The dressing rooms are inadequate, there are no facilities for taking care of the gymnasium students. The increase in the battalion has made it necessary to place gun racks in the gymnasium, and there is constant interference between the drill and the girls' gymnasium work. This can, in part, be met by scheduling the gymnasium for various hours in the day, but we shall have to do something to meet the need for lockers.

HIGH SCHOOL VISITATION.

We have followed a plan this year of placing the work of the College before the educators and high school pupils of this State. To facilitate this work a schedule was mapped out whereby we met each high school in the State from one to three times. Speakers from the various departments were sent out to tell of the work of the College, especially the work with which they were associated. It is especially gratifying to us to note the cordiality shown to these speakers. The teachers and the students were interested in what they had to say and seemed very friendly disposed toward the College.

There is such a call for young people trained along lines that fit them to help in the development of our State, there are such varied opportunities open, that we believe the people of the high schools should know them.

Many of the teachers of the high schools know little or nothing about the work of the College; they have been trained in institutions where agriculture is not taught, where Domestic Science is not offered, but where law, medicine, the sciences and engineering are emphasized. These teachers naturally influence their students by telling them of the opportunities there are in these special professions, and wholly overlook the opportunities offered in the lines of work in which we are strong. We have tried hard in this campaign to show the teachers, the pupils, and the young people under their care, the opportunities that are awaiting those who will train themselves for work along the lines we offer in our courses here. Some of the principals have visited the College and seem very well impressed with our facilities for work and with the work that we are doing. I am sure that this campaign is going to react favorably for the College and that it will mean increased enrollment and much better co-operation with the high schools. I believe we ought to strengthen this in every way. I believe we should get in much closer touch with the grade schools, especially the rural schools. The most important line of our work must ever be our educational work. If the College is to do its full measure of service, it must co-operate with the schools of all grades to even a greater extent than it is now with the farmers. The movement for vocational education is growing, there is a strong demand all over the state for agriculture in the high schools, for agriculture in the grades, and people are looking to us for help. We have before us a great opportunity to co-operate with teachers and school officers in shaping vocational education for Colorado.

We are doing some work with the Normal Institutes this summer. We should be doing more. We should look forward to increasing our work with the high schools and with the graded schools next winter. Fortunately it still looks as though we would have some appropriation for our rural school visitor. This will give us a chance to do field work, the result of which should prove mutually helpful to the College and to the schools.

STUDENT LIFE.

We have given a great deal of time to what we call student life work, the activities of the students outside the class room. We have used methods of co-operation, rather than methods of close supervision. We have gotten good returns in increased courtesy, consideration, ability to carry responsibility, and a good healthy attitude toward life in general. We paid half the salary of the Secretary of the Y. M. C. A. with the understanding that he give practically all his time to this outside work. Very little teaching was required of him; he looked after the finding of rooms for stud-

ents in the fall and helped them secure work during the year. It was part of his duty to call upon the boys in their rooms, to keep thoroughly in touch with them, to help them in their troubles and co-operate with them in their recreations.

Miss Corbett, our Dean of Women, was held for half time in teaching, the other half being given to work with the young women of the Institution. Provisions were made for her to use the college horse and surrey to aid her in calling upon the young women. She got very closely acquainted with each girl, she helped with the physical education, she helped plan the social affairs of the girls, saw that the parties and other social functions were properly chaperoned, called upon the women of the houses where girls were rooming—in short, kept in very close touch with all the young women of the school.

Principal Netherton, of the School of Agriculture, gave a great deal of his time looking into this outside work. He put himself in close touch with every student, he knew the conditions under which each and every one roomed, where he was boarding, what his general attitude was, his associates, what his ambitions were, and in this way has been able to exert a powerful influence for right thinking and right living on the minds of the students in the School of Agriculture.

The social activities of the School were largely directed by a social committee, of which the Dean of Women is Chairman. By keeping a social calendar, it is possible to regulate the social life and prevent needless conflicts, and to prevent social rivalry becoming too keen.

We have had a great growth of fraternity activities this winter, rivalry has grown keener, and general co-operation in the student body has often been threatened by the fraternity jealousies. In the main, the situation is good. While I believe thoroughly that we have too many of these organizations for the size of our student body, I believe, also, that their influence so far has been good. It has been gratifying to note how many little entertainments were given by the members of the Faculty to different classes or student organizations. This cannot fail to improve the understanding between the Faculty and the students and work for better results both in and out of the class-room. Plans are already under way for better co-operation between the social committee and the fraternities and the sororities next year. The students themselves have taken measures to do away with some of the disagreeable features of rushing and early pledging; they are showing ability in meeting their problems and I believe these organizations can be used for teaching practical citizenship, organized co-operation and institutional loyalty. The spirit of combination is in the air and

we can gain nothing by opposing it. We must use it to help us in teaching the principles we wish to have these young people carry away with them.

Another element in student life work that has had a very strong influence this winter is the system of class proctors. Each class is in charge of a proctor who looks after the special class troubles, especially the scholastic troubles. Reports of delinquency are first made to him and his report goes to the Executive Committee of the Faculty for final action. In this way we keep in very close touch with the work of each class and can take up a growing case of delinquency before it gets very serious. Many improvements have been worked out this winter by the proctors and Dean Lawrence and more are contemplated for next year. This system has proven very satisfactory. On the whole you see we are giving a great deal of time to this outside work. It makes extra work for the teachers; it adds to the general expense of the Institution but I know that it is thoroughly worth while. As an insitution we are not doing our full duty when we simply ask a man to come to the class room and receive what the professor has to give. We are not responsible for his intellectual training only. As a state institution, we are charged with both his moral and physical education as well; as a state institution we are training citizens, and all this, outside of class-room activity, is the laboratory for character building and for training in citizenship; it largely decides whether or not the intellectual training in the class room shall be used for the selfish use of the individual or for community service. We owe a responsibility also to the parents who send their children here. They have a right to expect that the conditions under which their boys and girls work are right; that the boy or girl who comes here is to be helped and strengthened along right lines, not introduced into conditions that will work for his or for her depreciation.

ATHLETICS.

In athletics we have had a good year. We have not defeated many teams, but there has been better team work. The spirit at the beginning of the year was especially good. The co-operation between the faculty athletic committee and the students has been very gratifying. Athletics, like fraternities, must be rightly used, if they are to be elements of good training. The faculty conference has been helpful in purifying the general intercollegiate athletics of the State. It has been helpful also in setting a definite scholastic standard for all those who compete. It is working slowly to a higher plane in athletic contests. Our students have so many other demands made upon them, that they do not give the time to

athletics that is necessary to make winning teams, and we have few men to select from. However, we can get much benefit from athletics and we should occasionally have a winning team. Professor Macdonald, as Chairman of the Athletic Committee, has given much time to the work this winter and is to be commended for the results obtained. The boys complain strongly of the present athletic field. The ground is rough and severe. They are asking that the field be moved, and that a new field be started as soon as possible. Many are anxious to have this for next fall. They have offered to help pay part of the expense. The present situation of the field is not at all desirable. A new and better field would be of great help in our athletic work.

THE ASSOCIATION OF COLLEGE WOMEN OF C. A. C.

This organization is going to be a great help in the social life of the Faculty. It consist of the women teachers and of the wives of professors and instructors organized for mutual helpfulness, and co-operation in all college affairs. It will correlate the social work of the Faculty with other lines of college activity, and will do its share for making the life at the College here happier, better and stronger.

SEMI-ANNUAL REPORTS OF HEADS OF DEPARTMENTS.

We did not mail the semi-annual reports of the heads of the departments to you as has been customary in the past. We thought that the minutes of the meetings of the Executive Commitee that we mailed to you each month would keep you informed concerning the general work that was being done. If you find it advantageous to have copies of these reports, we shall be very glad to have them made and send them to you. In order to get information from all the departments along certain definite lines, blanks were furnished upon which the head of the department was requested to report the work done by himself and each of his instructors in teaching, giving the enrollment in each class, number of credits earned, the per cent of the class passed and the per cent failed for each semester. Another blank called for an outline of the station work done, asking for a short description of each project. Another for an outline of the extension work done by each member of the department. A fourth asked for a general statement of work done and suggestions for improving the work of the department. The fifth asked for suggestions and criticisms of the general work of the College, a sixth asked for a financial statement in which the sums paid for salaries, labor, improvement, repairs, apparatus, laboratory supplies, stationery telephone and telegraph, furniture and fixtures, interest at seven per cent on the departmental inventory, depreciation ten per cent on the same, were listed. The professor was also requested to

figure out the cost per credit hour for the work done in his department. A seventh blank asked for a financial statement of the experiment station work and extension work done by the department.

These reports furnish some helpful data; not only do they show just what work is done by each member of the department, what the expense, classified along several lines, is, but they also form, when tabulated, a basis of comparison of the work between the various departments. They show which departments are carrying the heaviest load and what line of work is the most expensive. It is the first time in the history of the Institution, so far as I know, that these data have been collected. I hope we can continue this from year to year and note whether the cost is increasing or decreasing.

THE BUDGET OF LAST YEAR.

The budget last year totaled:

Salaries	$ 84,694.00
Improvement, Equipment and Maintenance	60,859.00
Total	$145,553.00

While we found that more money was needed than had been appropriated in some departments, all the budget has not been expended. This was due to the fact that the Executive Committee limited the mill levy expenditure each month to $6,000. This did not provide a rapid enough rate of expenditure to care for all the money appropriated. In spite of the overdraft shown in some of the departments, we have a net balance of something like $4,665 at the end of this budget year. It has taken careful watching of the finances on account of the effect of the overdraft for maintenance incurred some years ago. This overdraft makes it necessary to keep a balance of $33,000 on hand. As soon as the balance drops below this we have to pay interest, so we have tried to keep our net overdraft as small as possible. In doing this it has often been necessary to deny the departments legitimate requests, but it was thought best to keep the interest down. The removal of this debt would simplify the financial administration very materially and permit more freedom in the departmental expenditure.

HATCH FUND.

Limiting the rate of expenditure was practiced also in the Station, and has been the cause of some criticism on the part of the workers and on the part of Doctor Beal, who was here making an inspection of the Station last week. This limiting of the rate of expenditure was done deliberately, and will no longer be necessary when the cause of action is removed.

CAREFUL RECORDS.

I hope you will have the time to permit Secretary Taylor to show you how completely we keep the records of all financial transactions, how easy it is to answer any questions regarding the funds one may care to ask. Not only is it possible now to know just exactly how we stand financially at any time, but we know at the beginning of the month approximately where we shall be at the end of the month. In other words, at the beginning of the month we know the condition of our funds. When the estimate for the month's expenditure is made we can tell just how many bills will be contracted for in the next thirty days. From a chart giving the receipts for the last two years, we can get a pretty clear idea of the rate of income from tax collections. Not only are the accounts kept with each fund, but also with each department, so that each department is credited with what is allowed to it when the budget is made out and all expenditures charged against it and classified. We have been trying for two years to get a system that will tell us just how much we are expending along definite lines in each department, and we have this worked out satisfactorily.

The last step is the establishment of a purchasing agent system. This system was approved by your Honorable Body at its biennial meeting. The machinery is all ready and we intended to put it into operation the first of June. However, on account of the extra work incident to Commencement we have held back until after the 8th to put it into full operation. I am anticipating some very satisfactory results from the adoption of this method of making our purchases. I feel sure we shall save money and we shall help our department heads by relieving them of a lot of work incident to the purchase of supplies, and that we shall get more efficient and economical service.

Nothing that we have done has helped so much in giving us a grasp of the work of the Institution and control over its finances, as the system of accounting that has been developed in the Secretary's office. Without it the figures that I gave you some time ago of the cost of instruction, would mean the work of months, if the data could be gathered at all. As it was it required the work of only a few hours and with the improvement recently made the whole material will be available and ready to copy from the Secretary's books another year.

We have finally gotten the finances to the point where we know not only what we have, and what we are going to spend for the next thirty days, but what we have to spend in the department for the year; more than that we are in absolute control of the rate of spending this money. In achieving this it has not been

necessary to tie up the departmental expenditures with a lot of red tape. In fact the method works much easier and with less trouble than the old one it replaced.

REPORT OF FARM MANAGER.

It is with a feeling of keen satisfaction that I call your attention to the report of Professor Keyser as Farm Manager. It shows that the farm not only paid expenses for the last year, but has a balance to its credit of $1,855.

LEGISLATION.

The plans that were outlined for carrying on the work with the Eighteenth General Assembly in the annual meeting in December were quite closely followed by your Legislative Committee consisting of the members of the Executive Committee and myself. We met with very helpful support from all the commercial organizations, the banks, the newspapers, the stockmen and other agricultural associations, farmers' unions and the granges. Many of our friends have placed us under a lasting debt of gratitude for their advice and assistance. I believe we succeeded without making any enemies or losing any of our friends. Taking all in all, your Executive Committee has done most excellent work in this legislative matter, and all of us are under obligations to these three men for the thought, time and work they gave to our appropriation bill and other measures affecting the College that were up for passage.

The question of duplication of studies between the University and the College was early raised and threatened to become serious. A very drastic bill was introduced which if passed would have cut off all engineering work at the College. We should begin at once to show the people why it is necessary to teach engineering here, show them that it is a legal requirement, that we are under obligation to do so and that the work is justified. In fact there is so much to be done along agricultural lines in engineering that the work of a very extensive engineering course can be justified from the standpoint of state needs.

The special hold-over committee from the last General Assembly made a thorough investigation of the work of the College. It was gratifying indeed to have them report that the College needed $248,000 of the $250,000 asked for. The Finance Committee of the Senate could not see its way clear to give us this amount, and finally recommended $200,000, and the bill carrying this amount passed both houses. Unfortunately for us more was appropriated than the State has money to pay, so Governor Shafroth cut down the appropriation bills until the amount called for

was within the estimated income. In this process he considered it necessary to cut off $60,000 from our appropriation bill. The most of it was taken from the extension and station sections. The original $75,000 for a heating plant was reduced by the Assembly to $30,000, and further reduced by the Governor to $20,000. This will give us only enough to start the work. We shall probably be able to put in enough boilers to take care of the main building and perhaps some of the near by buildings. Nothing can be done in the way of a power plant with this amount.

We have our plans pretty well worked out for the special investigations and extension service called for and the cut in funds is going to reduce our work materially. I regret this because at this time development work is especially needed. We are facing somewhat of a crisis in agriculture in many sections of this State. Money used here would have proven a very good investment, and it is unfortunate indeed for all Colorado that funds are not available to provide for a substantial increase in station and extension activities.

I am more and more convinced of the need of closer co-operation between the institutions of higher learning of the State. The different parts of this splendid educational machine should work together much better than at the present time. I wonder if it would not be possible for this Board to hold out some plan of co-operation to the governing boards of the other state institutions of higher learning, and extend to them an invitation to meet with us, to talk over common problems and work together for higher efficiency. I wish our Board might take the initiative in this matter; you have shown yourselves broadminded and public spirited; we are working for the State; we are trying to make this Institution just as useful as we possibly can. It will increase this usefulness if we have closer co-operation with the other state institutions. I believe this invitation for co-operation should come from us and recommend that we ask our Executive Committee to extend to the other governing boards an invitation for their executive committee, or a committee appointed for the purpose, to meet some time this summer to consider the advisability of closer correlation of the work of the four institutions.

BUDGETS.

The budgets for the college and for the experiment station and extension work are pretty well worked out. The budget can be closed just as soon as we know definitely what your action will be on the report of the salary committee. A little more time will be necessary to readjust the station budget to the decrease in the appropriations.

EXTENSION ACTIVITIES.

On account of the uncertainty of funds we have not been crowding our extension activities during the last two months. Early in the year, shortly after we completed the work of the Farmers' Short Course at the College, we ran a Demonstration Train over the broad gauge lines of the Colorado & Southern, Denver & Rio Grande, Santa Fe and the Union Pacific railways, meeting in all 35,000 people. Perhaps nothing that we have done has shown the people of the State better what the work of the College is, what it is doing for them, and what its facilities are for doing work than this train. The only complaint we heard was that it did not stay long enough at one place for people to fully look over the many things that were on exhibition.

Superintendent Hinman had his plans definitely worked out for the summer and fall, but quite a few changes will be necessary on account of the cut that was made in his appropriation. We received originally $20,000 for this work but this had to be reduced fifty per cent. We are doing some little work with the boys' and girls' agricultural clubs and have a few demonstration farms that we are superintending. I am looking for helpful results from this line of work. We cannot hope to get good results in the boys' and girls' club work until we can give closer supervision than is possible at the present time.

In the main, the work for the extension operations is very promising. It is indeed unfortunate that the appropriation for this work had to be reduced.

EXPERIMENT STATION.

Just what we are doing in the Experiment Station can best be told you by the Director himself. I submit his report to me as part of my report.

WORDS OF APPRECIATION.

In closing this report I desire to express my appreciation to the members of the Executive Committee of the Board. Their devotion to the good of the Institution, their sound judgment, foresight, ability to deal, in a large way, with the problems of administration, have made the work of all of us a pleasure.

To Dean Lawrence, who as Dean of the Faculty and Chairman of its Executive Committee has been tireless in his efforts to keep the work of the education to high efficiency.

To Director Gillette, whose careful administration is shown in the strong work of the Experiment Station.

To Superintendent Hinman of the Extension Service; to the members of the Executive Committee of the Faculty; to Professor

Coen, Chairman of the Catalogue Committee; to Professor Johnson, Chairman of the Rural and Industrial Education Committee; Professor Macdonald, Chairman of the Athletic Committee; Professor Keyser Chairman of the Division of Agriculture and Farm Manager; to Principal Netherton of the School of Agriculture and to Secretary Taylor and Accountant Dwyre.

Some of the younger members of the Faculty have done especially well this year. We have had a year that has tried us out; it has given us an opportunity to see how we can carry an overload. At times the nervous tension got a little high, but these times were not numerous. Your men on the campus, in the laboratory and in the field have given a good account of their stewardship and they can submit their year's record to you with the feeling that they have given you and the Institution good service.

Respectfully submitted,

CHAS. A. LORY,
President.

June 7, 1911.

DIRECTOR'S REPORT.

To the President:

Sir.—I have the honor to present my first semi-annual report as Director of the Agricultural Experiment Station. As it comes near the close of my first year of service in this capacity I am making it somewhat in the nature of an annual report.

At the outset I wish to express my warm appreciation of the kindly treatment that has been accorded me at all times by yourself and by the members of the Executive Committee in our business relations. My relation with the Experiment Station workers has been equally pleasant, nothing having occurred to mar a pleasant memory of the year's work.

When I accepted the position as Director of the Station it was with some fears that I might not be the man for the place, and with a full understanding that the position was for one year. At the end of June, this year will have expired and I shall then be ready to step aside if you and the Board feel that someone else will be able better to administer the affairs of the Station. If it is your wish that I shall continue as Director of the Station, I shall hope to show some improvement as the result of the year's experience.

There is only one month left in which to complete the expenditure of the Government funds for the fiscal year 1910 and 1911. It appears now as though we shall be able to close out the Hatch and Adams funds without difficulty, and also have plenty to properly carry all the needed expenses to July 1st. A recent letter from the office of Dr. True states that the financial report of the Station has been approved and the Station certified to the Treasury Department for the balance of the year's appropriation. I am sure you will be pleased to know that only $1,361.71 out of what looked like $3,000 was finally disallowed from the bills of the former director. Of this sum $1,117.29 was from the Adams fund and $244.42 from the Hatch fund. Plans for the expenditure of the full $30,000 for the next fiscal year have been quite fully completed and are on file in my office. The importance of the work that has been planned can be judged from the names of the projects and the brief outline given on another page.

Bulletins.

The bulletins that have been published since July 1 of last year, the number of pages in each, and the size of the editions are as follows:

No.	Title	Pages	Edition	Total No. Pages
162	Rabies	8	20,000	160,000
163	Farm Butter Making	16	20,000	320,000
164	Poultry Raising	16	20,000	320,000
165	Ration Experiments with Swine, 1906-08	24	20,000	480,000
166	Information Concerning Colorado Carriage Horse Breeding Station	12	10,000	240,000
167	Life and Care of Farm Machinery in Colorado	20	20,000	400,000
168	The Deterioration of Manures under Semi-Arid Conditions	32	18,000	576,000
169	Some Insects and Mites Attacking the Peach in Colorado	20	15,000	300,000
170	Thinning the Winesap	20	15,000	300,000
171	Colorado Raspberry Industry	16	10,000	160,000
172	Garden Notes, 1910	16	20,000	320,000
173	Notes on a Dry Land Orchard	8	10,000	80,000
174	Adobe as a Building Material for the Plains	8	10,000	80,000
175	Potato Industry of Colorado	80	20,000	1,600,000
176	Productiveness and Degeneracy of the Irish Potato	16	10,000	160,000
	Circulars			
9	Growing Broom Corn in Colorado	16	15,000	240,000
10	Preparation of New Land for Crops	16	20,000	320,000
11	Flax Growing	8	15,000	120,000
				6,176,000

Besides the above, manuscripts are in hand, or will be within a few days, for bulletins as follows:

150 Meaurement and Division of Water by Prof. Carpenter
177 Nitre Investigation by Dr. Headden
178 Hold-over Blight in Pears by Prof. Sackett

Matters of General Policy.—No money has been available for salaries or expenses for carying on experiments maintained by State appropriations since the first of last December, and it is doubtful if any will be available for a month or more to come. Fortunately, the Station special fund has been able to carry our Station expenses to the present time without an overdraft, but it does not seem probable that a special fun dcan be developed that will be sufficiently large to carry the expenses of the projects

through the interim that will come at the end of the present biennial period. This makes it necessary to plan some way by which funds may be available too carry the expenses from December, 1912, to such a time as appropriations may again be made and become available. As most of the men who are employed in carying on experiments on the State funds also do College work, the Station can arrange to pay a liberal portion of their salaries and expenses to December, 1912, and the College can then afford to carry the work until appropriations are again made.

Since conferring with you in regard to bearing a portion of the expense of men desiring to attend meetings of scientific societies, or to visit other sections of the country for the purpose of getting information that will be of service to them in carrying on their projects, I would like to recommend a rule something like the following: A person working upon Station projects supported by a State fund may be allowed, upon the recommendation of the Director and the approval of the President of the College and the Executive Committee of the Board, to draw requisitions upon this fund for one-half of the expenses of such inter-state trips, but the total of such expenses borne by the fund shall not exceed 10 per cent. of the appropriation devoted to that line of work. This would not interfere with the Station, at any time, sending an employee upon any purely business trip and paying all his expenses.

I am decidedly in favor of encouraging our scientific men to attend the meetings of scientific societies in their special line and also to take vacations occasionally to go to technical schools where they can take advanced training to perfect their education in the latest and best in their special line.

The Station machinery is running very smoothly and I hesitate to make any radical changes, but for lack of funds, I am inclined to recommend that we try to get along with one good field man, who shall be an entomologist as well as an all round horticulturist, to take care of the Western Slope field work with headquarters at the Teller Institute. If this were done, I should want to bring Mr. Weldon here to take charge of the inspection work in the State as Deputy State Entomologist, and to devote a portion of his time to experimental work and teaching. If the plan meets with your approval, I should like to have Mr. Weldon here by August or September, at the latest.

A few years ago it was customary to pay a considerable portion of the salaries of stenographers in the offices of Station men from the Hatch fund. The Government has restricted the expenditure of this fund more and more from year to year and it no longer seems proper to pay stenographers for doing extension work, and that is what nearly all of the correspondence is. I would therefore

recommend that all stenographers' salaries outside of those for the Director of the Experiment Station be paid out of other funds than the Hatch.

At the end of each year the matter of increasing salaries is always sure to come up. Several requests have been received and are given attention a little further on. I believe a good deal of discretion should be used in raising salaries and that they should only be raised when they are really deserved, but I do not believe we should lose specially good men who we greatly need because some other institution offers a small amount more than we are paying. Men are of more importance in building up an institution of learning, or an investigational force in an experiment station, than high-price apparatus. So I am in favor of paying good prices for first-class men for experiment station work.

Aside from wanting more money for the work, there has been one complaint from that station men that has been frequently made, and that is in regard to delays in getting orders when purchases need to be made quickly. I think it would be well for us to arrange some plan that will be satisfactory with the Executive Committee by which expenses for small amounts, and even for considerable sums when very important, may be arranged for quickly.

If we get the full appropriation for experimental and extension work from the State during the present biennium, the amount will somewhat exceed the total of the Adams and Hatch funds for the same period. As the Government funds would not be allowed to bear the expenses incident to the administration of the State funds, it becomes necessary for the latter to bear their share of executive expenses or to put the expense upon college funds. I understand it to be the wish of the Executive Committee that the State funds should bear their share of the executive expenses, so I have planned to pay one-half of the salary of the Director and his office assistants, and one-half of his office expenses, about one-fourth of the salaries and expenses in the office of the Secretary of the College, and $500.00 a year in the President's office from the State appropriations. If a different apportionment is desired, I should like to be advised what it will be as soon as convenient.

Comments from Reports Handed In.—As this is the time of the year when most of the projects for expenditure and experimental work are decided upon, it may be a matter of sufficient interest to you and to the Executive Committee to justify my taking sufficient space to give a full list of the projects that have been proposed and favorably considered for the ensuing year. I will also give the object and method of procedure very briefly for each.

CHEMICAL SECTION.

NITRE—A STUDY OF ITS OCCURRENCE AND FORMATION IN CERTAIN SOILS, TOGETHER WITH ITS EFFECT ON VEGETATION.

Object.—To determine the source of the excessive amounts of nitre (nitric acid) which occurs in certain areas and its very great abundance in some of our cultivated soils and its effect on our crops, the sugar beet in particular.

Method of Procedure.—Collection and analyses of samples. Study of conditions in the field by bacteriological study of the soil (Sackett's particular work); by growing of crops (beets) and studying the effects on the composition and manufacturing qualities of the crops produced. I have surmised that the over-supply of nitric acid (nitrates) may be the cause of the deterioration of our sugar beets. This is still a problem. Supplementary to this I shall ask for a physiological study of the beets grown under these conditions. Further, by inoculation of soils.

RIO GRANDE DEL NORTE VALLEY WATER.

Object.—To determine what changes take place in the mineral matter held in solution. What changes take place in the composition of these mineral matters. The relation between these changes and the mineral matter held in solution by the ground waters of the surrounding country. If there is anything in the changes, though modified by seepage waters and the artesian waters, i. e., does the relation which is evident in the upper portion of the valley persist throughout the valley. If there is any relation between the river water and the general soil conditions of the valley, and if the changes and composition throw any light on the question of drainage.

This work necessitates a study of the ground waters, the alkalies, the artesial wells, and to some extent the soil of the valley.

BACTERIOLOGICAL SECTION.

RELATION OF SOIL BACTERIA TO ALKALIES.

Object.—To determine the cause of the excessive nitrates in moderately seeped alkali soils in the San Luis, Grand and Uncompahgre and Arkansas Valleys; to find if due to bacteria; if so, the conditions of their activity; and perhaps means of preventing damaging activity, or of arresting.

Method of Procedure.—Collection of samples. Field studies.

Determination of the nitrogen fixing power of the given soils.

Isolation of pure cultures of the nitrogen fixing organisms.

Conditions favoring activity; whether temperature of soil; moisture content, or composition of soil.

BACTERIOLOGICAL STUDIES OF ALKALI SOILS.

Object.—To determine the biological character of certain alkali soils and further to study some of the physiological processes accomplished by soil bacteria in these soils in their relation to soil fertility.

Method of Procedure.—Owing to the extent of the field covered by this investigation it has seemed advisable to subdivide it into a series of independent yet more or less related soil studies.

Samples of soil are to be collected from two or three different localities which are representative of alkali soils and which may possibly be important because of their peculiar or special chemical or agricultural properties.

RASPBERRY YELLOWS.

Object.—Discover nature of disease and remedy.

Method of Procedure.—Laboratory studies, cultures and inoculation experiments. Field observations.

ENTOMOLOGICAL SECTION.

PLANT LOUSE INVESTIGATIONS.

Object.—To determine the species of Aphidae that infest Colorado plants, to work out the life habits and food plants of as many of the species as possible, and to make descriptions and careful structural and color drawings of the different stages of each species during its development and also to determine natural enemies.

Method of Procedure.—By means of insectory and breeding cage work and many observations in the field and by correspondence with other workers in this country and Europe.

CODLING MOTH INVESTIGATIONS.

Object.—Life history and remedies for codling moth on Western Slope.

Method of Procedure.—Spray thoroughly as petals fall and as first brood of eggs hatch, to poison first brood of worms as completely as possible. Keep check and by counting all the fruit determine per cent. of benefit from sprays.

MISCELLANEOUS INSECT PESTS.

Object.—To give some attention to unexpected insect outbreaks and to accumulate year by year information of economic

value concerning numerous common pests to which we cannot give much special attention.

Method of Procedure.—Attack the problems as they present themselves as far as possible without unduly neglecting other regular lines of work.

EXPERIMENTAL ORCHARD.

Object.—To determine best means of combating the green and woolly aphis of the apple and to have a young orchard for general experimental work where trees may be destroyed if necessary.

Method of Procedure.—Trees given various root treatments on being set, to note effects on woolly aphis, tops to be sprayed to destroy green and woolly aphis, trees set close to be thinned as necessary to make a permanent orchard.

POTATO FLEA BEETLE.

Object.—The discovery of preventive or remedial measures.

Method of Procedure.—Field experiments in potato growing localities. Considerable work has been done in the life history of this insect and discoveries made which are new to science. The work remaining is mostly of an economic nature and there is little prospect of a cheap and effective method of control.

IRRIGATION AND DRAINAGE SECTION.

EXPERIMENTS WITH FLOW OF WATER THROUGH ORIFICES.

Object.—To determine the law of effect of velocity on discharge of water through an opening in the side or bottom of a channel where the velocity acts in a direction normal to the axis of the opening.

Method of Procedure.—Construct a flume 2x2 in cross section and about 20 feet long. Weir box to have adjustable spillway on one side and hook gage box on the other, to allow close adjustment of the head of water to be run through the flume. Equipment to be arranged for measuring the quantity of water and for the relation of the velocity and pressure of the water run through the flume.

WEIR CONSTRUCTION.

Object.—To determine the effect of various factors of construction of weirs and their effect upon the discharge over the weir. The real object is to determine the allowable limit of error in following specifications for weir construction.

Method of Procedure.—After constructing a weir in accordance with accepted specifications, gradually allow the weir box to

fill up or silt up, and determine the discharge through the various stages of this box-filling action. Also interfere with the free fall and with the complete aeriation of the nappe and determine the effect of such interference in per cent. Also change the contraction element and see the effect. This work would be for the purpose of determining what refinement would be necessary in the construction of farmers' weirs to obtain a reasonable accuracy, consistent with the farmers' demand and the price of water.

EFFECT OF TEMPERATURE ON THE FLOW OF WATER.

Object.—To determine the effect of temperature on the flow of water through large pipes, small pipes, flumes, orifices, open canals and siphons.

Method of Procedure.—With the hydraulic laboratory equipment make volumetric determination of the flow through pipes, weirs, orifices and small flumes at various temperatures. It is also desirable, if suitable conditions can be found, to supplement the laboratory work with measurements of flumes, ditches, siphons and pipes in actual operation in the field.

CONCRETE.

Object.—A study of concrete structures for canals, ditches and farms to promote its use if found to be desirable. Also a study of the effect of alkali on concrete.

Method of Procedure.—A study of concrete farm and ditch structures, including canal linings, check gates, drops, spillways and field lateral structures. Also find structures that have been influenced by alkali and it may be possible to learn something of the methods of mixing and placing the concrete and the cause of failure. Supplement the above knowledge with plans and photographs of such concrete structures as seem to be desirable. Make this study principally from the farmers' standpoint in order that he may get good structures at a comparatively small cost by making them at odd times.

DRAINAGE REQUIREMENTS FOR CROPS.

Object.—To obtain definite data concerning the effect on the life and yield of crops of maintaining the ground water level at various depths below the surface in typical soils of Colorado, in order that the design of land drainage systems may be placed on a rational basis.

Method of Procedure.—Construct a series of underground cement tanks in order to have control of the underground water conditions and to approximate field conditions as nearly as possible.

A system of pipes would be installed near the bottom of each tank to furnish the water-supply.

Each tank would have soil thermometers at various depths and a test well for the observation of the water level. Each tank would be cropped and accurate records kept of the yield in order to determine the effect of the conditions imposed. Soil moisture determinations and studies of the root and plant conditions should be made at stated intervals throughout the course of the experiment.

Automatic records of temperature of the surrounding soil should be kept, as well as evaporation, precipitation, velocity and direction of the wind, conditions of humidity, and other general meteorological data, in order that tank results of one season may be compared with those of another.

CO-EFFICIENT OF FRICTION.

Object.—To obtain more definite data concerning the value of "n" (co-efficient of friction) in Kutter's formula, for the flow of water in channels.

Method of Procedure.—Make measurements of friction or resistance to flow of water in concrete, rip-rap and various types of earth channels, old and new timber flumes, and various types of canal sections in actual operation. Determine effect of moss, sediment and general debris on flow through channels.

DRAINAGE ACTION OF VARIOUS SOILS OF COLORADO.

Object.—To determine the water-holding capacity of soils; rate of percolation; proportional part of interstitial space representing the drainage capacity of the soil, and the general physical condition of the soil effected by drainage. Associated with the above might be a study of the alkali and nitre soils from a drainage standpoint.

Method of Procedure.—Double jacketed tanks provided with a catchment area in the bottom would form the principal laboratory equipment. Soil to be placed in the tanks to such a depth as to permit a reasonable head of water to cover the soil. Weighings of tanks and contents to be made at stated intervals. Also collection of data in the field.

PUMP IRRIGATION.

Object.—To obtain data upon which to base a bulletin to meet the demands of the farmers who want to install pumping plants for irrigation.

Method of Procedure.—Look up records of underground water supply; quantity and qualit yof same in various parts of the State, and supplement with necessary field data to bring the subject up to date.

TANK EXPERIMENTS.

Object.—To determine the amount of water required by the different crops during their various stages of growth; also to throw light on the effect of moisture on yields and the amount of water required to produce a pound of dry matter exclusive of evaporation losses from soils.

Method of Procedure.—According to outline to be furnished by Doctor Fortier.

NITRE DRAINAGE.

Object.—A co-operative investigation of the effect of drainage upon the nitre problem; this co-operation to be carried on with the Chemical Section of the Station.

Method of Procedure.—It is desirable to secure a suitable field of 5 or 10 acres to be divided into experimental plats and adequate tile drainage system installed to lower the water table to the depth desired. The surface of the several tracts to be flooded, careful analyses to be taken before and after such floodings, by observation of the drainage waters and by careful scientific procedure throughout, it is hoped that valuable data will be obtained as to whether or not the nitre bacteria are affected by the ground water conditions.

DRAINAGE FOR COLORADO.

Object.——To demonstrate the benefits of drainage upon our alkalied soils.

Method of Procedure.—To select alkalied tracts in different sections of the State. These tracts to be of representative soils. To co-operate with the owners of the land in draining the same and showing the proper methods of redemption.

IRRIGATION SURVEY OF COLLEGE FARM AND WATER DUTY DETERMINATION FOR DIFFERENT SYSTEMS OF IRRIGATION.

Object.—To get a correct and complete map of the College farms so that the land may be divided into fields of measured areas for purposes of determining duty of water and comparing the duty of different systems.

Method of Procedure.—Topographical survey, location of ditches, drains, buildings, etc. Installation of different systems and testing of same for comparison on College and Fort Lewis farms.

THE RELATION OF CULTIVATION TO THE DUTY OF WATER ON DIFFERENT SOILS OF COLORADO.

Object.—To make necessary surveys that up-to-date methods of irrigation may be followed. To experiment with different

methods of cultivation and ascertain their effect upon the duty of water for different soils and crops.

Method of Procedure.—To select typical soils in the State and experiment upon the same with different systems of irrigation and cultivation. Measuring the water supplied, noting the cultivation and ascertaining the yield.

AGRONOMY SECTION.

Correlation of Characters in Grain; Including Former Projects on Correlation of Barley, Correlation of Wheat, and Correlation of Oats.

Wheat Improvement, Including Former Projects on Wheat, Status on Growing Early Spring Wheat, and Early Winter Wheat.

Feed Crop Improvement. Including Former Projects, Pasture and Meadow Grasses; Oat Improvement; Forage Crops and Feed Grains.

HIGH ALTITUDE CROPS.

Object.—To find crops adapted to Colorado High Altitudes.

Method of Procedure.—In two parts, first immediate, second continued.

ROTATION IN COLORADO.

Object.—To obtain the practice and results of rotation in Colorado in order to suggest improvements whereby yields may be increased, work be lessened and better distributed, and profits increased.

Method of Procedure.—Rotation followed by Colorado farmers, good and poor, to be obtained by corespondence and personal visits to selected farms. The rotations followed and results obtained.

PREPARATION OF NEW LAND.

Object.—To supply information to prospective settlers.

Method of Procedure.—Collect and publish such information concerning new lands and their management as can be obtained. To find best time to plow; best depth for different soils and locations; best first crops for various regions.

FIELD PEAS.

Object.—Improvement of the field pea.

Method of Procedure.—Work largely in San Luis Valley and other mountain park regions. Test methods of planting and cultivation, soil preparation; varieties, harvesting, irrigation, rotation. Begin selection for breeding improvement.

FARM MANAGEMENT.

Object.—To obtain the systems of farm management in the various regions of Colorado; to get better systems gradually before the farmers; to suggest new and improved systems, and get their advantages before the farmers.

Method of Procedure.—Visits to successful and unsuccessful farms in the various regions of Colorado, and study their methods as completely as possible.

METHODS IN SELECTION BREEDING.

Object.—To devise or discover methods for selection breeding which give nursery results comparable to field results, which save time and are simple of operation, in order to devise or adapt a method well suited to Colorado conditions. Scientifically, such study would give underlying reason for any method. To get at the reason for the method of selection. The method best adapted to Colorado climatic conditions.

Method of Procedure.—Crops will be grown in the nursery from a known pedigree parent by the centgener method; head row method; plant row method, etc. Careful records for yield, growth habits, ease of note-taking, harvesting, comparison of results. Comparison of methods with each other and with field trials. Comparison of growth and resistance to adverse conditions.

PLAINS CROPS AND MANAGEMENT.

Object.—Corn improvement, broom corn; plains farm management; plains forage and pasture crops; general plains crops; durum wheat, plains wheat, and plains corn. To find the variety best adapted to the plains conditions; to obtain variety characteristics.

HORTICULTURAL SECTION.

ASPARAGUS INVESTIGATION.

Object.—To find the most desirable depth to plant. To find variety best adapted to Colorado conditions. To avoid damage from late frosts. After bed is obtained to study diseases.

Method of Procedure.—Plant plat of asparagus of different standard varieties. Seed sown to obtain plants. These plants to be grown in the nursery row till old enough to determin all seed bearing plants from the staminate plants, then these two should be set in separate rows.

ORCHARD INVESTIGATION.

Object.—To obtain method of securing the strongest, health-

iest and best trees in the orchard, by setting one year whips and heading low; by high heading close vs. distributed. By heading low with leader vs. without. To secure deep-rooted trees and determine the difference in the depth of rooting of apples from deep cultivation vs. shallow cultivation.

Method of Procedure.—One-year apple trees of the best growing varieties should be set with poor growers as Rome Beauty for checks. After the trees are two or three years old the good growers should be top worked to determine the best stocks to use for that purpose. At the same time the problem of methods of heading, pruning, cultivation, pollination, irrigation and cover crops may be worked out.

CHERRY INVESTIGATION.

Object.—To work out the several problems connected with the growing of cherries in Colorado such as the amount of water best to use, pruning, etc. To produce an information bulletin on culture and growth.

Method of Procedure.—It is proposed to investigate the present methods used by successful cherry growers this spring and make photographs of the various essential operations in the work This to be published as an information bulletin.

CAULIFLOWER INVESTIGATION IN HIGH ALTITUDES.

Object.—To determine the value of cauliflower as a high altitude crop. Also the possibility of shipping to distant markets.

Method of Procedure.—A few hundred plants of two or three standard varieties of cauliflower are to be grown here and sent to Middle Park or possibly the San Luis Valley.

COVER CROPS FOR ORCHARDS.

Object.—To determine the best plant or plants to use as cover crops for orchards, and the best time for planting.

Method of Procedure.—Red clover, crimson clover, soy beans, cow peas and hairy vetch to be sown in plats in the old orchards this spring and in the young orchards in July.

BLACK ROOT OF STRAWBERRY.

Object.—To discover the cause of and a possible remedy for a very obscure and harmful trouble of the strawberry which is prevalent in this State, zut which also occurs in eastern states.

Method of Procedure.—Laboratory studies of cultures, greenhouse grown plants and field studies.

POTATO INVESTIGATIONS.

Object.—To study cultural methods and diseases of potatoes.

Method of Procedure.—Methods of culture, watering, depth

of planting, whole or cut seed, tested seed, scabby seed, treated seed, etc., to ascertain effect on disease.

ALFALFA INVESTIGATIONS.

Alfalfa Seed Breeding.

Object.—To improve the seed yielding tendency of alfalfa, and also to improve the hay type, and the desirable qualities in the plants, hardiness, disease resistance, and other desirable qualities and traits.

Method of Procedure.—Comparative nursery test of different varieties, and individual selections made each year and additions made to the old nursery, increase plats to be sown when the qualities and desirable traits will warrant, and field test made as the ultimate test.

ANIMAL INDUSTRY.

INFORMATION ON BEEF PRODUCTION.

Object.—The gathering of information concerning present methods of beef production in Colorado.

Method of Procedure.—Gather information at first hand by visiting different districts of the State. This information too form one of a series of such investiagtions.

LIVE STOCK INVESTIGATIONS.

Object.—To gather information concerning meat and milk production in Colorado as a basis for popular information bulletins upon the subject.

Method of Procedure.—Time of one man in field investigation collecting information on the two lines of meat production

ECONOMIC BEEF PRODUCTION.

Object.—To determine the cost of producing beef as demanded on the market.

POULTRY INVESTIGATION.

HATCHING AND REARING CHICKS.

Object.—To determine the cost of hatching and bringing chicks to marketable size; to hatch and rear chicks for further use in work on the College poultry farm.

Method of Procedure.—To hatch chicks by means of incubators. Rear them by means of brooders.

POULTRY HOUSING.

Object.—To compare different styles of colony houses, one

type wire wire front, one type with glass and muslin front, as to comfort, convenience, capacity, economy, etc.

Method of Procedure.—Build two houses of each type and compare results.

KEEPING FOWLS.

Object.—To determine the cost of feeding and caring for grown fowls, the cost of egg production, etc.

Method of Procedure.—To provide good house and feed for mature hens.

DEMONSTRATIONAL POULTRY FARMS.

Object.—To establish in each of a number of communities in Colorado, a demonstrational poultry flock, the fowls to be loaned by the Specialty Clubs, Poultry Associations or Commercial bodies of the State, and to remain the property of those furnishing them. The State Agricultural College to co-operate to the extent of furnishing a man to confer with those having the fowls in charge, as to methods of building, feeding, incubating, etc.

CHEMICAL SECTION.

W. P. HEADDEN.

Within the year two very important bulletins have been handed in from the Chemical section, giving the results of research work. The first of these (Bulletin 168) by Headden and Douglass on "Deterioration of Farmyard Manures under Semi-Arid Conditions," contained 32 pages, and the other bulletin "A Study of Nitre Impregnated Soils" is just ready for the printer. It will make a bulletin of about 100 pages. The bulletin gives the results of a continuation of the investigation reported in Bulletin 155. While this line of investigation has revealed a very serious condition that is developing in some of our agricultural sections, without as yet furnishing a sure remedy, I consider the work done of the utmost importance for the future of agricultural development over a large portion of the arid sections of this country. The study has revealed the real cause which has brought about a more or less complete loss of productiveness of thousands of acres of what were, a few years ago, Colorado's most fertile soils, an dthis is the first step toward the discovery of a remedy. The work will be continued with special attention to remedial measures another year. This work is all being done under the Adams fund, and so without expense to the State.

BACTERIOLOGICAL SECTION.

W. G. SACKETT.

Two bulletins giving the results of investigations in this Section have been presented during the year. One of these, No. 178, "Holdover Blight," deals with the most serious disease of the apple and pear trees existing in this State; the other, No..... Bacteriological Studies of Alkali Soils," treats of the micro-organisms that are producing the destructive quantities of nitrate of soda causing the so-called "black alkali" in some of our soils. This work is closely co-ordinated with the work of the chemical section on the same general investigation. The particular organisms that manufacture the nitre, and much in regord to their habits and the conditions that are favorable or unfavorable for their development, has been determined beyond a reasonable doubt. A continuation of this work will form one of the projects for the coming year.

Mr. Sackett took no vacation last year and so asks for five weeksin which to attend a summer term at Chicago University for the purpose of better preparing himself for work along investigational lines in bacteriology. I recommend that the request be granted, Mr. Sackett bearing all his expenses. Mr. Sackett's work has been entirely supported by the Adams fund.

ENTOMOLOGICAL SECTION.

C. P. GILLETTE.

A bulletin, No. 169, on "Some Insects and Mites Attacking the Peach in Colorado" has been published from this section during the year. In addition five technical papers resulting from the plant louse work have been prepared, three of which were published, one is in the printer's hands, and another is about to go to press. The work has been supported chiefly from Government funds, Adams and Hatch, but Mr. Weldon's work has been supported out of the State appropriation for horticultural investigations.

The small appropriations made for the continuation of this work during the present biennium will probably make it necessary to terminate the regular employment of field men on the Western Slope at an early date.

BOTANICAL SECTION.

B. O. LONGYEAR.

A bulletin on "Co-operative Tree Planting" was presented by Professor Longyear early in the year, but for the want of funds has not yet been printed. Professor Longyear has one object, "Black Root of Strawberry," supported from the Adams Fund, which he

wishes to continue another year. He did some careful work during the summer of 1910 to determine the effects of iron sulfate on dandelions and reports very encouraging results. During the past year Professor Longyear has devoted nearly all of his time to teaching. He anticipates having more time for experimentation the coming year.

IRRIGATION SECTION.

E. B. HOUSE, V. M. CONE.

This section has recently been organized with Professor House as head of the section with his major duties in College work, and Mr. V. M. Cone as specialist in Irrigation and Drainage, with his whole attention given to Station work.

To July 1st, Mr. Cone will devote his time to Adams investigations exclusively, and after that date will draw a portion of his salary and expenses from the Hatch and State funds. We are also planning on co-operative work in this section with the Government. We are planning to give considerable attention to the more difficult drainage problems of the State, and especially those having for their object the reclamation of soils heavily impregnated with alkalies and nitre.

Professor Carpenter's bulletin on "Measurement and Division of Water" is in the hands of the printer, and his second bulletin on "Seepage and Return Waters" is nearing completion.

HORTICULTURAL SECTION.

E. R. BENNETT AND C. L. FITCH.

Professor Bennett is head of this section, but devotes the major portion of his time to College duties. Mr. Fitch is called our Potato Specialist, and devotes his entire time to experimental and extension work for the improvement of the potato growing industry in Colorado. Professor Bennett takes part in the planning of the potato investigations of the year, has charge of one field man on the Western Slope, and gives as much time as he can to the carrying on of a few horticultural projects and to extension work. The experimental work in this section is supported by State funds except for one rather inexpensive project on Orchard Investigations that is paid for out of the Hatch fund.

The Horticultural section has furnished the following bulletins during the past year:

No. 172, "Garden Notes, 1910," by Professor Bennett.

No. 171, "Colorado Raspberry Industry, by Bennet & Herrick.

No. 170 "Thinning the Winesap," by Mr. Herrick.

No. 175, "Colorado Potato Industry," Bennett & Fitch.

No. 176, "Productiveness and Degeneracy of the Irish Potato," by Mr. Fitch.

The small appropriations made by the last session of legislature for the continuation of the experiments with fruit and potatoes will greatly cripple the work for the next two years.

AGRONOMY SECTION.

ALVIN KYSER, P. K. BLINN.

Professor Keyser is the head of this department, dividing his time about equally between the College and Experiment Station work, and Mr. Blinn devotes his entire time to experimental and extension work with alfalfa, and seems to be doing very important work in introducing and breeding up improved strains of this most important of all agricultural crops in Colorado. Professor Keyser's work for the improvement of the grain and other farm crops for both dry and irrigated sections of the State also seems to be of great importance for the substantial improvement of the agricultural conditions in the State. The work is too extensive to be mentioned in detail here, but its nature is well indicated by the titles of the projecs given above for this section.

Aside from the list of bulletins published during the past year, manuscripts have been prepared on "Alfalfa Growing" and on "High Altitude Crops," but these have not been printed because of lack of funds.

Mr. Payne, who has devoted his time to collecting data for the benefit of the dry land farmers, has resigned and with the small appropriations available for this work, it seems impossible to employ another man to take his place. Professor Keyser thinks much of the data that has been collected by Mr. Payne is of sufficient value to publish for the benefit of those engaged in dry farming.

Mr. J. W. Adams, who has been in charge of the station dry farm at Cheyenne Wells, has been going ahead with the work without pay since last November in anticipation of re-employment in case we should get money to continue the work. As the amount appropriated for this work is only $3,000 for the two years, I believe we cannot do better than to continue Mr. Adams' services and devote the money very largely to experiments that can be carried on at Cheyenne Wells, and to such extension work as the fund will support in addition.

One of Professor Keyser's projects, that of "Correlation of Characters in Crops," is supported by the Hatch Fund, all the other projects are supported by the State funds.

Professor Keyser's work seems especially to need the purchase of an electric motor to drive a small threshing machine and other machinery, the installation of additional electric lights, and the employment of an artist and photographer in addition to the ordinary expenses for the year. It is doubtful if much of this expense can be allowed with so small an appropriation for the work.

ANIMAL HUSBANDRY.

G. E. MORTON, W. E. VAPLON.

Professor Morton, head of this section, has charge of the feeding experiments and other investigations with farm animals, and Mr. Vaplon devotes his entire time to the poultry work. Mr. Vaplon gives nearly one-half of his time to purely extension work.

Professor Morton has carried through successfully ration experiments on steers, lambs and swine, the past winter and spring, and bulletins giving the results of the work will be prepared later. He has planned to maintain a dairy field man who should devote his time to the furtherance of the dairy interests by forming testing associations, encouraging the building of silos and the construction of proper dairy barns and the like. He would like to put in a first class dairy equipment at the College for the education of both students and visitors, which equipment should include a dairy barn, and herds of Jerseys, Holsteins and Ayrshires. With but half of the anticipated appropriation to carry on this work, it will be necessary to recast the plans, and probably to cut out the dairy plans entirely for the first year, leaving that portion of the work for this year entirely to the Government men detailed to Colorado. It will probably be necessary to confine the feeding experiments to one winter and probably cut out either the pig or the lamb feeding entirely.

VETERINARY SECTION.

G. H. GLOVER AND B. F. KAUPP.

Besides Bulletin 162 on "Rabies," published early in the year, from this section, manuscript for a bulletin on "Poultry Diseases" has been prepared, but because of lack of funds has not been published. To the present this section has been practically without funds. With only $10,000 for animal husbandry for the next two years, it will hardly be possible to set aside more than $2,500 for the veterinary work. With this amount the veterinary section can hardly do more than carry on a small amount of laboratory investigation and pay expenses for an occasional investigation of important

outbreaks of animal diseases about the State. This section has no support outside of State funds.

HORSE INVESTIGATIONS SECTION.

J. O. WILLIAMS.

This work is supported chiefly by the Bureau of Animal Industry at Washington. The State's appropriation for the next two years amounts to $2,500 a year. There are now 41 brood mares, and something over 70 animals of all ages in the stud. Mr. Williams and the Bureau at Washington are quite anxious that a trainer should be procured to devote his full time to the training of the young animals. This would result in our getting much better prices for the animals sold and is really essential in order to determine what animals are suitable to be retained. I recommend that we proceed to employ a trainer if a suitable man can be found at a reasonable price, and provided that the Government will pay for half of the salary and expenses of the trainer in carrying on the work.

For fuller information in regard to the work of the different sections I would respectfully refer you to the reports of the heads of the sections on file in my office.

Dr. Beal, of the Office of Experiment Stations, has just completed his inspection of the books and projects of the Station and has had a personal interview with each person in charge of investigations under the Government (Hatch and Adams) funds. After completing his work he expressed himself as pleased with the conditions as he found them. He did not obpect to any bills. The only real adverse criticism made was in regard in to the administration of the Hatch and Adams funds. He thought it very objectionable to require workers to make estimates in advance of their monthly expenses, and said he believed it sufficient to require each worker to keep within the budget allowed him. He also said that arrangements for expenditures should be such as to allow a worker to make purchases quickly and at any time when an article is needed, so long as he does not exceed his allowance. It seems to me that it will call for very little change in our present system to do away with these objectional features and fully meet the requirements of the Government office in this matter.

Respectfully submitted,

C. P. GILLETTE,

Director.

REPORT OF THE PRESIDENT.

To the State Board of Agriculture:

The educational work of the Institution for the year closing in June was extensively outlined to you in my semiannual report.

In the educational work this fall we are following in the main the lines described to you in June, and are giving special attention toward increasing the eficiency of our Instruction. Registration for the College began September 2d, and by the end of the first week college classes were meeting regularly, conflicts in the schedule had been adjusted and the work of the year begun. Registration for the School of Agriculture began October 9th, and by the end of the week the work for this student body was in good running order. The enrollment shows a gratifying increase over that of last year. This is especially true in the College, where we show an increase of 25 per cent. The Freshman class shows a gain of 38 per cent. over that of last year. The School of Agriculture shows a gain of nine per cent., which is very small when compared with the 36.6 per cent. gain of last year, but the adverse economic conditions reacted upon this younger student body very strongly, and I would have considered ourselves fortunate had we been able merely to hold our own with the last year's enrollment.

The following table shows our enrollment to date; also how many counties and accredited high schools are not represented in the college enrollment, and how many counties are not represented in the school of agriculture enrollment; also what percentage of students of last year's classes returned to the College and to the School of Agriculture. Last year's record is also given for a basis of comparison:

	Men.	Women.	Total.	
College Students	223	90	313	
School of Agriculture	217	100	317	
Conservatory of Music			80	
Returned to College this fall				152
Freshmen		80 Per Cent.		
Sophomores		92 Per Cent.		
Juniors		86 Per Cent.		
Returned to School of Agriculture				133
College graduates last year				43
Nonresident college students				38
Nonresident school of agriculture students				20
Number of accredited high schools not represented				24
Number of counties not represented in School of Agriculture				21
Number of counties not represented				21

LAST YEAR'S TABLE.

	Men.	Women.	Total.	
College students	179	61	240	
School of Agriculture	188	82	270	
Conservatory of Music	20	58	78	
Returned to College in fall				123
Unclassified			30 Per Cent.	
Freshmen			68 Per Cent.	
Sophomores			83.6 Per Cent.	
Juniors			86 Per Cent.	
Returned to School of Agriculture				87
College graduates last year				42
Nonresident college students				27
Nonresident school of agriculture				19
Number of accredited high schools not represented				23
Number of counties not represented				27
Number of counties not represented in School of Agriculture				16

CHANGES IN THE COURSE OF STUDY.

Only minor changes were made in the course of study, both in the College and in the School. In the latter, the first year of a course in Mechanic Arts is offered. This is a parallel course to that now given in Agriculture, and is designed for the training of artisans and mechanics. The boy who completes this course will have a first-class foundation for any of the building trades. It offers for the lad who wants this line of work the same opportunity for training that the course in Agriculture offers for him who expects to make his living in the open country. Only minor changes are proposed for next year, in order to secure a little better correlation of the work in some of the college courses.

CHANGES IN THE FACULTY.

We were fortunate this year in not having nearly so many changes in our Faculty. Miss Margaret Haggart and Miss Charlotte Carpenter are the new instructors in the Department of Home Economics. J. B. McNulty and G. A. Gilbert are the new instructors in the Department of Animal Husbandry, F. H. Rosencrants is the new instructor in Farm Mechanics in the Department of Agronomy, S. I. Ross instructor in forge and foundry practice in the Department of Mechanical Engineering, Raymond Hertwig, instructor in the Department of Chemistry, Fred Rankin, instructor in the Department of Physics and Electrical Engineering, H. W. Hughes, Director of Physical Training, and Major G. L. Scott was appointed by the War Department to take command of the college

battalion. Dean J. W. Lawrence has not been in good health for a long time and was finally ordered by his physician to give up his work and go to a lower altitude. He was given a six months' leave of absence by the Executive Committee at its November meeting, and Professor S. Arthur Johnson was appointed Acting Dean.

GENERAL REPAIRS AND IMPROVEMENTS.

Early in the year the janitor force was organized into a competent repair squad under the direction of Building Superintendent J. W. Lawrence and did a lot of work putting the buildings in order. Floors were oiled, desks and chairs varnished, walls painted. In addition a number of the roofs were painted and cement floors put in the basement of the Conservatory and in the Armory. Some badly needed repairs have been postponed for the time being, on account of lack of funds. We find it does not pay to allow repairs to accumulate during the winter. The cheapest and best policy is to keep all buildings in first-class repair by attending, at once, to any breakage. The campus presented a much better appearance last summer, due to better care and to a better water-supply. Some improvements are now in progress, and more will be undertaken just as soon as we get out special appropriation made by the last Legislature for this purpose. The campus fence is in bad repair and will soon have to be practically rebuilt. We have been holding this fence back until we could decide upon a good, lasting post.

CHANGE IN THE NAME OF THE DIVISION OF VETERINARY SCIENCE.

At the recent meeting of the American Veterinary Association, at Toronto, Canada, a resolution was passed requesting all institutions to give a uniform degree, namely, Doctor of Veterinary Medicine. It seems desirable that we act on the suggestion of changing the name of our division to that of Veterinary Medicine and granting the degree of Doctor of Veterinary Medicine, instead of that of Doctor of Veterinary Science. I recommend that this change be made and that we be given the authority to publish it in the catalogue for next year.

PLANS FOR HIGH SCHOOL VISITATION.

Our plans for high school visitation have been worked out along the lines we found so satisfactory last year. If it is at all possible we are anxious to have members of our Faculty meet with all the high schools of the State. No line of extension work that we did last year, in my opinion, gave better results than this high school visitation. It means an added burden to the many our Faculty are carrying, but the results were so uniformly good last year that

the Faculty unanimously asked that the work be continued this year and, if possible, extended.

NEED OF STRENGTHENING OUR COURSE FOR TRAINING TEACHERS.

The demand for well trained teachers of agriculture, both for primary and secondary instruction, is far beyond the supply. Practically no training is now given in this State for secondary instruction in this subject. Many of our high schools are ready to establish courses in agriculture, but cannot do so on account of the utter impossibility of getting teachers to do the work. Not only should we make provision for training some of our regular four-year college students for teachers in agriculture and mechanic arts, but we should make provision for teachers already in the work to come here and take a course that will fit them to give instruction in one or both of these lines. Under the Nelson Amendment, we are now receiving $10,000 a year that may be used for this work. The need for teachers is so strong that the Bureau of Education and the Department of Agriculture are encouraging the agricultural colleges more and more to use this fund for the training of teachers. The Normal School is now making some provision for the training of rural teachers. Students of our own School of Agriculture should be encouraged to take some training in pedagogy to fit themselves for work in the rural school. A plan should be worked out whereby both students of the University and of the State Teachers' College could come here for special work in Agriculture and whereby our own students could go to the University and to the State Teachers' College for special work in education and psychology. I see no reason why such a plan cannot be made feasible. We have the facilities for strong technical training in Agriculture, in the Mechanic Arts and in Household Science. The University and the State Teachers' College have the facilities for strong professional training in education. The plan should prove helpful to all three institutions and should result in giving the State well trained and efficient teachers in these three lines of work. Working out this plan for the training of teachers, I believe, is of most importance at the present time. I believe we should take definite action toward inaugurating it at this meeting.

ORGANIZATION OF THE FOUR INSTITUTIONS OF HIGHER LEARNING.

Accepting the invitation of your own Executive Committee, representatives of the Board of Regents of the University, of the Board of Trustees of the State School of Mines, of the Board of Trustees of the State Teachers' College, met in the Governor's office October 7th, and perfected a permanent organization, electing Trustee Smith, of the State School of Mines, as President, and

Regent Dudley, of the University, as Secretary. Two meetings have been held since that time, one in Denver, the other at the University. The next meeting is to be held at the State Teachers' College, the following one at the School of Mines and the next here at the College. A lot of good has come from this organization and I believe more is to follow. The good that can be accomplished by such an organization is extensive enough to make it worth while for each institution to sacrifice something for its continuance. I believe the plan of meeting at the various institutions is good. It acquaints the representatives of the other institutions with the work of the one acting as host; it gives an opportunity to study methods of administration and cost of maintenance, and should work for higher economy in maintenance charges, and stronger co-operation in meeting the problems of higher education.

NEED OF AN OUTDOOR GYMNASIUM.

Some work has been done for increasing the playground of the Institution and for providing an outdoor gymnasium. In this climate it is more or less of a crime to keep students indoors the year round for gymnasium exercises. I believe fully 80 per cent. of the work of physical training should be done in the open air. I hope it will be possible in the next year to provide more and more outdoor gymnasium equipment. This is especially desirable for the work in physical training for women. The new campus plan provides for a large athletic field south of Agricultural Hall and for the use of the present athletic field for an outdoor gymnasium for women. While our present financial condition will not allow much to be done along this line, still I believe a start should be made, plans for the outdoor gymnasium worked out and a little apparatus added each year until it will be possible for all students to take a definite amount of exercise each day out of doors, under the general direction of the Director of Physical Training. My plan would be not to decrease the work we are now doing in athletics, but to develop the desire for play in the entire student body, even extending it to the Faculty. In other words, do away with the plan we now have of taking our exercise by proxy, and allowing the athletic teams to overdevelop themselves while we sit on the bleachers exercising only our vocal organs.

EXPERIMENT STATION.

The work of the Experiment Station has been especially satisfactory during this past year. We have done some very commendable work. We have met the problems that came to us in a manner that deserves credit and have succeeded in keeping up the general efficiency in spite of the uncertainty introduced by the condition of the special appropriations which go to maintain so much of the

station work. The report of the Director will show you how extensive the work of the Station has become.

EXTENSION WORK.

The work of the Superintendent of Extension has been hampered very materially by the uncertainty of the funds appropriated for his use; in fact it has been impossible to make plans for the future, or to promise far in advance that farmers' institutes would be held. In spite of this we have been able to make a very creditable showing and the report of Superintendent Hinman will show you how the Extension work of the College has grown.

THE FARM.

The plan of farm administration and farm accounting worked out a year and a half ago is giving very satisfactory results. Not only are Farm Manager Keyser, and Farm Superintendent O'Brien and their efficient corps of workers looking after the general farm work and taking care of the walks and drives about the campus, but they are also supplying the labor needed in the various lines of investigation carried on by the Experiment Station in the way of hauling, supplying fertilizer, cultivating, making ditches, etc., but they are also doing a great deal of general repair and new construction work. Superintendent O'Brien has developed a very efficient gang of concrete workers. Just how skillful these men are may be seen from the new concrete silo built by them this fall. The farm shows a net earning power this year of $2,634.30. While requiring a great deal of work, the system of farm bookkeeping is giving us a basis of the cost of production that can be gotten only in this way. The system is now complete, so that we can charge the growing crops with the amount of water used as well as with the labor needed in plowing, seeding and cultivation.

FORT LEWIS SCHOOL.

The organization of the work at the new School of Agriculture at Fort Lewis has brought us almost as much work as we had before at this Institution. For the present the Executive Committee asked that this new school be administered the same as the departments here. This means that I have had a great deal of work to do in the organization and planning of the work for this new Institution. We found the buildings in very bad shape; it was necessary to increase our original estimates for repairs and even then, with an expenditure of close to $5,000, it was not possible to put all of them in good serviceable shape. Building Superintendent Lawrence gave a month and a half this summer in planning and supervising the work of repairs. Quite a lot of small repair work was done after the school opened. Along with the difficulties of getting the plant in shape

we had the troubles brought on by the great flood to contend with so that furniture and equipment was held up fully forty days after the opening of school. In spite of all these difficulties, however, the new school is getting started. The last report from Principal Snyder shows an enrollment of 29; this may increase to 45 or 50 by the end of the year. The members of the Faculty have done heroic work and deserve a great deal of credit for the way they have met the many difficult problems. If the full appropriation becomes available, it will be possible to extend the agricultural side of the new Institution and start development of the land that will in time return considerable revenue. It seems quite possible to me to so develop the agricultural possibilities of these school lands that the Institution will, in time, be practically self-supporting. As it is, the carrying of this institution on our already overworked resources has materially added to our financial burden, while the uncertainty attending the third-class appropriations has made future planning for the work at Fort Lewis almost out of the question.

TELLER SCHOOL OF AGRICULTURE AT GRAND JUNCTION.

We are doing little here besides taking care of the property. Mr. Herrick, formerly Field Horticulturist for the Experiment Station, has been made Custodian. He was given an assistant so that he could spend a great deal of his time in the field; in other words, we are using this means for keeping him in the field on the Western Slope. The buildings, as far as possible, have been put in shape for winter. We are now conducting a series of experiments to determine the depth of the ground water over various parts of these school lands. At the buildings proper water is standing in a number of the basements. Until this ground water can be taken care of it does not seem advisable to even attempt to open this school for students. Should the third-class appropriations become available, it is planned to conduct a short course here sometime in February or early March. Up to the present time not a dollar of this special appropriation has been received, and the maintenance of this property is an added burden on our college funds. It hardly seems right on the part of the State of Colorado to ask this Institution to take care of these two properties, and yet there seems to be no other way. I believe, however, that we, as a board, have the right to expect the state officers to make every effort to protect us against loss.

FINANCES.

In financial matters the year has been one of great uncertainty. At the beginning of the fiscal year we were debating the advisability of keeping the men employed in investigational work, funds for which were provided by the Seventeenth General Assembly. All

these funds had to be used by the end of the last biennial period. We had to take the chance, should we continue, on the legislature appropriating funds for this work. Believing that the people of the State wanted these investigations continued, the Executive Committee arranged to continue the work until the appropriaion bill should be passed, setting aside the cash fund of the Experiment Station as a reserve, should for any reason, the Legislature not wish to continue all or part of this work. As you know the appropriation bill was not passed until May, and the amount was reduced from $200,000 to $140,000 in June, and in conferences with State Auditor Leddy and State Treasurer Kenehan we could get no idea of the amount of the third-class appropriations that would probably be available. It was finally considered safe, after a conference with Governor Shafroth, Auditor Leddy, Treasurer Kenehan and Attorney General Griffith, in July, to figure on 50 per cent. of the third-class appropriations being paid, and plans were then made for beginning the work at Fort Lewis, and for continuing until the end of the fiscal year such work as had been provided for by the previous Assembly, and for delaying the beginning of all new work provided by the Eighteenth General Assembly until we knew definitely the amount that would be available from the third-class appropriations. You can readily imagine that the uncertain condition of the funds did not necessarily work for high efficiency in the planning and the execution of these special investigations.

In October the Executive Committee of the Farmers' Congress met with the Executive Committe of the State Board of Agriculture and went over the entire situation. It was the unanimous opinion at this meeting that we were not warranted in carrying on this investigational work beyond the end of the fiscal year unless we were sure that the third-class appropriations were going to be paid. Conferences with the state officials brought no new data or assurance, in fact we do not know, at this time, whether the third-class appropriations will be paid in full or only in part. Accordingly, the men who were still paid from these special appropriations were notified early in November that we could not promise them their salaries after the end of the fiscal year. Special arrangement was made with Superintendent Hinman to plan to stay with us until after the meeting of the Farmers' Congress. Letters were sent out to prominent potato growers of the State, asking their opinion as to the probability of our being able to get county support for continuing the potato investigations. At a meeting early in November the Weld County Farmers' Club took up the subject and decided to try to raise not only the money necessary to continue the potato investigations, but also sufficient funds to continue the extension work of the College and the poultry investigations. This action was

entirely voluntary and unsolicited and the Weld County Farmers' Club deserves the thanks of this body. We hear encouraging reports. On Monday last the County Commissioners of Larimer County voted $250 for this fund. We should extend a vote of thanks to the Boards of County Commissioners, the banks, the Great Western Sugar Company and others who have contributed to this fund for the continuance of this work. In the meantime Superintendent Hinman has had a very flattering offer from Canada and one from West Virginia. The Canadian people are urging him strongly to send his acceptance, and we are unable to tell him whether or not we can continue his work next year. The general situation is trying, to say the least.

You will see from the following statement that the educational funds of the Institution are in good shape. The station funds coming from the U. S. Government are in good shape. In fact I am sure I can convince you that we have taken good care of the finances this past year. When you consider that we started in with an overdraft of over $32,000.00 on the Tax fund; that we have had to advance $15,000 to Fort Lewis and $1,300 to Grand Junction; that we have carried the work of Superintendent Hinman, the Animal Investigations, including the co-operative horse breeding, the general farming investigations, the dry land investigations, the fruit investigations, the potato investigations and the poultry investigations, provided for by the last General Assembly, on borrowed money, and are closing the year with a net overdraft of less than $8,000.00, I think you will agree with me that we have cause for commending the work of the Executive Committee. As a Board we were given work on special appropriations, calling for an expenditure of $110,000 this year, of this amount we have received just $2500. This gives you some idea of the magnitude of the financial problem we have had to face.

As it is I believe we are getting a high duty out of every dollar expended. Our purchasing agent system is saving money. We are buying closely and carefully, and were it possible to have a little greater freedom so that we could buy in larger quantities, even greater economies could be effected. While we had planned to start the purchasing agent system early in June, it was necessary to hold this in abeyance until we could learn the requirements of S. B. 459 scheduled to become law August 4th, but which was referred by petition to the vote of the people at the next state election.

Should the full third-class appropriations become available, the finances of the Institution will be in first-class condition.

CO-OPERATIVE WORK.

May I call your attention especially to the amount of co-operative work the Station is now doing. First, the work in horse breed-

ing, then the work in co-operation with the dairy division of the Bureau of Animal Husbandry, and the extensive co-operative work in irrigation with the Irrigation Investigations of the Office of Experiment Stations.

We are beginning work on the installation of a timber preserving plant to be operated jointly by the U. S. Forest Service and our Department of Forestry. The work with the U. S. Department of Agriculture has been most satisfactory in every way, and we have no reason to regret the amount of co-operative work we have undertaken; in fact we would welcome a great deal more of this line of work. We are also doing a great deal of co-operative work with individuals and companies in various parts of the State. Only recently quite an extensive plan for irrigation investigations to be carried on with the Costilla Estates Development Company has been worked out and started. We look with favor on this line of work. It brings to the Station an added interest and multiplies its power to do.

MEETING OF DRY FARMING CONGRESS.

Acting in part as host, the College was quite strongly in evidence at the recent session of the Sixth Dry Farming Congress, held in Colorado Springs; both in the preparation of the program and in its carrying out our men had a great deal to do. I believe the Congress did considerable good. It came in a year when dry farming in Colorado was at a low ebb and when it was necessary to look at the facts squarely. It emphasies the need, however, of more work on the part of our Station and extension service in dry farming investigations and teaching. We are doing very little indeed toward the reclamation of this great domain of 18,000,000 acres. It is worth more consideration than we are giving it.

WORDS OF APPRECIATION.

In closing this report I desire to express my appreciation to the Executive Committee and to every member of the Board for your kindness and help to me the past year; to the Dean of the Faculty; to the Director of the Experiment Station and to the Superintendent of Extension work for their hearty co-operation and for their untiring efforts in behalf of the Institution. To the Executive Committee of the Faculty for the extra services each and every one is giving. To Principal Netherton, of the Colorado School of Agriculture, and to Principal Snyder, of the Fort Lewis School of Agriculture, for the unselfish devotion to their work, and to Secretary Taylor and Accountant Dwyre. In fact only by all working together, by each doing his full part, has it been possible to carry on the work under the conditions that confronted us.

Respectfully submitted,

CHAS. A. LORY,

President.

December 13, 1911.

REPORT OF THE DIRECTOR.

To the President:

I have the honor to present the following report upon the work of the Experiment Station for the State fiscal year of 1910 and 1911.

The personnel of the Station has undergone slight change, and the general plan of organization remains the same as a year ago.

THE WORK OF THE SECTIONS.

Following you will find the projects under which we are working, and somewhat detailed statments as to the progress of the work. It will be noticed that the projects are drawn along lines that are of special importance to the agricultural interests of the State. In fact the State is so large and the interests so varied that we are only able to take up a small proportion of the important problems that force themselves upon the attention of the Station, with the funds at our command.

The Chemical Section has done all its work during the past year upon Adams fund projects, and chiefly upon a further study of the effects of the nitrate deposits in the soils of the State upon the development of certain crops. A partial report upon this work was made by Dr. Headden in two papers which he read at the Columbus meeting of the Society for the Promotion of Agricultural Science this month.

The opinion continues to be more or less prevalent that the Experiment Station will analyze soils, water, beets and other objects for the people of the State free. The Station has neither funds nor men available for this work. If done at all it would have to be by the College, or upon special funds provided by State appropriations.

The Bacteriological Section has been supported entirely by the Adams fund also. The work has been largely in co-operation with the Chemical Section, taking up the biological side of the nitre trouble in our soils. Bulletin 179 is an outgrowth of this work. Bulletin 177, giving the results of a study of Holdover Blight, was also published from this Section during the year. The demands upon this Section are so numerous that we should give it additional help and larger quarters as soon as we are able to do so.

Irrigation and Drainage Section.—This Section was re-organized last spring with Professor E. B. House as its head, and with Mr. V. M. Cone as Irrigation Specialist in full charge of the co-operative work entered into by this Station and the Irrigation Investigations of the Office of Experiment Stations. The Station is very fortunate in being able to arrange for this co-operative work,

for it greatly increases the scope of the work that can be carried on, and also the funds available for experimental work in this line.

Under Mr. Cone's direction we are also co-operating with the Costilla Estates Develpoment Company for the purpose of carrying on rather extensive field experiments in the San Luis Valley to determine the duty of water, efficiency of underflow for irrigation; suitable crops, methods of cultivation, etc., for that district. The plans and agreement for conducting this work have been completed, but active work will not be begun until early next spring.

Agronomy Section.—The work in this Section is supported by three funds—the Adams fund, the Hatch fund and State appropriations—and includes both general farming and dry farming problems. A large proportion of the experimental work is along the line of the development of better grains and forage crops for Colorado. Sufficient progress has been made in these lines to thoroughly justify the expenditures to date. Two very distinct types of alfalfa have been secured, one adapted to the warmer portions of the State, the other adapted especially to resist cold and the injuries sustained by severe pasturage.

Mr. P. K. Blinn, situated at Rocky Ford, has special charge of the alfalfa work, and Mr. J. W. Adams at Cheyenne Wells, has direct supervision of the dry land experiments that have been carried on in that locality Professor Keyser having general charge of the entire work of the Section.

There is no Section of the Experiment Station that is more continually in demand for information by letter and through farmers' meetings and upon special trains than the Section of Agronomy. Its work touches the interests of every farmer in the State, whether he grows grain, alfalfa, sugar beets, fruit or live stock. The work has been very much hampered this year because of lack of funds to carry it on properly.

Entomological Section has been carrying on experiment station work on Adams and Hatch funds only. One new project, Grasshopper Investigations, has been in the hands of Professor Johnson. Mr. L. C. Bragg, who devoted most of his time to the Plant Louse Investigations, resigned September 30, and his place has not been filled.

Animal Husbandry Section.—This Section has drawn funds from the special State appropriations only. Feeding experiments have been carried on with cattle, sheep and swine for the purpose of determining relative values of important feed-stuffs in this State. Because of our failure to get any of the State appropriation to carry on this work to the present time, we are only able to undertake rather limited calf and pig feeding experiments the present fall and winter.

The Poultry Plant is organized as a division of the Animal Husbandry Section and is in charge of the Station Poultryman, Mr. W. E. Vaplon. On account of the small appropriation for this work and the constant demand for Mr. Vaplon at meetings of poultrymen and farmers in the State, it has been impossible to keep up detailed experimental work. A model poultry plant at which the leading poultry types for egg and meat production are kept is maintained.

Horticultural Section.—Except for two rather inexpensive projects, the work of this section is supported by State appropriations. Professor Bennett is considerably crippled in his efforts to carry on experimental work at the home station from the fact that a considerable portion of this appropriation is expended on the Western Slope in the support of two field men, Mr. George P. Weldon and Mr. R. S. Herrick, who devote their time chiefly to extension work, one in entomology and one in general horticulture. An important line of work in this section is the discovery of varieties of fruits that can be successfully grown in our high altitudes.

Potato Investigations form an important part of this section, the work being in the immediate charge of Mr. C. L. Fitch, our Potato Specialist. On a further page is given a rather full outline of the work that has been under way during the summer, along with some conclusions that Mr. Fitch has drawn. While the money appropriated for this work is practically exhausted, and it looked for a time as though we should have to discontinue the work, we are greatly pleased to learn that the farmers and business organizations of the State are making an effort to raise the money needed to continue the work for another year, and it seems probable that they will succeed. The serious potato crop failure this year, due to the prevalence of a fungus (*Fusarium*) disease, makes it imperative that we continue our potato investigations in the hope that we may find some means to avert such losses in the future.

The Veterinary Section.—There have been no funds available for Experiment Station work in this Section so far this fiscal year, and it was not thought best to start any new projects until money should be available from the appropriations made by the Eighteenth General Assembly. It is hoped that there will be some funds available for the Veterinary Section during the fiscal year of 1911-1912, as there are several important lines of work that should be taken up if possible.

The Botanical Section.—This Section has had only one project in the Experiment Station work during the past year, and that was the "Black-root of the Strawberry." This project has been supported by the Adams fund and has called for very little expense.

Horse Breeding Section.—While the horse breeding experiment has made very satisfactory progress the past year, it is apparent that the appropriation made by the last General Assembly for the continuation of the work is quite inadequate to meet the Station's half of the expenses for the two years, even if the entire appropriation should become available, which does not seem very probable. As the experimental animals increase in number from year to year the expenses of their keep and training must also become greater, so that it will be necessary hereafter to secure larger appropriations for the experiment if the work is to be continued at this Station.

We get the full appropriation of $15,000 on both the Adams and Hatch funds this year. The calls for money for experimental work were so many and urgent that these funds were allotted to the various budgets with but a small reserve for contingencies. These funds are in good condition, a smaller part having been spent than the proportion for the year that has passed.

The State special appropriations that are being administered through the Station are those made for

Horse Breeding Experiment	$ 5,000.00
Fruit Investigations	6,000.00
Potato Investigations	5,500.00
Plant Industry	5,000.00
Dry Farming	3,500.00
Irrigation and Drainage Investigations	5,000.00
Animal Husbandry (Including Veterinary)	10,000.00
Poultry	5,000.00
Total	$45,000.00

While no money has been available from the State treasury, up to the present time, with which to pay the expenses incident to carrying on any of the above lines of work, the money has been advanced from other College and Station funds in order to continue the work that was already under way from appropriations of the Seventeenth General Assembly. This was necessary both for the sake of efficiency and for the economic use of the funds. Otherwise we should have had to discharge men and stop the work that was in progress, and plan later to fill their places with whoever could be found to take up the work. By doing this we would have all lines of work to reorganize with the serious losses due to lack of continuity and a change of management. Such a course would also necessitate spending the whole appropriation in each case in one year instead of two, which would cause a serious disadvantage in the securing of best results

If not more than 50 per cent. of the appropriations are to be-

come available, as we have been led to expect, we shall have to stop work on most of these appropriations at the close of the present fiscal year unless funds are supplied from other sources to continue the work.

The amounts loaned to these funds and spent up to November 30, are as follows:

Animal Husbandry	$ 2,672.21
Fruit Investigations	2,926.70
Plant Industry	3,040.35
Potato Investigations	3,297.50
Poultry Investigations	1,692.38
Horse Investigations	3,570.53
Dry Farming	824.70
Irrigation and Drainage	394.03
	$18,418.40

It appears that the only reason why the State institutions do not get their appropriations is that the assessors in the various counties will not assess property as required by law. Instead of assessing at actual value as the law requires, it is assessed at about one-fifth actual value, and as a result the State gets only one-fifth of the valuation that it should have to assess for State purposes. A strong, united effort should be made at the next General Assembly to pass a law that will bring about a reasonable assessment of the taxable property of the State. If county commissioners could be limited to a ten mill assessment for county expenses, the situation would be relieved at once.

Publications.—On account of the entire absence of State funds during the year there have been no information bulletins printed, though several have been offered. The Hatch Fund publications of the fiscal year have been:

Bulletin 177, "Holdover Blight," by W. G. Sackett.

Bulletin 178, "The Fixation of Nitrogen in Some Colorado Soils," by Wm. P. Headden.

Bulletin 179, "A Bacteriological Study of the Fixation of Nitrogen in Some Colorado Soils," by W. G. Sackett.

The financial statement will be found in the report of Secretary L. M. Taylor.

Respectfully submitted,

C. P. GILLETTE,
Director.

REPORT OF THE SUPERINTENDENT OF EXTENSION.

To the President:

SIR: The tabulated report of such of the activities of this branch of the College work for the year ending November 1st, 1911, as can be tabulated, is as follows:

Farmers' Institute meetings (138 sessions) 58. Total attendance, 14,600.

Train Institutes (41 stops), 2. Total attendance, 11,804.

Demonstration Trains (101 stops), 1. Total attendance, 34,835.

Boys' and Girls' Agricultural Clubs, 8. Total attendance, 288.

Farmers' Short Courses (1 week). Total attendance, 114.

Housekeepers, Short Courses (1 week). Total attendance, 105.

Colorado Farmers' Congress. Delegates, 98.

*Normal Institutes (1 to 2 weeks each. Total attendance, 1,213.

Total attendance 63,057.

Farmers' Institutes.—The total number of Farmers' Institutes held has been 58, with a total of 138 sessions, and an aggregate attendance of all sessions of 14,600. Thirty-one speakers from the College and six outside speakers have assisted in this work. All railroad, except the Burlington, have given free transportation to attend Farmers' Institutes to some of our speakers.

The demands for Farmers' Institute work are greater than can be filled with the available funds, and the work has been handicapped because of the inability of the Superintendent to command the time of the members of the faculty and Experiment Station staff as fully as he could wish. The increased demands made by the College and Experiment Station have rendered it impossible for the faculty members to spend much time in extension work off the campus. It is believed that local organizations to carry on the Farmers' Institute work should be formed as rapidly and as extensively as

*This work was conducted on College funds under the faculty committee of Rural Education, of which Professor S. A. Johnson is chairman. The work was carried on by Professors Johnson, Longyear, Hinman, Allison, Mr. Frear, Mr. Marshall, Mr. Smith, Miss Probst and Miss Robinson. Credit for this work does not appear in the tabulation of Extension work by individuals, which is attached to this report. This work is of great importance and will doubtless be made the subject of a special report by Professor Johnson's committee. In the absence of report for this year the total for last year is used.

possible, so as to place the responsibilities for the success of these institutes in the community for which the institute is held, rather than in this Department. It is hoped by this means to work up a much better local support for the institutes and to develop local men by giving them a place on each program. It is believed that if this work is carried on as actively as possible for the next two years the State will be in position to reasonably ask adequate county support for the Farmers' Institute movement, and thereby remove a considerable burden from the College and place it where it logically belongs. An effort should be made to reach all portions of the State with Farmers' Institute work, and to secure local organizations to take charge of this work under the direction of the Superintendent of Agricultural Extension.

Train Institutes.—Two "Agricultural Special Institute Trains" were conducted with the assistance of the Agricultural College. The one of these being operated upon the Santa Fe lines in the Arkansas Valley, the topics presented being "Soils" and "Alfalfa." The lectures given were published and distributed from this train, a copy is attached to this report and made a part of it. This train made 28 stops. The total atendance was 5,092 Another train was the "Dry Land Special," operated on the Rock Island lines under the direction of the Agricultural Commissioner, H. M. Cottrell, the speakers being furinshed by the Agricultural College. This train made 15 stops. Total attendance, 6,756. These Agricultural specials afford the cheapest means of institute work in which the College can engage, and if properly conducted, seem to secure as valuable results as the regular means of Farmers' Institute work. The printed matter distributed may indeed make these more profitable than the average local institute, while the cooperation of the railroads and the novelty of the work seem to give it a prestige which makes for larger attendance.

Plans are now being perfected for the operation of another of these "Institute Specials," covering practically all of the dry land territory of the State, during the month of December.

Demonstration Train.—A comprehensive "Demonstration Train," carrying exhibit material from those departments of the Agricultural College which are of primary and direct interest to the farmer, was operated during the months of February and March. This train was operated for four weeks, covering all the irrigated portions of the State, making 101 stops and being visited by 34,835 people. Sixteen pieces of special literature were distributed from this train, copies of 14 of which are attached to this report. It is believed that this train was of the greatest value, no only in a direct educational way, but in bringing about a better understanding between the Agricultural College and the farmers of the State,

an understanding which should result in greater dependence being placed upon the teachings of the Agricultural College by the farmers throughout the State. I believe that this general plan should be made an annual feature of the extension work of the College, although some changes in the makeup of the train and the schedule upon which it is operated would seem advisable from the experience of this year.

Boys' and Girls' Agricultural Clubs.—During the spring of 1911, Superintendent Hinman, Mr. Fitch and Mr. Vaplon, of the College, visited eight schools, talking to 288 boys and girls relative to the organization of Boys' and Girls' Agricultural Clubs, in accordance with the plans recommended by the Farmers' Institute Circular of April, 1910, forming clubs under this plan in each of the schools visited. Aside from these, between 30 and 40 of these clubs were formed in Delta County under the direction of the County Work Secretary of the Young Men's Christian Association of that county, while a county organization containing over one hundred members was formed in Cheyenne County under the direction of Mrs. D. H. Zuck, as Secretary, with the co-operation of the County Superintendent of Schools of that county.

A very general failure of the potato crop throughout the State has resulted in the failure of many of these clubs. Reports are not yet available to indicate how much has been accomplished this year. Exhibits have been made by club members of Delta County, Cheyenne County and some independent clubs that are conducted under the College plan, but without College supervision, in Phillips and Larimer counties. The State exhibits of products will be held at the College probably during "Farmers' Week." This work should be carried on and extended to cover practically the whole state, but it will be necessary to place it in charge of some one whose sole business shall be to have an intimate acquaintance with the rural schools of the State, and to work up the Boys' and Girls' Clubs. The proper conduct of these clubs involves too much detail to make them practicable to handle solely from this office so long as it is necessary for the Superintendent to be away from the office the greater part of his time. It is believed that this will be a proper part of the activities of the rural school visitors whom it is hoped the College will be able to employ during the next year.

Co-operative Demonstration Work.—In the opinion of your Superintendent, the most important line of extension work, and the one most certain of producing permanent results, is what is generally known as "Demonstration Work," whether this takes the form of an entire farm handled under the direction of the Agricultural College, or whether it be fields handled under such direction in co-operation with responsible and progressive farmers in various localities. A

beginning was made in this work last year, co-operative work being carried on with nine different farmers in widely separated parts of the State, and a contract has been entered into with the Sedgwick County Fair Association at Julesburg, for the conducting of an entire farm at that place for a period of five years. It was hoped that this work might be greatly extended this year and the coming year, but this now seems doubtful. Its importance should not be lost sight of, however, and insofar as it can be properly conducted with the forces and funds now available, it should be undertaken. There is, however, danger of undertaking more than can be properly handled at present, and work which important when done well becomes doubly dangerous when badly done.

Short Courses.—In the opinion of your Superintendent, the work of the College should be extended by means of special short courses, or movable schools, as rapidly as possible, and it is hoped that a considerable number of these may be undertaken during the next two years. The plan adopted should be that of confining these schools to a single subject, or a small group of closely related subjects, to furnish specialists in these subjects and study them carefully for one week with a class limited in number, so as to allow good work to be done. Such classes may be made self-sustaining by a reasonable registration fee, except as to salaries and railroad expenses. During the past year there have been held at the Agricultural College the annual Farmers' Short Course, continuing one week, with the registration of 114, and the annual Housekeepers' Short Course of five days, with a total registration of 105.

Colorado Farmers' Congress.—In connection with the above meetings was held the second meeting of the Colorado Farmers' Congress, to which there were accredited delegates representing ninety-six organizations. It is to be hoped that the next meeting of this Congress may show a large increase in the number of organizations represented by delegates, and that this state organization may develop into the most important agricultural organization in the State, and that the time of its meeting at Fort Collins may become the most important event agriculturally in the State in the minds of all people interested in agriculture.

Miscellaneous.—The activities of the College in Agricultural Extension for the past year have included the furnishing of speakers to special meetings, such as those of granges, picnics, etc.; the furnishing of judges for 19 fairs, carnivals and similar occasions, as well as the carrying on of a very considerable correspondence.

It is recommended that the several departments of the College be requested at an early date to begin the preparation of material suitable for exhibit at the various fairs of the State next fall. It is believed that if suitable material be prepared so that trans-

portation may not be too difficult nor expensive that the various fair associations will be glad to assist; that they will in fact bear the expense of these exhibits to their various fairs. The plan which your Superintendent would suggest is a modification of the plan now used by the Ohio State College, which is made the subject of a bulletin now in your possession.

Respectfully submitted,

C. H. HINMAN.

Thirty-fourth Annual Report

SECRETARY'S CASH COLLECTIONS.

December 1, 1911, to November 30, 1912.

COLLEGE.

RECEIPTS—		
Agronomy Department	$ .45	
Animal Husbandry Department	3,036.13	
Building Superintendent	103.20	
Botany and Forestry	3.00	
Chemical Department	268.70	
Civil and Irrigation Engineering	60.00	
Electrical Supplies	184.85	
Entrance Fees	4,630.50	
Farm	10,555.86	
Farmers' Institutes	2,165.80	
Fort Lewis School	7,168.45	
Grand Junction School	678.85	
Home Economics Department	18.54	
Horticultural Department	875.47	
Library	1.00	
Mechanical Department	49.26	
Miscellaneous Receipts	177.00	
Music Department	45.00	
President's Office	15.00	
Rent Account	300.00	
Transfer (Deficiency)	16,339.60	
Veterinary	812.10	$47,488.76

EXPERIMENT STATION.

Animal Investigation	$ 1,304.05	
Bacteriological Investigation	3.25	
Director and General	102.00	
Dry Farming Investigation	46.50	
Horse Investigation	2,802.76	
Horticulture	176.67	
Irrigation Investigation	30.00	
Plant Industry	519.97	
Potato Investigation	300.91	
Poultry Investigation	212.97	5,499.08

DISBURSEMENTS—		
College Treas. for Credit to C. Special Fund		$31,149.16
College Treas. for Credit to Tax Fund		16,339.60
College Treas. for Credit to S. Special Fund		5,469.08
College Treas. for Credit to S. Sales Fund		30.00
	$52,987.84	$52,987.84

U. S. GOVERNMENT FUND—HATCH FUND.

Receipts and Disbursements for the Year Ending November 30, 1912.

RECEIPTS:		
Balance on hand November 30, 1911	$	$ 2,669.52
From United States Treasurer		15,000.00

DISBURSEMENTS:		
Salaries	$ 9,161.43	
Labor	741.14	
Publications	2,435.23	
Postage and Stationery	657.90	
Freight and Express	117.84	
Chemical Supplies	5.40	
Seeds, Plants and Supplies	187.69	
Feeding Stuffs	38.00	
Library	224.13	
Tools, Implements and Machinery	65.10	
Furniture and Fixtures	282.35	
Scientific Apparatus	227.33	
Live Stock	31.30	
Traveling Expenses	547.70	
Contingent Expenses	25.80	
Building and Repairs	1,140.18	
Balance in Fund Nov. 30, 1912	1,781.00	
	$17,669.52	$17,669.52

U. S. GOVERNMENT—ADAMS FUND.

Receipts and Disbursements for the Year Ending November 30, 1912.

RECEIPTS:		
Balance on hand November 30, 1911		$ 1,611.46
From United States Treasurer		15,000.00
DISBURSEMENTS:		
Salaries	$11,195.22	
Labor	131.32	
Postage and Stationery	99.82	
Freight and Express	166.30	
Chemical Supplies	743.36	
Seeds, Plants and Supplies	109.89	
Library	112.10	
Tools, Implements and Machinery	123.69	
Furniture and Fixtures	140.15	
Scientific Apparatus	868.85	
Traveling Expenses	725.85	
Building and Repairs	1,413.48	
Balance in Fund November 30, 1912	781.33	
	$16,611.46	$16,611.46

EXPERIMENT STATION SPECIAL FUND.

Receipts and Disbursements for the Year Ending November 30, 1912.

RECEIPTS:		
Balance on hand, November 30, 1911		$ 9,898.01
Animal Investigation		1,304.05
Bacteriological Investigations		3.25
Director and General		102.00
Dry Farming Investigations		46.50
Horse Investigations		2,802.76
Horticultural Section		176.67
Plant Industry		519.97
Potato Investigations		300.91
Poultry Investigations		212.97
DISBURSEMENTS:		
Salaries	$ 1,283.23	
Labor	1,126.47	
Publications	40.27	
Postage and Stationery	165.22	
Freight and Express	75.21	
Chemical Supplies	6.25	
Seed, Plants and Supplies	244.51	
Feeding Stuffs	3,270.20	
Tools, Implements and Machinery	730.72	
Furniture and Fixtures	27.20	
Scientific Apparatus	3.15	
Traveling Expenses	350.39	
Contingent Expenses	10.00	
Building and Repairs	425.92	
Balance in Fund November 30, 1912	7,608.35	
	$15,367.09	$15,367.09

EXPERIMENT STATION SALES FUND.

Receipts and Disbursements for the Year Ending November 30, 1912.

RECEIPTS:		
Irrigation Section		$ 30.00
DISBURSEMENTS:		
No disbursements during year		
Balance in fund November 30, 1912	30.00	
	$ 30.00	$ 30.00

EXPERIMENT STATION APPROPRIATION FUND.

Receipts and Disbursements for the Year Ending November 30, 1912.

RECEIPTS—(From the State Treasurer)—		
Fruit Investigations		$ 3,000.00
Plant Industry		2,500.00
Potato Investigations		2,750.00
Horse Investigations		2,500.00
Poultry Investigations		2,500.00
Animal Investigations		5,000.00
Dry Farming Investigations		1,750.00
Irrigation Investigations		2,500.00
DISBURSEMENTS—		
Overdraft, Fruit Investigation, Dec. 1, 1911	$ 2,926.70	
Overdraft, Plant Investigation, Dec. 1, 1911	3,040.35	
Overdraft, Potato Investigation, Dec. 1, 1911	3,297.50	
Overdraft, Horse Investigation, Dec. 1, 1911	3,570.53	
Overdraft, Poultry Investigation, Dec. 1, 1911	1,692.38	
Overdraft, Animal Invesigation, Dec. 1, 1911	2,672.21	
Overdraft, Dry Farming Investigation, Dec. 1, 1911	824.70	
Overdraft, Irrigation Investigation, Dec. 1, 1911	394.03	
Salaries	3,413.56	
Labor	1,330.71	
Publications	224.75	
Postage and Stationery	160.65	
Freight and Express	253.19	
Chemical Supplies	21.55	
Seeds, Plants and Supplies	235.98	
Feeding Stuffs	1,614.07	
Library	7.99	
Tools, Implements and Machinery	682.47	
Scientific Apparatus	221.05	
Live Stock	17.50	
Traveling Expenses	298.17	
Contingent Expenses	40.00	
Building and Repairs	918.34	
Overdraft, Fruit Investigation, Nov. 30, 1912		527.58
Overdraft, Plant Investigation, Nov. 30, 1912		925.60
Overdraft, Potato Investigation, Nov. 30, 1912		1,370.85
Overdraft, Horse Investigation, Nov. 30, 1912		2,500.00
Overdraft, Poultry Investigation, Nov. 30, 1912		33.49
Overdraft, Dry Farming Investigation, Nov. 30, 1912		.86
	$27,858.38	$27,858.38

DISBURSEMENTS—EXPERIMENT STATION FUNDS—FOR THE YEAR 1911-1912.

	Hatch.	Adams.	Special.	Appro.	Total.
Animal Investigation	$.....	$.....	$ 15.50	$2,379.89	$ 2,343.29
Bacteriological Investigation	172.39	2,229.12	16.42	.....	2,417.93
Botany and Forestry	.....	12.50	89.27	.....	101.77
Bulletins and Rep	2,123.20	.....	.....	.....	2,123.20
Chemical Section	158.29	3,728.76	.....	.....	3,885.05
Director and General	2,131.25	.....	141.69	.....	2,272.94
Dry Farming Investigation	.....	.....	22.20	926.16	948.36
Entomological Section	486.14	669.74	23.50	.....	1,179.38
Fruit Investigation	.....	.....	.....	600.88	600.88
Horticultural Section	212.54	.....	261.32	.....	473.86
Horse Investigation	.....	.....	4,917.19	1,429.47	6,346.66
Irrigation Section	2,030.79	2,589.05	80.34	2,105.97	6,806.15
Library	174.48	54.49	.....	.....	228.97
Plant Industry	2,031.23	.....	549.75	385.25	2,966.23
Potato Investigation	156.73	.....	689.65	823.35	1,669.73
Poultry Investigation	.....	.....	262.63	841.11	1,103.74
Salary	5,403.44	6,529.47	529.08	.....	12,461.99
Secretary's Office	462.30	18.00	42.20	.....	522.50
Free Planting Investigation	.....	.....	112.00	.....	112.00
Veterinary	346.74	.....	6.00	.....	352.74
	$15,888.52	$15,830.13	$7,758.74	$9,439.98	$48,917.37

STATE FORESTER APPROPRIATION FUND.

(Senate Bill No. 261.)

Receipts and Disbursements for the Year Ending November 30, 1912.

RECEIPTS:		
From State Treasurer		$ 5,000.00
DISBURSEMENTS:		
Apparatus	$ 245.63	
Freight and Express	164.44	
Furniture and Fixtures	123.20	
Labor	911.02	
General Supplies	401.71	
Permanent Improvements	141.38	
Postage and Stationery	155.41	
Publications	285.62	
Repairs	31.50	
Salaries	1,715.96	
Seeds and Plants	268.98	
Telephone and Telegraph	10.85	
Tools, Implements and Machinery	47.45	
Traveling Expenses	486.85	
Contingent Expenses	10.00	
	$ 5,000.00	$ 5,000.00

PAY ROLL.

THE STATE AGRICULTURAL COLLEGE, AND COLORADO EXPERIMENT STATION.

1911-1912.

		College	Station	Total
ADMINISTRATION—				
Lory, Chas. A.	President	$ 4,999.92	$.....	$ 4,999.92
Dillon, M.	Sec. to President	127.77	.....	127.77
Reed, Julia	Stenog. Pres. Office	924.99	.....	924.99
Gillette, C. P.	Director and Prof.	333.37	2,666.63	3,000.00
Muray, Margaret	Stenog. Director's Off.	233.31	766.65	999.96
Taylor, L. M.	Sec. State Bd of Ag.	1,633.28	666.64	2,299.92
Dwyre, Chas. G.	Bookkeeper, Sec. Off.	1,599.96	.....	1,599.96
		$ 9,852.60	$ 4,099.92	$13,952.52
INSTRUCTION AND SPECIAL INVESTIGATION—				
Johnson, S. Arthur	Associate Professor	1,774.97	100.05	1,875.02
Allison, Inga M. K.	Professor	1,624.95	.....	1,624.95
Baker, Charlotte A.	Librarian	1,224.99	.....	1,224.99
Barnes, C. L.	Associate Professor	1,000.00	.....	1,000.00
Bennett, E. R.	Professor	1,874.94	124.98	1,999.92
Blinn, P. K.	Alfalfa Specialist	.....	1,200.00	1,200.00
Coen, B. F.	Professor	1,824.99	.....	1,824.99
Cone, V. M.	Irrigation Specialist	.....	1,358.31	1,358.31
Corbett, Virginia H.	Associate Professor	1,724.94	.....	1,724.94
De Lay, F. A.	Professor	1,424.97	.....	1,424.97
Dvorachek, H. E.	Assistant Professor	625.00	.....	625.00
Emslie, Alexander	Director of Music	900.00	.....	900.00
Fitch, C. L.	Potato Specialist	.....	1,250.00	1,250.00
Frear, D. W.	Associate Professor	1,483.26	.....	1,483.26
Glover, Geo. H.	Professor	1,752.49	347.51	2,100.00
Headden, Wm. P.	Professor	374.98	2,625.02	3,000.00
House, E. B.	Professor	1,866.60	183.33	2,049.93
Kaupp, B. F.	Associate Professor	1,733.27	99.99	1,833.26
Keyser, Alvin	Professor	1,349.99	900.01	2,250.00
Kingman, H. E.	Associate Professor	1,700.00	.....	1,700.00
Lawrence, J. W.	Professor	2,499.96	.....	2,499.96
Longear, B. O.	Professor	1,150.00	50.00	1,200.00
Macdonald, S. L.	Professor	1,824.99	.....	1,824.99
Mead, Chas. S.	Assistant Professor	255.00	.....	255.00
Morton, G. E.	Professor	1,624.95	300.00	1,924.95
Netheron, T. M.	Principal of School	1,824.95	.....	1,924.95
Newsom, I. E.	Associate Professor	1,716.59	.....	1,716.59
Parshall, R. L.	Associate Professor	1,424.94	.....	1,414.94
Person, F. G.	Assistant Professor	1,369.95	.....	1,369.95
Rankin, F. J.	Instructor	1,169.94	.....	1,169.94
Sackett, W. G.	Assistant Professor	.....	2,044.92	2,044.92
Thomas, W. R.	Specialist	1,724.94	.....	1,724.94
Vail, C. E.	Assistant Professor	1,424.94	.....	1,424.94
Whitehouse, A. W.	Assistant Professor	141.66	.....	141.66
Adams, J. W.	Field Agent	.....	225.00	225.00

THE STATE AGRICULTURAL COLLEGE, AND COLORADO EXPERIMENT STATION.
1911-1912.

		College	Station	Total
Bascom, D. C.	Assistant	374.94	.....	374.94
Bogdahn, Otto	Armorer	180.00	.....	180.00
Bragg, L. C.	Assistant	.....	600.00	600.00
Brockett, Zula M.	Instructor	824.94	.....	824.94
Burnett, W. L.	Curator	667.50	.....	667.50
Butler, Jessie	Assistant	130.00	.....	130.00
Cammack, A.	Instructor	1,200.00	.....	1,200.00
Carpenter, Charlotte E.	Instructor	1,024.95	.....	1,024.95
Crabbe, J. B.	Instructor	1,199.94	.....	1,199.94
Craig, Eleanor	Instructor	249.99	.....	249.99
Crain, L. D.	Instructor	170.00	.....	170.00
Dilts, Arlene	Assistant	612.48	.....	612.48
Douglass, Earl	Chemist	.....	1,599.96	1,599.96
Durward, Margaret	Instructor	1,124.94	.....	1,124.94
Elwell, Anna E.	Assistant	400.00	.....	400.00
Erdman, Julius	Florist	1,200.00	.....	1,200.00
Frisbee, J. B.	Instructor	205.55	.....	205.55
Gilbert, G. A.	Instructor	1,024.95	.....	1,024.95
Glidden, Clara	Assistant	270.89	.....	270.89
Haggart, Margaret H.	Instructor	1,024.95	.....	1,024.95
Haynes, Miriam	Assistant	180.00	.....	180.00
Hertwig, Raymond	Instructor	924.99	.....	924.99
Hills, Roy	Assistant	124.98	.....	124.98
Hughes, H. W.	Physical Director	1,049.97	.....	1,049.97
Hunt, Lillian	Assistant	180.00	.....	180.00
Jones, Paul S.	Specialist	100.00	236.67	336.67
Killgore, Nellie	Instructor	225.00	.....	225.00
Langridge, F. N.	Instructor	1,030.00	.....	1,030.00
Maris, Paul V.	Specialist	150.00	200.00	350.00
Marshall J. D.	Instructor	1,124.94	.....	1,124.94
McNulty, J. B.	Instructor	583.31	.....	583.31
Pierce, Hiram	Instructor	1,200.00	.....	1,200.00
Robbins, W. W.	Assistant Professor	416.66	275.01	691.67
Robinson, Annie	Instructor	824.94	.....	824.94
Rood, Ellwood D.	Assistant	1,124.94	.....	1,124.94
Rosencrants, F. H.	Instructor	824.94	.....	824.94
Ross, S. I.	Instructor	1,024.95	.....	1,024.95
Sarget, C. G.	Rural School Visitor	195.83	.....	195.83
Smiley, Grace	Instructor	249.99	.....	249.99
Smith, S. Van	Instructor	1,099.92	25.02	1,124.94
Trimble, R. E.	Assistant	.....	974.97	974.97
Upson, C. Agnes	Assistant	615.00	.....	615.00
Vaplon, W. E.	Poultryman	.....	697.50	697.50
Walker, Ida	Assistant	250.00	.....	250.00
Walters, G. D.	Assistant	.....	393.75	393.75
Weldon, Geo. P.	Assistant	420.00	78.00	498.00
Boyle, Frank	Student Assistant	210.15	.....	210.15
Briggs, Zelma	Student Assistant	83.32	.....	83.32
Brockway, Thos. C.	Student Assistant	34.00	.....	34.00
Byerley, D. E.	Student Assistant	140.00	.....	140.00
Clement, P. E.	Student Assistant	33.32	.....	33.32
Coffin, Roy G.	Student Assistant	66.66	.....	66.66
Dixon, Beryl	Student Assistant	60.00	.....	60.00
Colson, Mrs. W. J.	Student Assistant	30.00	.....	30.00
Edwards, A. H.	Student Assistant	60.00	.....	60.00
Goeder, Frank	Student Assistant	300.00	.....	300.00
McMurdo, Geo. A.	Student Assistant	60.00	.....	60.00
Montgomery, Dorothy	Student Assistant	27.00	.....	27.00
Murphy, Harry	Student Assistant	.....	100.00	100.00
Nucholls, C. O.	Student Assistant	86.00	.....	86.00
Olson, P. J.	Student Assistant	.....	260.00	260.00
Richards, Geo. L.	Student Assistant	150.00	.....	150.00
Willis, H. W.	Student Assistant	180.00	.....	180.00
Barnhart, A. T.	Assistant	.....	600.00	600.00
Chace, R. E.	Assistant	.....	136.00	136.00
		*$69,839.98	†$16,986.00	$86,825.98

*Total salaries for instruction
†Total salaries for special investigations

THE STATE AGRICULTURAL COLLEGE, AND COLORADO EXPERIMENT STATION.
1911-1912.

EXTENSION—

		College	Station	Total
Hinman, C. H.	Director	$ 1,999.92	.....	$ 1,999.92
Smith, Ida L.	Stenographer	720.00	.....	720.00
		$ 2,719.92	$.....	$ 2,719.92

STENOGRAPHERS AND CLERKS—

		College	Station	Total
Albee, Susie	Clerk	$ 275.00	$ 385.00	$ 660.00
Bohnenkemper, Daisy	Stenographer	735.00	105.00	840.00
Lewis, Mabel	Stenographer	477.50	137.50	615.00
Proctor, Emily	Stenographer	545.00	.....	545.00
Weldon, Edith	Stenographer	455.00	175.00	630.00
Worcester, Mabel	Stenographer	258.35	341.65	600.00
		$ 2,745.85	$ 1,144.15	$ 3,890.00

JANITORS AND FIREMEN—

		College	Station	Total
Student Janitors		$ 1,648.53	$.....	$ 1,648.53
Allan, Colin	Fireman and Janitor...	350.00	.....	350.00
Chatfield, I. N.	Fireman and Janitor...	360.00	360.00	720.00
Kelly, William	Fireman and Janitor...	925.00	.....	925.00
Marshall, W. H.	F'r'm'n-N'twatchm'n ...	600.00	.....	600.00
Salsberry, Jos.	Fireman and Janitor...	600.00	.....	600.00
Sullivan, W. H.	Fireman and Janitor...	600.00	.....	600.00
Taylor, S. C.	Fireman and Janitor...	250.00	.....	250.00
Veazey, J. L.	Fireman and Janitor...	720.00	.....	720.00
		$ 6,053.53	$ 360.00	$ 6,413.53

FORT LEWIS SCHOOL OF AGRICULTURE.
1911-1912

		State Appropriation
Breeden, Mrs. R. G.	Instructor and Matron	150.00
Christiansen, C. A.	Laborer	235.00
Cook, Mrs. W. S.	Cook	180.00
Graves, G. W.	Instructor	949.98
Haskell, S. C.	Laborer	45.00
Huebler, Ada	Cook	103.00
Ladwig, Edna	Instructor	135.00
Meyer, E. J.	Instructor	900.00
McCartney, E. F.	Engineer	174.99
Nida, Martin	Cook	40.00
Rodecker, F. A.	Farm Superintendent	609.00
Schryver, J. A.	Dairyman	600.00
Schryver, Mrs. J. A.	Instructor	383.35
Snyder, G. F.	Principal	1,825.00
Tritz, W. H.	Custodian	300.00
Weston, Delia B.	Instructor	557.75
Williams, Albert	Laborer	30.00
		$ 7,218.07

TELLER SCHOOL OF AGRICULTURE.
1911-1912

		State Appropriation
Herrick, R. S.	Custodian	$ 999.96
Sporer, J. A.	Laborer	600.00
Cone, V. M.	Drainage Specialist	183.33
Jones, P. S.	Assistant	100.00
		$ 1,883.29

STATE FORESTER

		State Appropriation
Longyear, B. O.	State Forester	$ 749.94
Robbins, W. W.	Deputy	458.32
Bennett, I W.	Deputy	450.00
Kyle, Jas. F.	Deputy	57.70
		$ 1,715.96

PAY ROLL—Continued.

THE STATE AGRICULTURAL COLLEGE, AND COLORADO EXPERIMENT STATION.
1911-1912.

SUMMARY OF PAY ROLL FOR YEAR 1911-1912.

AGRICULTURAL COLLEGE AND EXPERIMENT STATION, FORT LEWIS SCHOOL, TELLER SCHOOL, AND STATE FORESTER.

Administration	$13,952.52	
Instruction	69,839.98	
Special Investigations	16,986.00	
Extension	2,719.92	
Stenographers—College	2,745.85	
Stenographers—Experiment Station	1,144.15	
Firemen and Janitors	6,413.53	
Herdsmen	2,616.95	
Farm and Campus Labor	9,528.35	
Total		$125,947.25
Fort Lewis School		7,218.07
Teller School of Agriculture and Mechanic Arts		1,883.29
State Forester		1,715.96
Grand Total		$136.764.57

HERDSMEN—

		College.	Station.	Total.
Auld, Adam C.	Herdsman	$ 204.00	$	$ 204.00
Brewer, C. J.	Herdsman	221.66		221.66
Howarth, Herbert	Herdsman		549.96	549.96
Lambuth, G. R.	Herdsman	138.33		138.33
Nicholson, Alex.	Herdsman	244.00		244.00
Russell, L. L.	Herdsman	720.00		720.00
Schenk. Frank	Herdsman	55.00		55.00
Thomas, Chas.	Herdsman	240.00		240.00
Thompson, Wm.	Herdsman	244.00		244.00
		$ 2,066.99	$ 549.96	$ 2,616.95

FARM AND CAMPUS—

		College.	Station.	Total.
Turner, J. W.	Laborer, Farm	$ 570.00		$ 570.00
Wolff, J. E.	Laborer, Farm	216.00		216.00
Bales, J. W.	Laborer, Farm	600.00		600.00
Baxter, C. E.	Laborer, Farm	28.50		28.50
Brown, H. J.	Laborer, Farm	360.00		360.00
Coulson, E. C.	Laborer, Farm	600.00		600.00
Coutts, Thomas	Laborer, Farm	100.00		100.00
Dallas, J. W.	Laborer, Farm	600.00		600.00
Foster, C. A.	Laborer, Farm	210.00		210.00
Fry, Alvin	Laborer, Farm	600.00		600.00
Gifford, E. W.	Supt. of Campus	585.00		585.00
Grundy, E. L.	Farm Laborer	570.00		570.00
Grundy, C. S.	Farm Laborer	570.00		570.00
Hinkle, John	Farm Laborer	214.50		214.50
Hopkins, C. P.	Farm Laborer	66.67		66.67
King, R. H.	Farm Laborer	68.00		68.00
Lawson, S. J.	Farm Laborer	600.00		600.00
Matthews, Frank	Farm Laborer	125.00		125.00
McIntyre, Duncan	Farm Laborer	156.00		156.00
O'Brien, William	Farm Superintendent	1,200.00		1,200.00
Portner, J. M.	Farm Laborer	591.67		591.67
Portner, S. S.	Farm Laborer	595.00		595.00
Sapp, I. N.	Farm Laborer	270.00		270.00
Short, C. P.	Farm Laborer	32.01		32.01
		$ 9,528.35	$	$ 9,528.35

DISBURSEMENTS—COLLEGE FUNDS—FOR THE YEAR 1911-1912.

	Tax.	L. Income.	Special.	U. S.	Appro.	Total.
Advertising	$ 2,860.57	$.....	$.....	$.....	$.....	$ 2,860.57
Agronomy	1,235.00	316.66	66.68	4,749.80	.....	6,368.14
Animal Husbandry	10,849.37	350.00	2,066.99	3,858.21	.....	17,124.57
Botany and Forestry	611.67	125.00	.....	1,441.66	.....	2,178.33
Building Supt.	4,740.58	.....	.....	.....	.....	4,740.58
Campus	2,422.43	.....	270.00	.....	1,297.00	3,989.43
Chemical	1,111.41	.....	.....	2,791.57	.....	3,902.98
Civil and Irrig. E.	1,074.91	233.32	42.00	3,124.88	.....	4,475.11
Current Expense	9,592.02	245.00	.....	.....	.....	9,837.02
Deficiency	.....	.....	.....	.....	16,339.60	16,339.60
Electrical Sup.	1,662.20	.....	20.00	.....	.....	1,682.20
English and History	1,037.37	566.65	.....	5,258.16	.....	6,862.17
Farm	5,958.40	.....	9,576.92	.....	.....	15,535.32
Farm Management	48.88	.....	.....	.....	.....	48.88
Farmers' Institutes	.25	.....	1,500.00	.....	5,238.89	6,739.14
Farmers' Congress	112.20	.....	.....	.....	.....	112.20
Firemen & Janitors	94.80	.....	6,052.53	.....	.....	6,147.33
Fort Lewis School	.....	.....	.....	.....	18,221.80	18,221.80
Grand Jct. School	.....	.....	.....	.....	3,669.94	3,669.94
Guggenheim Bldg.	.....	.....	.....	.....	2,285.45	2,285.45
Home Economics	1,112.29	150.00	.....	4,942.28	.....	6,204.57
Horticulture	902.87	533.32	.....	3,116.54	.....	4,552.73
Hydraulic Lab.	4,473.35	.....	.....	.....	.....	4,473.35
Land & Water	.....	.....	.....	.....	6,351.98	6,351.98
Library	2,053.94	1,180.00	.....	.....	.....	3,233.94
Library Fee	1,190.78	.....	.....	.....	.....	1,190.78
Mathematics	66.81	.....	.....	3,163.93	.....	3,230.74
Mechanical	2,674.50	1,221.65	.....	5,874.93	.....	9,771.08
Military	506.16	150.00	.....	.....	.....	656.16
Modern Lang.	710.79	649.98	.....	.....	.....	1,360.77
Music	726.76	450.00	.....	.....	.....	1,176.76
Museum	635.65	330.00	.....	.....	.....	965.65
Power Plant	.....	.....	.....	.....	10,000.00	10,000.00
Physical Training	1,309.27	957.97	.....	.....	.....	2,269.24
Physics & Ele. Eng.	1,302.52	170.00	40.00	4,364.86	.....	5,877.38
President's Office	4,219.08	2,949.96	.....	.....	.....	7,169.04
Rural Education	4.70	.....	.....	.....	2,499.30	2,504.00
Registrar's Office	756.22	300.00	.....	.....	.....	1,056.22
School of Ag.	1,926.00	949.98	.....	.....	.....	2,875.98
Secretary's Office	2,451.47	1,637.46	.....	.....	.....	4,088.93
State Bd. of Ag.	541.25	.....	.....	.....	.....	541.25
Student Life—Girls	500.74	212.49	.....	.....	.....	713.23
Student Life—Boys	253.96	249.96	.....	.....	.....	503.92
State Forester	.....	.....	.....	.....	5,000.00	5,000.00
Telephone Ex.	257.00	50.00	.....	.....	.....	307.00
Veterinary	2,832.13	788.31	9.00	7,227.24	.....	10,856.68
Zoology and Ento.	301.90	312.66	.....	2,377.69	.....	2,992.25
New Athletic Field	778.03	.....	.....	.....	.....	778.03
	$75,900.23	$15,082.36	$19,644.12	$52,291.75	$70,903.96	$233,822.42

FORT LEWIS SCHOOL APPROPRIATION FUND.

(Senate Bill No. 1.)

Receipts and Disbursements for the Year Ending November 30, 1912.

RECEIPTS:		
From State Treasurer		$27,500.00
DISBURSEMENTS:		
Overdraft Dec. 1, 1911	$14,566.81	
Apparatus	6.40	
Feeding Suffs	764.33	
Freight and Express	241.47	
Furniture and Fixtures	459.35	
Labor	2,203.56	
Laboratory Supplies	361.79	
Live Stock	368.90	
Permanent Improvements	188.31	
Postage and Stationery	332.86	
Publications	113.58	
Repairs	355.44	
Salaries	7,328.02	
Seeds and Plants	157.82	
Telephone and Telegraph	109.66	
Tools, Implements and Machinery	360.57	
Traveling Expenses	354.70	
Commissary Supplies	2,537.02	
Contingent Expenses	175.57	
Fuel	1,504.36	
Text Books	165.53	
Lights	132.56	
Overdraft Nov. 30, 1912		5,288.61
	$32,788.61	$32,788.61

FORT LEWIS SCHOOL CASH FUND.

Receipts and Disbursements, Dec. 1, 1911—Nov. 30, 1912.

RECEIPTS:			
Balance December 1, 1911		$ 1,030.84	
Board	$ 3,263.47		
Farm Produce	821.18		
Commissary Supplies	754.06		
Postage and Stationery	130.08		
Pasture Rents	298.50		
Room Rents	142.92		
Text-Books	120.55		
Miscellaneous Collections	60.83		
Telephone	11.15		
Tuition	187.50		
Entrance Fees	240.00		
Mechanic Arts Fees	61.20		
Domestic Science Fees	28.34		
Durango Board of Trade	750.00		
Laundry	111.30		
Coal	11.62		
		7,168.45	
DISBURSEMENTS:			
No disbursements from this fund during the year ending Nov. 30, 1912			
Balance in Fund Nov. 30, 1912			8,199.29
		$ 8,199.29	$ 8,199.29

GRAND JUNCTION APPROPRIATION FUND.

(House Bill No. 365)

Receipts and Disbursements for the Year Ending November 30, 1912.

RECEIPTS:		
From the State Treasurer		$ 5,000.00
DISBURSEMENTS:		
Overdraft, Dec. 1, 1911	$ 1,330.06	
Freight and Express	3.75	
Furniture and Fixtures	11.20	
Labor	173.15	
General Supplies	50.31	
Permanent Improvements	477.33	
Postage and Stationery	18.60	
Publications	1.00	
Repairs	270.36	
Salaries	1,908.29	
Telephone	102.43	
Tools, Implements and Machinery	56.15	
Traveling Expenses	343.25	
Lights	60.52	
Water Assessments	193.60	
	$ 5,000.00	$ 5,000.00

GRAND JUNCTION CASH FUND.

Receipts and Disbursements for the Year Ending November 30, 1912.

RECEIPTS:		
Balance in Fund Dec. 1, 1911		$ 87.65
Farm Produce		150.00
Pasture Rents		39.00
Rent of Buildings		99.10
Bewsher Contract (Rent)		100.00
Rent of Water		290.75
DISBURSEMENTS:		
No disbursements during year		
Balance in Fund Nov. 30, 1912	$ 766.50	
	$ 766.50	$ 766.50

FARMERS' INSTITUTES AND EXTENSION SERVICE APPROPRIATION FUND

(Senate Bill No. 129, Section 6.)

Receipts and Disbursements for Year Ending Nov. 30, 1912.

RECEIPTS:		
From State Treasurer		$ 5,000.00
DISBURSEMENTS:		
Overdraft Dec. 1, 1911	$ 4,894.95	
Apparatus	15.25	
Freight and Express	22.33	
Furniture and Fixtures	142.00	
Labor	222.31	
General Supplies	152.91	
Postage and Stationery	89.64	
Publications	619.68	
Salaries	2,869.92	
Telephone and Telegraph	31.32	
Tools, Implements and Machinery	.70	
Traveling Expenses	1,067.83	
Contingent Expenses	5.00	
Overdraft Nov. 30, 1912		5,133.84
	$10,133.84	$10,133.84

FARMERS' INSTITUTES CASH FUND.

Receipts and Disbursements for Year Ending Nov. 30, 1912.

RECEIPTS:		
Balance in Fund Dec. 1, 1911		$ 134.00
County Institutes		376.00
Refunded from departments		130.80
Short Course fees		159.00
Weld County Farmers' Club (Donation)		1,500.00
DISBURSEMENTS:		
Weld County Farmeers' Club Donation returned	$ 1,500.00	
Balance in Fund Nov. 30, 1912	799.80	
	$ 2,299.80	$ 2,299.80

RURAL EDUCATION APPROPRIATION FUND.

(Senate Bill No. 129, Section 14.)

Receipts and Disbursements for the Year Ending Nov. 30, 1912.

RECEIPTS:		
From the State Treasurer		$ 2,500.00
DISBURSEMENTS:		
Overdraft Dec. 1, 1911	$ .70	
Apparatus	25.16	
Freight and Express	.40	
Postage and Stationery	8.90	
Salaries	1,785.76	
Telephone and Telegraph	.75	
Traveling Expenses	678.33	
	$ 2,500.00	$ 2,500.00

SUMMARY OF THE RECEIPTS AND DISBURSEMENTS FOR THE YEAR 1911-1912.

COLLEGE FUNDS.

	Balance Nov. 30, 1911.	Receipts.	Transfer To	Transfer From.	Disburse-ments.	Balance Nov. 30, 1912.
Tax	*$20,100.14	$ 80,073.31	$16,339.60	$.....	$75,900.23	$ 412.54
Land Income	3,709.91	13,347.00	.....	.....	15,082.36	1,974.55
Special (Cash)	5,848.95	31,149.16	.....	.....	19,644.12	17,353.99
U. S. Mechanic Arts	29,556.24	50,000.00	.....	.....	52,291.75	27,264.49
Revolving Fund	2.500.00	.....	.....	.....	.....	2,500.00
APPROPRIATION.						
Farmers' Institutes.	*4,894.95	5,000.00	.....	.....	5,238.89	5,133.84*
Land & Water	*3 808.42	10,160.40	.....	.....	6,351.98	.....
Fort Lewis School.	*14,566.81	27,500.00	.....	.....	18,221.80	5,288.61*
Grand Junc. School	*1,330.06	5,000.00	.....	.....	3,669.94	.....
Guggenheim Bldg.	*214.55	2,500.00	.....	.....	2,285.45	.....
Rural Education	*.70	2,500.00	.....	.....	2,499.30	.....
Campus	.....	1,000.00	.....	.....	1,297.00	297.00*
Power Plant	.....	10,000.00	.....	.....	10,000.00	.....
State Forester	.....	5,000.00	.....	.....	5,000.00	.....
Deficiency	.....	16,339.60	.....	16,339.60	.....	.....
EXPERIMENT STATION FUNDS.						
Hatch	2,669.52	15,000.00	.....	.....	15,888.52	1,781.00
Adams	1,611.46	15,000.00	.....	.....	15,830.13	781.33
Special (Cash)	9,898.01	5,469.08	.....	.....	7,758.74	7,608.35
Sales	.....	30.00	.....	.....	.....	30.00
APPROPRIATION.						
Fruit Investigation	*2,926.70	3,000.00	.....	.....	600.88	527.58*
Plant Industry	*3,040.35	2,500.00	.....	.....	385.25	925.60*
Potato Investigation	*3,297.50	2,750.00	.....	.....	823.35	1,370.85*
Horse Investigation	*3,570.53	2,500.00	.....	.....	1,429.47	2,500.00*
Poultry Inv.	*1,692.38	2,500.00	.....	.....	841.11	33.49*
Animal Inv.	*2,672.21	5,000.00	.....	.....	2,327.79	.....
Dry Farm. Inv.	*824.70	1,750.00	.....	.....	926.16	.86*
Irrigation Inv.	*394.03	2,500.00	.....	.....	2,105.97	.....
	*$7,539.94	$317,568.55	$16,339.60	$16,339.60	$266,400.19	$43,628.42

*Overdraft.

ADMINISTRATION, INSTRUCTION AND MAINTENANCE BUDGET FOR THE YEAR ENDING NOVEMBER 30, 1912

	Apparatus	Feeding Stuffs	Freight & Express	Furniture and Fixtures	Labor	Laboratory Supplies	Fuel	Live Stock	Permanent Improvements	Postage and Stat'ry.	Publications	Repairs	Salaries	Seeds and Plants	Telephone and Telegraph	Tools, Implements and Machinery	Traveling Expense	Contingent Expense	Light & Power	Insurance	Water Assess'ts.	Total
Advertising and Publications	$.....	$.....	$ 4.36	$.....	$ 15.25	$ 19.15	$	$	$	$ 366.63	$2,126.88	$	$	$.....	$ 6.91	$.....	$ 297.04	$ 24.85	$	$	$	$ 2,860.57
Agronomy	176.40	.....	60.83	17.10	249.49	94.95				91.09	6.50	9.67	5,413.12	4.58	21.99	174.42	40.00					6,306.14
Animal Husbandry	149.69	5,000.49	527.06	22.40	3,701.10	415.19		1,294.00		204.24	2.85	48.07	4,593.21	101.97	43.33	60.10	279.01	111.86				17,124.67
Botany and Forestry	34.96	.....	9.80	48.75	343.75	18.34				17.95	18.26	109.40	1,566.60		6.39	1.05	3.00					2,178.33
Building Superintendent	.....	.....	15.37	45.00	641.63	.....			1,772.54			2,263.79	.....	.....	2.25	.....	.....					4,740.58
Campus	23.50	.....	49.06	44.88	1,966.86	79.09			6.00			63.85	291.65	159.24	.....	43.30	4 90					2,692.43
Chemistry	71.72	.....	21.58	26.83	2.43	889.19			.....	16.60		56.45	2,791.57		18.51	4.60	6.50					3,902.98
Civil and Irrigation Engineering	858.49	.....	57.43	70.55	78.45	118.29			33.63	28.84		22.71	3,587.78		17.49	.....	101.25	20				4,475.11
Current Expense	249.21	.....	1,091.65	54.05	906.33	173.18	2,846.64			46.55	146.50	23.50	245.00		1.90	84.85	114.50	204.45	1,309.00	1,417.16	954.05	9,337.02
Electrical Supplies	.....	.....	80.72	.....	349.50	1,000.45			206.41				20.00		26.12							1,682.20
English and History	.50	.....	2.20	86.00	26.29	.....				25.71			6,699.78		5.74		15.95					6,862.17
Farm	9.00	.....	47.84	.....	12,122.64	169.03		1,250.00	303.17	12.41	1.80	105.65	133.82	107.17	10.30	1,063.25	18.99	180.75				15,535.32
Farm Management	.....	.....	.....	.....	.....	.....			.....		.....	.....	88.83		.....	.....	15.55					48.88
Farmers' Congress	.....	.....	.....	.....	.....	.....			.....		.....	.....	.....		.....	.....	112.20	.....			.....	112.20
Farmers' Institutes	.....	.....	.25	.....	.....	.....			.....		.....	.....	.....		.....	.....	.....	1,500.00			.....	1,500.25
Firemen and Janitors	.....	.....	.....	.....	6,147.33	.....			.....		.....	.....	.....		.....	.....	.....	.....			.....	6,147.33
Hydraulic Laboratory	.....	.....	26.98	.....	1,326.29	.....			3,119.63		.....	.....	.....		.45	.....	.....	.....			.....	4,473.65
Home Economics	.....	.....	51.58	55.55	90.70	554 82				88.80	.....	75	5,260.10		18.82	9.55	7.90	96.00			.....	6,204.57
Horticultural Department	.....	.....	36.13	00.00	337.16	10.55				11.40	.....	44.44	3,995.71	3.25	10.74	84.65	3.70	.....			.....	4,552.73
Library	.....	.....	50.76	51.60	80.68	31.72				74.57	1,000.08	9.80	2,469.27		11.24			5.00			.....	4,424.72
Mathematics	.....	.....	.....	.50	14.05	1.55				15.97	.....	.....	3,193.93		4.74	.....	.....	.....			.....	3,230.74
Mechanical Department	.....	.....	457.57	89.16	207.26	1,361.58			4.54	46.20	.....	120.74	7,304.91		11.64	150.21	17.25	.....			.....	9,771.08
Military Department	120.89	.....	87.76	3.50	52.05	51.12			.....	9.80	6.17	.60	609.28		2.48	.....	10 50	.....			.....	656.16
Modern Languages	.....	.....	.....	.....	.....	.....			.....	2.50	.....	.....	1,358.27		.....	.....	.....	.....			.....	1,660.77
Music Department	.....	.....	1.00	245.00	.65	.....			.....	25.37	.....	.....	900.00		4.74	.....	.....	.....			.....	1,176.76
Museum	137.90	.....	.45	146.25	.....	7.55			.....	2.50	3.50		667.50		.....	.....	.....	.....			.....	965.65
New Athletic Field	.....	.....	19.86	.....	.....	.....			758.17	.....	.....		.....		.....	.....	.....	.....			.....	778.03
Physical Training	.....	.....	1.95	250.00	110.00	10.22			.....	10.12	.....		1,864.05		.....	.....	.....	10.00			.....	2,209.24
Physic and Electrical Engineering	368.01	.....	80.40	83.27	20.71	127.00			59.30	38.47	28.50	22.35	5,058.18		8.19	5.05	32.05	.....			.....	5,877.36
President's Office	.....	.....	15.00	238.60	17.20	.....			.....	177.86	.....	2.50	6,080.68		158.72	.....	474.93	.....			.....	7,169.04
Registrar's Office	.....	.....	2.90	52.50	5.76	.....			.....	173.09	.....	.....	799.99		7.99	.....	6.60	.....			.....	1,056.22
Rural Education	.....	.....	4.70	.....	.....	.....			.....	.....	.....	.....	.....		.....	.....	.....	.....			.....	4.70
School of Agriculture	.....	.....	2.33	.....	21.35	1.25			.....	355.65	359.36	.....	2,012.95	.....	9.14	.....	88.95	7.00	.....	.....	.....	2,875.93
Secretary's Office	.....	.....	12.39	74.40	158.00	.10			54.23	448.86	.....	.....	8,156.62	.....	73.18	.85	110.20	.10	.....	.....	.....	4,088.93
State Board of Agriculture	.....	.....	.....	.....	.....	.....			.....	.....	.....	.....	140.00	.....	.....	.....	401.25	.....	.....	.....	.....	541.25
Student Life—Boys	.....	.....	.....	4.00	.....	.....			.....	.....	.....	.....	499.92	.....	.....	.....	.....	.....	.....	.....	.....	503.92
Student Life—Girls	.....	.....	.....	4.00	.....	3.25			.....	19.25	.....	6.25	640 98	.....	3.30	.....	27 20	.....	.....	.....	.....	713.26
Telephone Exchange	.....	.....	.....	.....	.....	.....			.....	.....	.....	.....	175.00	.....	132.00	.....	.....	.....	.....	.....	.....	307.00
Veterinary Science	155.36	130.16	41.95	48.75	170.31	1,237.17		3.00	22.48	99.35	126.86	74.61	8,593.43	.....	73.56	11.30	84 35	14.00	.....	.....	.....	10,856.68
Zoology and Entomology	6.12	.....	28.55	27.30	40.32	29.98			.....	44.89	4.75	.....	2,709.20	.....	18.89	.....	.....	.25	.....	.....	.....	2,992.25
	$1,883.75	$5,730.65	$2,805.71	$1,850.37	$29,143.53	$6,400.72	$2,846.64	$2,547.00	$6,340.10	$2,437.47	$4,526.03	$2,954.63	$82,669.33	$ 381.21	$ 693.75	$1,622.68	$2,232.72	$2,191.06	$1,309.00	$1,417 10	$ 954.05	$162,016.46

GUGGENHEIM HALL APPROPRIATION FUND.

(Senate Bill No. 129, Section 4.)

Receipts and Disbursements for the Year Ending Nov. 30, 1912.

RECEIPTS:		
From the State Treasurer		$ 2,500.00
DISBURSEMENTS:		
Overdraft, November 30, 1911	$ 241.55	
Freight and Express	6.00	
Furniture and Fixtures	2,221.82	
Labor	53.48	
Traveling Expenses	4.15	
	$ 2,500.00	$ 2,500.00

LAND AND WATER APPROPRIATION FUND.

(Senate Bill No. 129, Section 5.)

Receipts and Disbursements for the Year Ending Nov. 30, 1912.

RECEIPTS:		
From the State Treasurer		$10,160.40
DISBURSEMENTS:		
Overdraft, December 1, 1911	$ 3,808.42	
Interest on Land	3,793.42	
Principal	2,558.56	
	$10,160.40	$10,160.40

DEFICIENCY APPROPRIATION FUND.

(Senate Bill No. 129. Section 17.)

Receipts and Disbursements for the Year Ending Nov. 30, 1912.

RECEIPTS:		
From State Treasurer		$16,339.60
DISBURSEMENTS:		
Transfer to Tax Fund	$16,339.60	
	$16,339.60	$16,339.60

POWER PLANT APPROPRIATION FUND.

(Senate Bill No. 129, Section 2.)

Receipts and Disbursements for the Year Ending November 30, 1912.

RECEIPTS:		
From State Treasurer		$10,000.00
DISBURSEMENTS:		
Freight and Express	$ 2.64	
Labor	707.32	
Permanent Improvements	9,100.84	
Tools, Implements and Machinery	155.00	
Traveling Expenses	34.20	
	$10,000.00	$10,000.00

CAMPUS IMPROVEMENT APPROPRIATION FUND.

Receipts and Disbursements for the Year Ending November 30, 1912.

(Senate Bill No. 129, Section 3.)

RECEIPTS:		
From State Treasurer		$ 1,000.00
DISBURSEMENTS:		
Labor	$ 319.23	
Permanent Improvements	977.77	
Overdraft, November 30, 1912		297.00
	$ 1,297.00	$ 1,297.00

PRESIDENT'S REPORT.

To the State Board of Agriculture:

GENTLEMEN: In looking back over the work of the school year just closing, I find that I can quote the opening statement of my report last year as fully applicable to the conditions holding this year: "It has been a good year. In education, in the work of the Experiment Station and in our extension efforts the record is good. The year has been one of great activity, it has brought a great deal of good to all of us. The calls made upon each department, upon each executive officer are many, and often difficult to meet, but it has been a year of splendid co-operation, of high devotion to duty, of splendid service, and though rich in problems it has brought in nothing to break the spirit of good-fellowship and of cooperation among our workers."

In education we show even a greater growth than last year. The total enrollment in the College shows an increase of 27 per cent over that of last year, while that of the School of Agriculture shows an increase of 13.8 per cent over that of last year. This means a growth of 20 per cent for the entire Institution. This increase is especially gratifying because this last year times have been hard. Indeed we thought ourselves fortunate should we be able to hold our own in the School of Agriculture and we had no reason to anticipate such a large growth in the College. When you keep in mind that very little personal solicitation was done for students, that practically none was done for School of Agriculture students, all this work having been done by correspondence, the year's growth becomes very satisfying. All things considered, I believe we have done even better work in the class rooms and laboratories than we did last year. The general spirit throughout the year has been good, the students have shown a willingness for work and response to the requests of the Faculty that is very encouraging. In spite of the little difficulty we had over the spring vacation, the year, as a whole, stands out strongly for good work for the College students. Not only was good work done in the class rooms and in the laboratories, but also in drill; in the literary societies, in the technical societies, with the student publications and in our social life. In athletics, in spite of the fact that we had a disastrous year, losing most of our games, we have made advance. Our teams have trained better, they have stood stronger for clean athletics and for fair playing. They have deveolped a spirit of gentlemanly sportsmanship in advance of last year. I present the Junior Annual, *"The Silver Spruce,"* for your inspection, with pride. I am proud also of the *Collegian* for the year, especially of the special editions gotten out this spring.

In our general student life activities we have found some opportunity for improvement, some conditions that need attention and change. While the response to our efforts was not so general as we had hoped for or expected, we believe we are on the track of the right plan for meeting these needs.

I am sure you will feel proud of the graduating class, numbering 47, with one candidate for an advanced degree, the largest class we have ever graduated from the Institution. It will please you also to learn that in checking up the credits of these young men and women, the Dean found that nearly every one had more than the required number of credits necessary for graduation, excess ranging from one or two to fifteen credits. Many of the men already have positions. All the graduates in Civil and Irrigation Engineering had positions offered them in February, and all but one entered the U. S. Reclamation Service the first of May. One went to Australia in the employ of the Rivers and Water Supply Commission, Victoria. Every one of our Electrical Engineers have positions. The graduates in Animal Husbandry, Agronomy and Entomology all have good positions. Three of our young women are practically placed, with bright prospects for placing the others. In fact, the record made by previous graduates makes it easy to find places for the present class.

The general increase in the enrollment makes it desirable that some changes be made in some of the classrooms to relieve congestions and to increase the general efficiency. One hard problem is the social life, especially the dances for the School of Agriculture. We do not like to see these young people go down town and yet we have no place on the campus for use. The Gymnasium is large enough but the floor is in bad condition. I believe this condition should be remedied even though some other matters will have to be left undone. It is far easier to control our social life, especially with this younger student body, if the meetings are held upon the campus. One development I am looking upon with more or less apprehension is the tendency of the fraternities and sororities to rent houses far down town. Unfortunately no one has seen the advantage of building good-sized rooming houses near the campus. In order to find houses with sufficient room, the fraternities and sororities must go several blocks away from the College. Next year nearly all of them will be in what may be well called, the down town section. This means that it will be easier to hold the social gatherings down town, that the down town influence will be more and more dominant. That many functions on the campus will suffer simply because the students will be so far away that they will not think it worth while to make the effort to attend.

We have had more or less difficulty, also, due to conflicts in

drill and gymnasium work. Placing the gun racks in the Gymnasium was a mistake. It would have been better by far to have used all the space in the Armory upstairs. I believe this could still be done. It can hardly be expected that gymnasium work for the young women will be satisfactory when it is necessary for the battalion to first march down to get the guns and at the end of the hour again march down to place them in the gun racks.

High School Visitation.—Our high school visitation this year was not quite so extensive as last. We made an effort to have some one representing the College speak before evry high school in the State. We have also done a great deal of work through correspondence. Early in the year we secured the name of every high school senior and we have sent each one at least one personal letter, a copy of the catalogue, a card calling his attention to the *"The Silver Spruce"* and where requests came for such, special information.

The attitude of the high schools toward the College is most gratifying. We are striving hard to co-operate with each and every high school along any lines possible, making a special effort to be helpful in the teaching of agriculture, mechanic and household arts. We have provided packet libraries for the use of high-school principals and superintendents and we are sending special information on rural and industrial education for rural teachers upon request. I have been keenly disappointed that we could not employ a rural school visitor, but the conditions of the funds are such that I did not think it advisable. I hope this can be done another year. I hope also that we can see our way clear to start a department of rural and industrial education authorized by the Executive Committee at tis January meeting. Such a department would give us an opportunity to work with the high schools and with the graded schools utterly beyond us at the present time. We will do the most good through the children of this State; through them we can reach the parents better than in any other way. The children will be quick to pick up new methods of cultivation, insect control, irrigation, sanitation and other lines we are well fitted to teach them and every boy and girl that does take up some such work enlists the interest of his parents.

In developing our plans for movable schools for next year, we can do school visitation and a partial measure of the work even though the plans for the rural school visitor and for the department of rural and industrial education cannot be put into full operation.

Student Life.—We have given more attention than last year to student life activities. We are now looking forward to giving

even more attention next year. We have tried out some plans for teaching personal hygiene to the young women of the College this past year with gratifying results. We expect to extend this to the young men of the Institution next year. We are looking forward to developing what I will call, for the lack of a better name, "The Playsome Idea." I do not believe that our present system of athletics is broad enough to meet our needs of physical education and physical development. Too many of our students take their exercise by proxy; not nearly enough take an active part in the work of the various athletic teams. I believe also we are giving too much of our gymnasium work indoors. With a splendid climate like our own, most of this gymnasium work can be done out-of-doors. Of course to meet this need, some special equipment must be provided, but I believe that the good that will result is worth the outlay and the effort. I should like to see the whole school take part in these outdoor exercises, to see the Faculty and students get out on the field and play an hour a day. I believe this can be done if we give it the right kind of encouragement. The new field is going to help a great deal and the special park that we can arrange for the women's work will be of equal service. The students themselves are taking a great deal of interest in the plan, especially in getting the new athletic field. They took one of their own holidays to work on the field some time ago and asked for another and with twenty teams and about 120 or more men at work they moved 2,500 yards of dirt, besides digging the post holes for the new fence. In addition to this work they assessed themselves $3.00, those not able to pay the money now agreeing to pay it on registration next fall, for the expense of installing the track and of building the new grandstand.

I believe if we can develop this "playsome idea" it will be a distinct step forward. We can retain the better part of intercollegiate athletics and tie to this the proposition that every student get out two or three times a week for an hour or an hour and a half exercise in the open air.

Student life work has been materially helped this year by the Association of College Women of C. A. C. Late this semester a Faculty club was organized, which I believe will be of material help in meeting some of our problems next winter.

Semi-Annual Reports of Heads of Departments.—We followed, this year, our plan of last with the reports from the heads of departments, using similar blanks. These reports give us not only a financial statement of the departmental expense, but also a statement of the work done in education, in research and in extension, with recommendations for improving the same. Along

with the reports we also ask for an estimate of costs for next year to aid us in making up the annual budget.

We are asking for rather elaborate reports in order to make a study of the cost of education as carried on here. We now have two years of data from which we can compute just how much it costs per credit and per student hour to teach the subjects in any one department. We are gradually improving our methods and hope to have some valuable data worthy of publication at the end of the five years' period. I hope you will take time to look into these reports somewhat. You will find them interesting and helpful; for example, I can tell you exactly how much we are expending in each department for the various lines of activity. I can tell you how much work each professor is doing in the way of teaching, research and extension work. These reports will give you the number of students enrolled in each class, the per cent. passed, conditioned and failed.

Budget—Education and Maintenance.—The budget for last year totaled $149,465, as follows:

Salaries	$91,331.00
Improvements, Equipment and Maintenance	$58.134.00

as compared to $84,694, for salaries, and $60,859 for improvements, equipment and maintenance, or a total of $145,555 for the previous year.

The financial statement of the Secretary will show you that we have lived within this amount and that our educational funds are in better condition than they have been for years, in fact in the last three years, comparing the catalogues of 1909 and 1911 and 1912, we find that the enrollment in the College has increased 50.7 per cent. The enrollment in the School of Agriculture has increased 55.8 per cent., and the amount of extension work has increased 300 per cent. We have carried on this work, we have met the regular increase in salaries provided for by the salary schedule, we have kept the plant in reasonably good shape, having it in better condition now than it was at the beginning of this period, and we have practically wiped off the indebtedness on maintenance. This means a saving of something like $24,000.

The budget for next year will have to be materially increased because we shall have to protect the station workers. This year a number of salaries were paid wholly or in part from funds received under special appropriations. Since these are not available, a certain part of these salaries will have to be paid out of mill levy funds wherever the services of the men are retained. The natural increase in salaries is about $6000 a year. Three thousand, five

hundred dollars will be needed to pay the increase due to the condition of the funds already explained and on account of the overdraft in the Horse Breeding and the Potato Investigations, I believe $2,500 additional should be provided. This means that further saving is impossible because aside from the Station, we have to protect also our interest on land indebtedness and the overdraft on the extension work.

There are certain improvements, however, about the campus, that should be made. At its last meeting the Executive Committee authorized the building, on a co-operative plan, between the Office of Experiment Stations, U. S. Department of Agriculture, the College and Experiment Station, of a Hydraulic Laboratory for testing the flow of water through orifices and conduits. It authorized also the beginning of work on the new heating plant. We have received $5,000 for this work and $5,000 more may be available. If this plant goes in, it will mean the saving of 50 per cent of our coal bills. This will warrant the College to put in about $3,500 a year to push this work through. We are also in duty bound to furnish some labor for the athletic field. The students have already collected $466 for this enterprise and have given more in labor. One thousand dollars should be figured for this work

It will cost us something also to put in the curbing on College Avenue, although the amount received from the State for campus improvements, $500, will be nearly sufficient for this work.

Station Funds.—On account of the uncertainty of the Station funds the work of the Station and of Extension has been very difficult. In making out the budget we planned on an expenditure of 50 per cent of the funds. In all lines but three the work was stopped as soon as the 50 per cent was used; these exceptions were the extension work, the work in horse breeding, and potato investigations. These were considered of such importance that we thought it wise to carry them on even on an overdraft. The Weld County Farmers' Club started out to raise sufficient money to keep the extension activities and the potato investigations going. However, only $1,500 has been received from them as yet, they are having hard work collecting the balance. If we receive 50 per cent of the State appropriation, the Station funds will not be in an extra bad condition. Should nothing more be received, the financial showing we must make to the Nineteenth General Assembly will indeed be a bad one.

This same condition holds true with the funds at Fort Lewis and Grand Junction. At the Fort Lewis School we have carried on eight months of school, with fair success. The problems we met there presented special difficulties, but we have gotten well started

and at the meeting of the Executive Committee held at Fort Lewis it was decided to keep the school open next year, planning on a six months' course of instruction and on outlining the budget within the fifty per cent limit of the appropriation. The continuing of Fort Lewis presents some severe problems, and I hope you will have time today to go over them in detail so that we may have a definite policy to present to the next General Assembly.

Practically the same holds true regarding the Grand Junction school. Conditions are such there that it is not possible at present to open the school, nor will this be possible until we discover some satisfactory way of draining the property. At present the water stands so near the surface at the buildings that opening a school there under present conditions is out of the question.

Special Recommendations.—We have discovered activity on the part of some School of Agriculture students to form a fraternity. It is believed by educators all over the country that fraternities in secondary schools are harmful. The general experience all over the country is that there is nothing in secondary education that needs the fraternity life. I recommend that this body pass resolutions against fraternities in secondary schools under its control, this rule to be applicable to the School of Agriculture here, the School of Agriculture at Fort Lewis and that at Grand Junction and that the breaking of this rule against fraternities be sufficient ground to warrant permanent suspension from the Institution.

At the request of the Athletic Council of the Athletic Association, I recommend that our Physical Director be made general manager of all athletic teams and all athletic activities. At present we have a student manager in charge of each athletic team. I consider this plan desirable, but it is a very costly one, because each year we have to break in new managers and their mistakes are frequently very expensive. With the Director as general manager we would have the benefit of experience from year to year. We can still retain the student manager, but he will act as an assistant manager to the general manager instead of independently as heretofore.

I call your attention also to a communication from Dr. Emslie and recommend that favorable action be taken, in other words, that we grant the degree of Bachelor of Music on the conditions set forth.

Reports of Director and Superintendents.—I submit the reports of Director Gillette, of the Experiment Station, and of Superintendent Hinman, of the Extension Service, as part of my report.

Appreciation.—In closing I desire to express my appreciation to the Board as a whole for the consideration and the kindness you

have shown me and to the members of the Executive Committee for their devotion to the good of the Institution and for the help they have ever been ready to give us executive officers in meeting the problems that come to us.

To the executive men and to the Faculty as a whole great credit is due for the showing made this year. The men of the Institution have given a good account of their stewardship and in looking over their records for the year I feel sure that you will be satisfied witth the service they have rendered.

This report would not be complete without calling your attention to the progress that has been made in getting better co-operation among the state institutions of higher learning. A number of meetings have been held and the year shows real progress. Your Executive Committee has taken a leading part in this work of persuading the institutions to co-ordinate their work and their efforts for the good of the State. If this work can be kept up, Colorado will get far more satisfactory service in higher education.

Respectfully submitted,

CHAS. A. LORY,
President.

Dec. 11, 1912.

DIRECTOR'S REPORT.

To President Charles A. Lory:

Sir:—I have the honor to present the following semi-annual report upon the progress of the work of the Experiment Station during the first half of the present fiscal year.

In accordance with the instructions from the Executive Committee of the Board and yourself, the work upon Experiment Station projects that was being supported by state appropriations has been practically suspended for several months. One section, however, that on irigation engineering, still has some money on hand from the twenty-five per cent. payment upon the appropriation, and Professor House and Mr. Cone are continuing expenditures up to the twenty-five per cent. limit. I believe all other sections having State appropriations have now expended the fifty per cent. limit on these funds and, in some cases, this proportion has been somewhat exceeded.

WORK OF THE SECTIONS.

Chemical Section.—The Chemical Section has concentrated its efforts upon one project, that of the Nitrates in the Soil, during the past year and has taken up no active work upon any other project. A bulletin covering the results of the work of the past two years upon this project is now completed and in my hands for publication. It will doubtless make a bulletin of 160 to 180 pages and gives much valuable information in regard to the progress of the work. It has been proven beyond all question that nitrates, at least in the form of nitrate of soda, appear in certain Colorado soils in quantities greatly in excess of the amounts that are permissible for healthful plant development. In fact, there are hundreds, perhaps thousands, of acres, in the State where orchards or other vegetation have been completely destroyed as the result of the excess of these soil nitrates. It has also been proven that these nitrates are the result of a development of a micro-organism (Azotobacter sp.) which, under conditions favorable to its growth, may produce these nitrates in harmful quantity in a very short period of time. Methods of prevention and control have also been studied, but as yet no satisfactory remedies have been discovered.

Doctor Headden suggests that as soon as it is possible to do so he would like to take up a study of the effect of these nitrates upon our grains, especially wheat. I might add that the bulletin that has

just been completed deals very largely with the effect of these nitrates upon sugar beets and the results of the investigations along this line are so well established that the work is considered completed.

The expenditures in this Section for the past year have been as follows:

Salaries	$5,166.00
Expenses	1,121.77
One Bulletin (approximately)	700.00

The expenditures asked for the coming fiscal year are:

Salaries	$6,028
Expenses	13,000

Bacteriological Section.—As in the case of the Chemical Section, the bacteriological work has been supported entirely by the money from the Adams Fund, except for the publication of bulletins. The work in this Section has been almost entirely confined to two projects—a Bacteriological Study of Alkali Soils, and Raspberry Diseases. By far the greater proportion of work has been upon the first named project. The main object of the soil studies has been to determine the ammonifying efficiency of our Colorado soils and upon this work Professor Sackett has written a bulletin that is now ready to send to the printer. The practical bearing of this phase of the work can be well judged from the following quotation which I take from Mr. Sackett's report to my office:

"For example, in New Jersey, blood meal is four times as valauble as cottonseed meal from the standpoint of available nitrogen; but in Colorado cottonseed meal is equal, if not superior, to blood meal, undoubtedly because of the bacterial flora peculiar to our soils. Cottonseed meal applied to our soils is three times as efficient as it would be if used on certain Iowa land. Again, flaxseed meal is almost worthless with us, but when employed in New Jersey, it is as valuable as cottonseed meal in Colorado. We have been able to show that so far as available nitrogen is concerned, cottonseed meal ranks first, blood meal next, followed by alfalfa, and flaxseed meal last."

Professor Robbins has co-operated with Professor Sackett in his niter studies by making a study of the soil algae which might serve as a source of carbon to serve as a source of energy in the soil for the manufacture of the nitrates. Mr. Robbins' work has been of so much importance that Professor Sackett expresses the desire that his services may be continued through the coming year.

I am hoping to be able to allow at least two hundred dollars ($200) on Professor Robbins' salary next year in order to secure a portion of his services in this work.

The work on Raspberry Diseases has been completed except for the trying out more thoroughly of remedies to be applied for the control of any diseases. This can probably be done the present summer. Professor Sackett has already proven that Bordeaux Mixture properly applied will control the raspberry fungus.

Professor Sackett has also given some time to co-operative work with Mr. Fitch in his study of the *Fusarium* that did so much injury to the potato industry in the State last year. This work was absolutely essential in connection with the studies that were being carried on by Mr. Fitch to determine the real cause of the potato disease and it has been proven beyond doubt that the fungus known as *Fusarium* did most of the damage.

Professor Sackett has also given a little attention to the development of a culture that can be used in a commercial way for the conversion of apple cider into a good grade of vinegar within a year or less. This will be a great advantage to the apple growers of the State who are not able at present to get much return from their poorer grade of fruit. It is not uncommon for them to keep their apple cider for three or four years to convert it into vinegar and then fail to get a marketable product. Professor Sackett offers to produce his vinegar starter in sufficient quantities to be sent to all fruit growers of the State requesting it, at any ime when the Station is able to make the necessary provision for carrying on this work. The expense incurred will be very slight, as the income from the sale of these starters would be sufficient to pay all expenses.

Professor Sackett also suggests three new projects that he would like to take up as soon as time and funds will permit. They are as follows:

1. The Varietal Susceptibility of the Pear to Pear Blight.
2. The Production of Leaf Mold in the Rocky Mountains, a microbiological and zymotic study.
3. The fermentation of salt rising bread.

I feel that we are very fortunate in being able to retain Professor Sackett on our Station Staff another year as he has been offered very flattering inducements to take up work in other states. The salary inducement alone was $800 more per annum than we are paying Professor Sackett at the present time. It is the importance of the original investigations that he is able to pursue at this Station, and perhaps also the facilities that we have been able to place at his command, that have induced him to remain with us.

The expenditures of this Section for the past year have been:

For salary	$1,983.34
For expenses	1,260.76
Total	$3,244.10

Professor Sackett estimates the expenditures for his Section for 1912-1913 as follows:

BACTERIOLOGICAL STUDIES OF ALKALI SOILS.

Traveling	$250.00	
Supplies	200.00	
Office	50.00	
Laboratory assistance	300.00	
Miscellaneous	25.00	
Total	$825.00	$825.00

RASPBERRY DISEASE.

Travel	$ 10.00	
Supplies	25.00	
Labor	15.00	
Total	$ 50.00	$ 50.00
		$875.00

Irrigation and Drainage Section.—The Adams and Hatch investigations, as well as the work that is being carried on in co-operation with Doctor Fortier of Irrigation Investigations of the Office of Experiment Stations, are entirely in charge of Mr. V. M. Cone. I quote from Mr. Cone's report his statement in regard to the present status of this work, as follows:

ADAMS FUND.

Co-efficient of Friction. Arrangements are under way for doing considerable work on this project during the present season. It is hoped to continue the work for two or three seasons. The work has not progressed sufficiently to result in any publication.

Drainage Requirements of Crops and Drainage Factors. The tanks and other apparatus for conducting this experiment having been installed last year, the expense of continuing the work during the coming fiscal year will be slight (outside of regular salaries).

Water Requirement of Crops. The tanks containing different types of soil for this experiment have been cropped for this season to Grimm alfalfa. This work should be continued for this season, being a duplicate test of last year's work.

Experiments with Flow of Water. Little was accomplished on this experiment during the past winter, on account of conditions in the hydraulic laboratory. The experiment should be continued during the coming season, and as the large flume has been constructed and most of the apparatus secured, the expense should not be much. No publications can result from this work until we have had opportunity to carry through a series of experiments without interruption.

Weir Construction. Nothing has been done on this project and it will have to be held in abeyance until final arrangements are made concerning the proposed hydraulic laboratory.

HATCH FUND.

General Meteorology. This work has been carried on through a long series of years and a bulletin is now in press giving the observations both at the Experiment Station and at various points over the State. Mr. Trimble, who has taken the observations at the Station for the past 21 years, is the author, of the bulletin. Meteorological observations are to be continued through the coming season. This expense will be slight outside of salaries.

Pump Irrigation. Data on this project is to be collected during the present season by our various field men, from different sections of the State, and it is expected that a bulletin may be issued next winter, making available to the people of the State the facts we are able to learn in regard to the subject of pumping for irrigation.

Concrete. Data in regard to the use of concrete structures for canals and ditches, and for various farm uses, is to be collected by the field men, in connection with general field work, and will therefore require little or no traveling or other expenses. A bulletin on the subject will be issued when sufficient data have been collected to warrant publication.

Evaporation. Work on this project has been carried on for the past year, and is now practically completed, and will be ready for publication as soon as the checking and writing up the data can be attended to.

It now seems certain that we shall be able to secure the laboratory and equipment necessary to fit it for experimental work that the Government has been desiring to establish somewhere in the United States. This will be a matter of much importance to this Institution as it will insure the future co-operation of the Government in our irrigation investigations in this State. I believe this to be one of the most important acquisitions that the Station has made during the past two years. It is the plan of the Station to put in $2,200 of the expense necessary to establish

this laboratory on the college campus. About one-half of this amount will be paid from the funds of 1911-1912 and the other half from the funds of 1912-1913.

Mr. G. D. Walters resigned as assistant to Mr. Cone, his work closing the first of May. As a successor to Mr. Walters, Mr. Paul S. Jones has been employed, and took up his work on the 19th of May. He is to receive a salary of $1,200 a year. Otherwise there has been no change in the personnel of this Section.

The expenses in this Section for the past year have been as follows:

ADAMS FUND.

For salaries	$2,447.04
For expenses	586.69
Total	$3,033.73

HATCH FUND.

For salaries	$1,441.64
For expenses	404.70
Total	$1,846.34

Estimate of expenses on the work of this Section for the coming year, $5,800.00.

Professor House has done what he could on two projects that were allowed upon the state appropriation for irrigation and drainage work. These projects are the Duty of Water on the College Farm, and a Survey of the College Farm for the Establishment of more up-to-date Methods of Irrigation.

The work on these projects has been interrupted by our failure to secure more than 25 per cent of the appropriation which was to bear the expense of the work. Considerable progress, however, has been made on the first project mentioned, and one student at least will devote his entire summer to the continuation of this work. The total amount spent during the past year on these projects was $394.03.

No esimates have been made for the expenses of carrying on this work next year as it does not seem likely that there will be money available for the work. Professor House has other projects outlined but has been unable to take up any other work because of shortage of funds.

Entomological Section.—The experimental work in this Section has been supported entirely from Adams and Hatch funds. Only one Adams project is in force, and that is the Plant Louse Investigation. On account of the sickness of one member of the Staff and the absence of another for a considerable portion of the year,

less has been accomplished upon this project than for any previous year since the work was undertaken. At the present time we are working on the completion of the life histories of the woolly apple aphis (Schizoeura lanigera), and the beet louse (Pemphigus betae) and in getting together the life history notes for publication that have been accumulated during this investigation.

I am hoping that Miss Palmer will be able to return to her work by the latter part of summer. Mr. Bragg at present is devoting his entire time to the work.

Professor Johnson is in charge of a new project on the Hatch fund which is entitled, "Grasshopper Investigation," and to it he has given considerable attention during the past year, and also plans to complete his studies undertaken some years ago on the life histories and remedies for the Colorado bean beetle (Epilachima corrupta) and the tomato psyllid. For these last named lines of work no project has been drawn.

Some work has been continued during the year on the codling moth investigations, but on account of the almost complete absence of this insect in the orchards near the College last year comparatively little work was done in this Section. Mr. Weldon carried on the spraying experiments and orchard observations on this insect on the Western Slope during the entire fruit season. No work is planned on this project during the present season.

The experimental orchard has been a project on the Hatch fund for several years. This work has been for the purpose of determining the injurious effects of crown gall on young fruit trees, and also for the purpose of testing out insecticides for the purpose of determining their effect upon the foliage, and for experiments on the green apple aphis and the woolly aphis. The orchard will be used again this year for carrying on our insect investigations.

Considerable work is being done this spring to determine the complete life history of the fruit tree leaf roller and the remedies that may be used for its control. Mr. Weldon is in direct charge of the work with this insect and much important data have been accumulated for publication. We expect to issue a bulletin upon this work before the end of the year.

Mr. Olson has been engaged to assist in the Entomological Section during the present summer at a salary of $65 a month. I planned to pay Mr. Olson about $100 or $200 additional for work that he will be able to do for this Section during the college year.

The expenses in this Section for the past year have been as follows:

ADAMS FUND.

For salaries	$1,458.29
For expenses	81.49
Total	$1,539.78

HATCH FUND.

For salaries	$ 516.66
For expenses	87.59
Total	$ 604.25

Estimate of expenditures for the coming year:

ADAMS FUND.

For salaries	$1,525.00
For expenses	50.00
Total	$1,575.00

HATCH FUND.

For salaries	$1,290.00
For expenses	200.00
For bulletin	500.00
Total	$1,990.00

Botanical Section.—Only one project has been carried on by the Botanical Section during the past year, and that was entitled, "Black Root of the Strawberry." Professor Longyear reports that he does not find the trouble to be due to any living organism and believes that it is the result of our peculiar climatic conditons. The work is completed and the project discontinued.

Profesor Longyear states that because of the additional duties which have come to him on account of his work as State Forester, he does not care to undertake any station work during the next fiscal year. The expenses of this Section for the past year have been as follows:

ADAMS FUND.

For salaries	$250.00

Agronomy Section.—The experimental work in this Section has been supported by the Hatch fund and two state appropriations, one for plant industry investigations and one for dry farming. The Hatch projects are: Alfalfa Seed Breeding, in charge of Mr.

P. K. Blinn and the work is mostly carried on at the Arkansas Valley Station at Rocky Ford. Excellent progress has been made with this project during the past year and one bulletin, No. 181, Alfalfa, by Mr. Blinn, has been issued. We hope this work can be continued without interruption during the next fiscal year.

Correlation of Characters in Crops. This project is in charge of Professor Keyser and a large amount of data have been accumulated, but Professor Keyser does not care to publish results until he is able to carry through at least one year more of his observations. In regard to this work Professor Keyser says that he deems it "advisable to continue the work. Certain phases of the work, viz., that taking of statistical notes, will probably be completed on head and berry characters in wheat this year. It will be desirable to continue the notes upon other characters for a further length of time and to continue the studies, concentrating the study upon some particular characters as we have done the past year."

He estimates the expenses for this work for the coming year as follows:

For labor	$600.00
Travel	150.00
Apparatus and supplies	200.00
Total	$950.00

Professor Keyser estimates the expenses for the alfalfa work for the coming year as follows

For labor	$ 800.00
Travel	100.00
Apparatus and equipment	300.00
Total	$1,200.00

The projects that have been suspended for the present on account of our failure to secure the state appropriations, are: Wheat Improvement; Feed Crop Improvement; High Altitude Crops; Rotation in Colorado; Preparation of New Land; Field Peas; Farm Management; Method in Selection Breeding and Plains Crops Management. These projects will doubtless have to remain dormant until some fund is provided for their continuation.

As a new project Professor Keyser suggests that field pea investigation might be carried on under the Hatch Fund. The work on field peas is largely for the purpose of developing a better and more reliable strain than is at present obtainable on the market, and also to develop this plant as a high altitude crop.

The total expenditure of this Section for the past year has been:

HATCH FUND.

For salaries	$3,148.68
For expenses	803.48
Total	$3,952.16

Estimates for the expenses for the coming year are as follows:

For salaries	$2,400.00
For expenses	800.00
Total	$3,200.00

HORTICULTURAL SECTION

The work in the Horticultural Section has been carried on principally from state appropriations, although a small allowance has been made during the past year from the Hatch fund for two rather inexpensive projects. The Hatch fund projects are, "Orchard Investigations," and "Cabbage Investigation."

The orchard investigation work is being carried on partly on the college grounds, where an experimental orchard has been planted, and partly through observations in the field in different parts of the State. This spring special attention is being given to the effect of the severe fall and winter freezes, especially upon cherry and apple trees.

The work on the Cabbage Investigation is being carried on for the purpose of developing and establishing a better type of cabbage for Colorado conditions. This project is directly in charge of Mr. S. V. Smith, of the Horticultural Section. The work is carried on almost entirely in the college gardens and requires but a small outlay of money each year.

Brief mention may be made of the projects that have been supported on state funds in this Section, which are as follows:

Cherry Investigation.—Professor Bennett believes that the sour cherries are especially adapted to Eastern Colorado conditions and is carrying on a study for the purpose of determining the varieties that are best suited to the various sections. At least five varieties are under special investigation and by the end of the present year Professor Bennett expects to be prepared to write a popular bulletin giving what might be called a monograph on cherry growing for the benefit of fruit growers in this State.

Onion Investigation.—Professor Bennett is convinced that onion growing is one of the coming industries for certain sections in Colorado. On account of the onion being a very expensive crop

to grow profitably, it is very important that those who undertake the industry should understand as fully as possible the varieties, methods of cultivation and irrigation, harvesting, etc., that will insure the best success in growing this crop. Varieties of onions are being tested in the college garden, along with methods of planting and cultivation, but much of the study needs to be carried on in other onion growing sections of the State. The project would probably not call for more than $100 during the coming fiscal year.

Vegetable Garden.—The vegetable garden on the college grounds is really conducted for two purposes; demonstration and experimentation. The garden is used to illustrate to students the various garden crops that can be successfully grown here, and methods of caring for them. To a certain extent the garden is used as a plot of ground where students themselves may carry out experiments in the crossing of plants, comparing varieties, setting out grafts, and the like. It is also a place to demonstrate to college visitors the various garden crops and small fruits that will succeed in this section. In this connection Professor Bennett states in his report:

"It gives an opportunity to secure a great deal of valuable data in the way of plant diseases and other troubles, and cultural methods used in growing our varieties of garden vegetables. Among other things there are experiments with asparagus for the purpose of testing varieties, depth of planting and steminate as compared with pistilate plants. Where comparative tests of small fruits, such as raspberries, blackberries, gooseberries, currants and strawberries may be made. No less than 18 standard varieties of strawberries are being tested to determine their hardiness, productiveness and market qualities for this State."

In connection with the strawberry work, Professor Bennett wishes especially to test varieties for the high altitudes of the State where he thinks there is great promise for development in strawberry culture.

Fruit Growing in High Altitudes.—Under this project Professor Bennett is endeavoring to select and develop all kinds of orchard and garden fruits for the higher and colder sections of the State. Practically nothing has been done as yet along this line except the planting at Fort Lewis. This is work that should be continued if funds can be secured for it.

Cauliflower Growing in High Altitudes.—In regard to cauliflower Professor Bennett says "We have believed for some time that cauliflower should be one of our profitable Colorado crops. We have demonstrated at Fort Collins that the cauliflower can be

made to give returns of not far from $1,000 per acre when the product is sold at five cents per pound, which is below the average price paid for it in market. The plant is remarkably well adapted for high altitudes, and Denver is largely supplied during the winter from California."

This work could be carried on at a very small expense through co-operation with gardeners and farmers of the State and would doubtless be of much practical value.

Cover Crops for Orchards.—The work on this project has been carried on almost entirely by Mr. R. S. Herrick on the Western Slope in this State, and much valuable data have been colletced.

The Season of Blooming of Fruit Trees and Their Pollination. This project also has been in the immediate charge of Mr. Herrick in the orchard sections of the Western Slope, and has been carried on for two or three years past.

Professor Bennett thinks work should be done to give more definite information than we have at the present time in regard to orchard heating for the purpose of preventing frost injuries. This project, if undertaken, however, would require considerable expenditure and probably cannot be considered at the present time.

Expenses in this Section for the past year have been as follows:

HATCH FUND.

For expenses	$ 80.95
For salaires	150.00
	$230.95

Work of the Potato Specialist.—The experiments being carried on under Potato Investigations have been supported entirely by State funds until within the last two months when I have been allowing for some of the work from the Hatch Fund. Since the outbreak of the potato disease last summer Mr. Fitch has devoted nearly his entire time to the study of this trouble with the view of discovering some feasible method of preventing serious attacks in the future. Mr. Fitch has come to the conclusion that this disease seldom, if ever, develops unless the temperature and moisture content of the soil are high.

During the past winter very careful experiments have been carried through in the college greenhouses where the temperature of the soil and atmosphere could be under definite control, for the purpose of determining whether or not moisture and high temperature are the controlling factors in the development of this disease. The results of the experiment seem fully to corroborate the field observations of last year. Now it becomes necessary to test out

in the field during the coming summer the effects of high moisture and high temperature, and also to determine, so far as possible, what methods can be used for the purpose of controlling these conditions in the field.

This work Mr. Fitch would like to continue during the coming summer as a project to be known as "Effects of Moisture and Temperatures Upon the Development of Fusarium in Potatoes."

Mr. Fitch has another project entitled, "A Study of Inheritance in Pearl-Rural Hybrids" which can be carried on at the same time and at small expense, and is an attempt to combine the good qualities of the two varieties of potatoes mentioned by crossing the varieties when in bloom and then rearing and selecting the potatoes developed in this manner. Over 200 plants are now being grown as a result of these crosses, some of which give promise of being worthy of propagation in the field another year.

Another project that Mr. Fitch wishes to carry on this year is "The Productiveness and Degeneracy of the Irish Potato." The objects in view are the determination of the factors that have to do especially with yield and with degeneracy of the potato. This project will have to do very largely with the production of seed potatoes that will give potatoes of the best quality and of the highest productiveness.

The three projects above mentioned are all of a class that could be supported by the Hatch Fund, if we had the money available for the work. I have thought it possible that we would be able to set aside a small amount to assist in carrying on this work during the coming fiscal year, provided the greater portion of the expense can be furnished from some other sources. The government funds have been assisting in this work during the past three months to the extent of $650.

Mr. Fitch also has a project drawn, "To Determine What is the Most Profitable Amount of Field Space Per Plant, Under Irrigation, with Good Slope, and to Determine the Application of this Data to Early Potato Growing in Our Mountains." The main object in this project is to determine what distances apart the early potatoes should be planted to secure the highest yield per acre. This project can be carried on in connection with the others at an expense of about $25 to $50 for the season. It could not be supported by government funds.

The expenses for the potato work for the past year have been as follows.

HATCH FUND.

For Salary	$500.00
For Expenses	150.00
Total	$650.00

Animal Husbandry Section.—The expenses of the experimental work in this Section have been borne entirely from State appropriation, and the 50 per cent. limit of the appropriation for this work for the present biennial period has already been reached. Professor Morton has completed the two feeding experiments which were outlined for the present year, one being the Ration Experiments with Swine, and the other Beef Production, which was really to a large extent a ration experiment with beef steers. The data collected is being prepared for a bulletin which will doubtless be ready for publication within a short time.

At present there is no live project in this Section, and I do not see how any other experimental work can be done until additional funds are provided. Professor Morton suggests the following projects which should be taken up in his Section as soon as funds will permit:

1. Ration Experiments with Swine, which will be a continuation of the alfalfa meal work and ration tests with molasses, already carried on; and

2. Ration Experiments with Steers. This would also be a continuation of work carried on last year and the year previous, with barley as a feed for steers.

3. Ration Experiments with Dairy Cows. This would involve a comparison with corn silage and beet pulp with roots and beet molasses. Professor Morton estimates that these projects could be carried through at an expense of about $3,000.

Horse Breeding Investigation.—In reporting upon this work Mr. Williams states: "The project as carried on includes only the work of evolving an American carriage horse from native blood, as outlined when the work was instituted."

In regard to the progress of the work, Mr. Williams says:

"The work has progressed very satisfactorily, many individuals of unusual merit having been produced. There is no doubt but what our ambitions are being realized in producing an improved type, and each succeeding generation seems to bring out qualities not found in preceding ones which are desired."

We were unfortunate in that one of the horses came down with distemper (or strangles) soon after returning from the Western Stock Show at Denver, and the disease rapidly spread to nearly the entire herd, resulting in the loss of 8 young animals in all. There is no evidence of the disease among the horses at the present time and we hope that the trouble is past.

The funds for carrying on this work are exhausted and there is no likelihood that we shall have any more money from the State for the next year or 15 months, or until another appropriation has been made and the money becomes available. In my judg-

ment it will be best to plan a sale to take place the coming fall at which a considerable number of animals of less promise of value in the experiment shall be sold for the purpose of reducing the expenses another winter and also furnishing funds to carry on the work until another appropriation is made.

Veterinary Section.—Very little money has been spent in the Veterinary Section from the fund appropriated by the State for Animal Investigations. Dr. Kaupp has prepared a bulletin on Poultry Diseases, which is in my hands and should be sent to the printer as soon as possible.

I have approved one Hatch project in this Section, entitled Infectious Equine Anemia, upon which Dr. Kaupp has been doing some work for the past two months. Dr. Kaupp is very anxious to continue work upon this project during the next fiscal year and thinks he can carry on the work at small expense. I am inclined to provide for the continuation of this project if the funds will permit me to do so. To the end of the present fiscal year we will have spent from the Hatch fund for this work $436.69.

There is a great deal of demand for experimental work on animal diseases and I regret very much that we have no funds with which to meet the demands. Dr. Glover and Dr. Kaupp are undertaking a little co-operative work with a few of the veterinarians in the State, and at the request of the State Veterinary Medical Association, on a disease known as Azsoturia in Horses. The Association is bearing a portion of the expense and I hope that this Station will be able to put some money into it, perhaps $100 during the coming fiscal year.

Poultry Investigations.—We have now spent the 50 per cent. of the portion of the Animal Husbandry appropriation which was set aside for poultry work, and for sometime past Mr. Vaplon has been giving the major portion of his time to personal work outside the Station.

Mr. Vaplon is looking after the poultry without carrying on any definite experiments, and is receiving $30 per month besides his house rent, for this service. I do not see how it will be possible for the Experiment Station to bear a larger expense than this for the continuation of the poultry work until such time as additional funds may be provided for poultry experiments.

Mr. Vaplon has proven himself a very valuable man in poultry extension work, and I am wondering if funds cannot be provided from the Extension Department for the continuation of his services with the understanding that he will be allowed his house rent and perhaps a small salary while looking after the poultry plant.

Respectfully submitted,

C. P. GILLETTE,
Director.

June 1, 1912.

PRESIDENT'S REPORT.

To The State Board of Agriculture:

At this meeting we have the opportunity of looking back over what has been accomplished at the various institutions under our control in the biennium and of looking forward to the new State administration and to the Nineteenth General Assembly for assistance and for needed legislation.

The two years just closing, as a whole, have been kind to us. In all lines of work we have had a healthy growth. In Education, in Research, in Extension, we have made progress. The new secondary institutions placed under our direction have been organized. Fort Lewis has been opened to students and is rendering good service to the southwestern part of the State. We are also able to give a good account of our stewardship of the property of the Grand Junction School of Agriculture, although on account of the condition of the lands it has not seemed advisable to open this school for students.

Our plan of organization has had a heavy test. It has proven itself of value in meeting the needs of the increase in enrollment, the growing demand for special investigations and the insistent call for more extension service.

We have had very difficult financial problems to solve. The work of administration has been very much complicated by the slow and only partial payment of the special appropriations. Some pressing needs for special investigations we could not meet, but on the whole I believe the State Board of Agriculture can go before the Nineteenth General Assembly and give a satisfactory account of its stewardship.

No changes have been made in our general plan of organizing the work in the four divisions of Agriculture, Mechanic Arts, General Science, and Home Economics and in Veterinary Medicine in the college courses, and of having all the students of a division take the same work in the Freshman and Sophomore years, and beginning specialization in the Junior year with one-fourth of the work elective in this year and one-half elective in the Senior year. Only minor changes have been made in the courses of study. Our engineering courses have been gradually organized to train young men for leadership in engineering in Colorado and the West, leadership especially in work pertaining to the development of our natural resources and of our agriculture.

We recognize that a great field for power development is on the farm and that agricultural production per individual can

be greatly increased by the use of mechanical power. In our work in training mechanical engineers we are seeking to develop this field. Our electrical engineers recognize the need of the development of our water power and the use of this energy in doing the work of the farms on the plains. By the use of the soil as a reservoir for the storage of water, and by pumping, the area under irigation with our normal water supply can be enormously increased. Electricity is going to play an increasing part in agricultural production. It brings the farmers many comforts, and its more extensive use is necessary in the agricultural development of the State. Our work in highway engineering has been extended. We are doing more in irrigation and drainage.

We have made provision for those who wish to train themselves for teachers of Agriculture, Mechanic Arts and Household Arts and of the sciences closely related thereto. The technical courses of the College are supplemented by work in Psychology, History of Education, Theory and Practice of Teaching. Provision is also made for practice teaching in the School of Agriculture under competent supervision. We have made special provision for students who have taken their professional training in the State Teachers' College and in the College of Education at the University of Colorado, who desire the technical training necessary to fit themselves for teachers of Agriculture, Mechanic Arts and Household Arts, and we are working out plans whereby we can be of more assistance to rural teachers.

The department of rural and industrial education which your Executive Committee recommended favorably has been partially organized with Mr. C. G. Sargent as Rural School Visitor. At present the Department is confining itself almost entirely to extension work. With the growing need of teachers, its work should soon be extended to cover class instruction and research.

GRADUATE WORK.

We have materially strengthened our provisions for graduate work. At present we can accommodate only a limited number of students. The major line of work is so planned that it articulates with investigations being caried on by the Experiment Station, where the student works as an assistant on a fellowship basis.

SCHOOL OF AGRICULTURE.

In the School of Agriculture a course in Mechanic Arts is offered that is proving very satisfactory. Some minor changes have been made in the course in Agriculture for better correlation. At Fort Lewis the school term has been reduced to six months, and the same course of study adopted that we use in the Colorado School of Agriculture at the College.

ENROLLMENT.

Registration for the College began September 3d; for the School of Agriculture, October 8th; for Fort Lewis, October 21st. The enrollment shows a gratifying increase over that of last year. In the College the increase is 16.1 per cent., in the School of Agriculture 5.1 per cent., in the Fort Lewis School 20 per cent. The enrollment in the Conservatory shows an increase of 8 per cent.; we now have a total attendance here at the College of 823, a growth for the two-year period of 56.6 per cent. in the college classes and 29.1 per cent. in the school of agriculture classes. The following table shows our enrollment to date, also how many counties and accredited high schools are not represented in the College enrollment, how many counties are not represented in the School of Agriculture enrollment, and what percentage of students of last year's classes returned to the College and to the School of Agriculture:

	Men	Women	Total
College Students	365	114	379
School of Agriculture	257	92	349
Conservatory of Music	22	75	97
Returned to College this Fall—			
Freshmen	61	23	84
Sophomores	33	13	46
Juniors	29	9	38
	123	51	174
College graduates last year	36	13	49
Returned to School of Agriculture—			
Nonresident college students			45
Nonresident school of agriculture students	23	7	30
Number of accredited high schools not represented			26
Number of counties not represented			21
Number of counties not represented in School of Agriculture			18

CHANGES IN THE FACULTY.

There have been few changes in the Faculty for this school year. We have found it necessary to add to the number of instructors. Fortunately for us some of our men preferred to stay here even though they were offered higher salaries by other institutions. Dr. B. F. Kaupp, our Pathologist, accepted a posi-

tion with the Abbott laboratory, in Chicago, and Dr. Newsom was promoted to take his position and Dr. A. W. Whitehouse appointed to take the work of Dr. Newsom. Miss Grace Smiley came to us from an instructorship in Kansas Agricultural College to take the work of Miss Robinson. Mr. J. B. Frisbee was appointed to take the work of Mr. Rosencrants. Mr. L. D. Crain, formerly associate professor of Mechanical Engineering, and later professor of Electrical Engineering at this Institution, was appointed to take the work of Mr. Fred Langridge, who is now in charge of the work of manual training in the Colorado Springs schools.

REPAIRS AND IMPROVEMENTS.

The janitors were organized into a repair squad under Head Janitor Kelly immediately after school closed in June, and under the general direction of Building Superintendent, J. W. Lawrence, did nearly all the repair work about the Institution. Class rooms were painted, desks and chairs varnished and floors and roofs repaired and painted. Our farm men, under the direction of Superintendent O'Brien, have put in new curbing on the north side of the campus on Laurel Street and on the east side on College Avenue as far south as Plum Street. Several hundred feet of new cement walks have been put in and the sidewalk extended west on Laurel Street to the Veterinary group of buildings. All the excavating and about a third of the concrete work for the new Hydraulic Laboratory was also done by the farm men. While work on the new Athletic Field was not completed, enough was done so that the field could be used for the football season this fall. With our own men we constructed a new dressing room 30 x 60 feet. This was tried out as an experiment and has proven very successful. The dressing room is a model for ventilation and sanitation, and for general convenience of arrangement. A new steel grandstand is on the field ready for erection. The tennis court has been improved and work has been started on the woman's athletic park. The adverse weather conditions made it impossible to complete this before the winter's freeze set in.

The new Hydraulic Laboratory being erected under a co-operative agreement between the College, Experiment Station and the Office of Experiment Stations, U. S. Department of Agriculture, is rapidly nearing completion. Nothing that has been built since the completion of the new Civil and Irrigation Engineering building will do as much for the advancement of irrigation in this State as this new laboratory. It will give us excellent opportunities for carying on experiments in the measurement of water and the flow through orifices and conduits and for pump testing.

Plans for an outdoor gymnasium are taking form slowly but

we can report progress. We can report progress also in the plans for utilizing in a far more general way our new athletic field and the woman's athletic park. The committee has been at work for some time and while we expect it will take years to carry this work to satisfactory organization, the progress made so far is reassuring.

DIRECTOR'S REPORT.

The report of the Director of the Experiment Station, made a part of this report, will show you what the Station is doing. We have reason to feel well satisfied with the Station activities during the last two years, even though a great deal of the work had to be discontinued on account of lack of funds. Looking forward two years ago and knowing the conditions that we have had to face, I do not see how we could have accomplished more with the special funds we had at our disposal.

In the projects under the Adams and the Hatch Funds we are doing first-class work. We are proud also of the record made by the Section of Veterinary Medicine in diagnosing and preparing a vaccine for the "Kansas horse disease" that made its appearance in the Arkansas Valley.

A very unfortunate situation confronts us in that we are unable to publish the results of the investigations made on State funds for the last two years. The Director has a large number of bulletins ready for publication, but no funds are available. This work will be of little use to the State until it can be made generally known through publications.

The work of the Station, also, is outgrowing in some sections the quarters we have. In the Chemical Section, the congestion is extreme, and is rapidly becoming so in the Bacteriological Section. In making our plans, increased room for these sections must be given first place.

EXTENSION.

Our extension work is well shown in the report of Superintendent Hinman, which is made a part of this report. Superintendent Hinman, more than any of us, has suffered from the uncertainty of funds. In spite of this condition, however, he has shown great progress in extending the work of the College and the Station. He is to be congratulated on the showing made in his report. I trust the Lever Bill now before Congress may be enacted into a law before the close of the present session, so that our extension activities may receive federal aid along the lines provided for research under the Hatch Act, and with the assistance the State can give us for this work, the extension service can be better organized and definite plans for work laid out.

FORT LEWIS SCHOOL OF AGRICULTURE.

As I look back over the work that has been accomplished at Fort Lewis it does not seem possible that only two years ago Governor Shafroth was considering what recommendation he should make to the Assembly regarding the acceptance of the terms made by the Indian Appropriation Act of March 3d, 1909, extended by Act of April 4th, 1910.

We succeeded in opening the Institution for students on the second day of October, 1911, and carried through eight months of school. The total enrollment was thirty-nine. A one week's Short Course was given for the farmers and housekeepers of the region in February with the assistance of Superintendent Hinman and Miss Ida Baldwin, of the College, and Mr. L. A. Morehouse, of the Bureau of Plant Industry. Sixty men and women were in attendance. During the summer the Teachers' Normal Institute for the district was held at Fort Lewis, with very gratifying results. You will be pleased to hear the resolution passed by the attending teachers:

"Fort Lewis, Colo., June 14th, 1912.

"Resolved, That the members of this Institute highly appreciate the entertainment given by the Faculty of the Fort Lewis Agricultural School and the valuable teaching of the conductor, teachers and county superintendents present, and that the members of the Institute consider Fort Lewis a most appropriate and pleasant place for the holding of Teachers' Institutes.

"Resolved further, That the teachers present consider it a duty to acquaint the people in the districts to which they scatter, with the nature and object of the work done in the Fort Lewis Agricultural School, and recommend the school to those pupils that are prepared for it and desire this line of education.

The uncertainty of the appropriation has made the work of administration extremely difficult, and were it not for the assistance given by citizens of Durango, it is doubtful whether the Board would have been able to open the school for students this fall. It was decided, however, late in the summer that the school should be carried through. The budget was made out, provisions for more repair work made and an active campaign for new students started. School opened October 21st, with a registration of 47, and the work is going very nicely. Along with the regular class work the Faculty has done a great deal of extension service and

the school as a whole is proving very helpful to the region. It is amply justifying its expense and the State can well afford to continue and increase its activities. We go before the Legislature with a feeling that the money spent at Fort Lewis has been well used and that we are justified in asking for an appropriation for the continuation of the work.

THE GRAND JUNCTION SCHOOL OF AGRICULTURE, MECHANIC AND HOUSEHOLD ARTS.

When the ground and buildings of the Grand Junction Indian School were formally turned over to the State of Colorado, July 1st, 1911, the State Board of Agriculture, by legislative action, became custodian of this new property. Five thousand dollars of the $10,000 appropriation have become available. This has been used to keep the buildings in repair and to provide for some field work and extension teaching, much needed in the region, and to make some extensive investigations of the subsoil conditions and study the possibilities of drainage.

Under present conditions it does not seem advisable to use the buildings for school purposes. Water is standing in some of the basements and unless this condition can be overcome, a school there can not be successfully established. Arrangements were made with our own Experiment Station to have a subsoil survey made under V. M. Cone in charge of irrigation and drainage investigations. This survey has been completed and the plans for the drainage of the tract worked out. Contract has been let for doing a part of this work as far as our present funds are available, and money should be provided by the Nineteenth General Assembly for continuing this work.

The area surrounding the school land is badly in need of drainage. If a plan can be worked out for the successful drainage of the school land, it will prove of the utmost benefit to that region.

Unfortunately for us Mr. Robert Herrick, principal and custodian of the School, received a much better offer from the Agricultural College at Ames, Iowa, and left us for his new position in August. Mr. H. B. Scammell, horticultural inspector for Mesa County, acted as custodian until the end of the fiscal period. We have enough funds from the sale of water and hay and other products to take care of the property until funds for the work are provided by the Legislature.

FINANCES.

At the beginning of the period this Institution was indebted for lands purchased prior to 1909, $63,473.50. The Eighteenth General Assembly appropriated for the payment of principal and

interest, $20,320.79, half of which has been received. We paid during the period $7,601.84 interest and have reduced the principal $2,515.56. We still owe on land $60,914.94.

At the beginning of the period we had an indebtedness on general maintenance incurred prior to 1909 of $32,679.21. The Eighteenth General Assembly made an appropriation of this amount for clearing away this indebtedness on maintenance, half of which has been received. We have been able through the most careful husbanding of our mill levy to accomplish a saving sufficient to pay the balance of this indebtedness; in other words during the biennium we have taken care of all the expenses of the Institution and have effected a saving suficient to wipe out an indebtedness of $16,339.60. The fact that the appropriation bill was not passed until May 1911, and did not receive the Governor's signature until June, and that the first twenty-five per cent. of the appropriation was not paid until the following February, and the second twenty-five per cent. until this last September, less than two months before the close of the fiscal period, made the administration of the special appropriation funds exceedingly difficult.

The special appropriation for Farmers' Institutes is overdrawn; we spent the full appropriation and received only half and have an overdraft of $5,000. We also show an overdraft in General Farming Investigations, in Fruit Investigations and in Potato Investigations. The call for potato investigations was especially urgent and the need so great that it was deemed wise to continue this work even though we had to provide funds from the hard pressed educational resources. We also show an overdraft in Horse Breeding Investigations, but you will note from the Secretary's statement that the special fund of the Station is sufficiently large to take care of these overdrafts.

It would not have been possible to do the work that we were able to do, either in extension or station activities, had it not been possible to arrange for co-operative work with the U. S. Department of Agriculture. A co-operative arangement with the Bureau of Animal Industry has brought about very extensive extension work in dairying; the work in Irrigation Investigations was doubled through the co-operative arrangement with the Irrigation Investigations of the Ofice of Experiment Stations. Through co-operative arrangements with the Forestry Service we were able to build a timber preserving plant for experimental work in the use of native wood, especially the softer woods, like cottonwood and aspen for fence posts and other farm uses. The contract with the Bureau of Animal Industry for the continuation of the Horse Breeding Investigations has been renewed. A contract has been entered into with the Bureau of Plant Industry for carrying on

Farm Management Investigations and Farm Demonstration. Mr. D. W. Frear has been appointed State Leader and work has been started in Logan County, in five counties in the San Luis Valley and in El Paso County.

In all these lines of investigation the Government has or is putting in dollar for dollar; in this way we were able to double, in fact more than double, the returns from the appropriations made by the General Assembly.

Your Executive Committee and myself take some pride in the financial statement we are able to present through Secretary Taylor. We feel that we have been able to increase the purchasing power of every dollar expended; that we have kept down expenses to the point where a further decrease would have seriously crippled the work of the Institution; we have done that in order to free ourselves from the burden of indebtedness on maintenance. We feel that we have a right to look to the Nineteenth General Assembly for assistance in paying off our land indemtedness.

LEGISLATION AND NEEDS.

In education, in station and in extension work our needs have grown during the period. The Eighteenth General Assembly gave $30,000 for a Central Heating Plant. This was reduced by Governor Shafroth to $20,000, $10,000 of which has been received. Plans for this plant have been fully worked out and the boilers purchased. More than this could not be done. On account of the distance between our buildings, and the advisability of building right when we do build, $60,000 will be needed in order to install this plant. This is perhaps our greatest need, because it will give us more room in the Chemical Building where the congestion is great. This will reduce our fuel bills and reduce our firemen's salary list.

A new Library is a necessity; the present building is crowded with books, leaving no reading-room space. Fifty thousand dollars certainly is needed for this. A new Soils Laboratory is badly needed; we cannot continue our work in this important branch unless we have more space. Such a structure could be erected for $10,000. We must have more room for the Chemical Section of the Station. This is imperative. Fifteen thousand dollars will put up a building of sufficient size.

The call for special investigations is constantly growing stronger. The State should make provisions for doing this work, not only for this next biennium, but for the future, either through a time limited mill levy or through a continuous appropriation. These funds should be looked upon as the payment of insurance by the State to guard against loss through plant diseases and insect devastations and through wrong methods in cultivation. Every

dollar invested will bring ample returns. The State should put at least $40,000 a year into these special investigations and publications. All lines of industry will be stimulated, it will increase the valuation of property, increase production, and help to increase the population.

Conditions of the State call for very extensive additions to our extension service. Not only should the farmers' institute work be continued and extended, but provision should be made for more extensive service for the rural schools. We should take up studies in marketing, at present the loss between the consumer and the producer is too great and these conditions in Colorado should be made the object of special study. We cannot do the work on less than $13,000 a year.

As an Institution we are interested in the teaching of agriculture in rural schools and in secondary schools. We believe the Nineteenth General Assembly should pass a bill making the teaching of agriculture in the country schools compulsory after a certain time, this time to be given for teachers to prepare themselves in the new subject. I believe agricultural instruction in the high schools should also be required. There should also be a new law providing for gathering agricultural statistics. The law we have now has not been enforced for years. There is absolutely no way of getting at the agricultural production of the State. Such information is of vital importance. There should be also legislation permitting the county commissioners to employ a county agriculturist. At present we have legislation that permits them to employ a horticultural inspector and a pest inspector. In many counties the work of the horticultural inspector, pest inspector and county agriculturist could be combined. By having a man in each county studying the conditions that hold there, putting the farmers in touch with the latest information, assisting them in their problems through personal advice, would work wonders in the general rural conditions. Practically every agricultural county in the State needs this work. The possibility of arranging co-operative work with the College and the Bureau of Plant Industry will work wonders and the returns will prove it one of the best investments possible.

APPRECIATION.

The work of the last two years could not have been done without your cordial co-operation with our executive men, Faculty, station staff and extension workers. These have shown keen interest in the work and in the needs of the State and have given their time and service unselfishly. We have all worked hard, we have worked together, we have enjoyed meeting the problems as

they came to us from day to day, and every one of us takes pride in the results we as a group have been able to achieve.

Respectfully submitted,

CHAS. A. LORY,
President.

December 11, 1912.

REPORT OF THE DIRECTOR.

To the President:

I am presenting herewith the annual report of the Experiment Station for the State fiscal year just closing. I am also appending the financial statement to the Governor and brief reports from those who have been in charge of the various lines of investigation and research.

I am very glad to report that there have been very few important changes in the Experiment Station staff during the year.

Very few new projects have been taken up; some of the old ones have been completed, and for the greater part work will continue on the projects that were in force the past year. The lines of research that were carried upon the government (Hatch and Adams) funds have progressed very satisfactorily, but the investigations upon State appropriations have been seriously handicapped because of inadequate and uncertain funds with which to support the work. From the date upon which the appropriations were made by the General Assembly, the State Treasurer was in serious doubt as to whether or not he would be able to pay any, or more than a very small portion, of the appropriations. These appropriations were made for the biennial period of 1911-1912, but there have been only eleven months since the first allowance of 25 per cent. was received. Consequently we were without any money from these appropriations for the first thirteen months of the biennium, and have received only 50 per cent. to date. We could have used this money to much better advantage if we had known at the beginning of the period just what funds would be at our command and when they would be available.

It is extremely important the Station should have its investigational work supported by some form of continuing appropriation that shall extend over a period of several years. In the first place, such an appropriation would bridge the hiatus that now exists from November 30th, closing one biennial period, to the time when money is again available, which is seldom, if ever, less than six months, and sometimes a full year or more. In the second place, it would permit our investigators to plan their projects along

important lines of investigation with an assurance that the work could be continued for a period of years if necessary in order to reach results. Furthermore, if we are to avail ourselves of opportunities to co-operate with the various bureaus of the Department of Agriculture of the General Government, thereby doubling our funds for experimental work, we must be able to promise the continuance of our co-operation for a period of years. It is seldom that the Government would care to undertake such work in co-operation with the Station unless they can have a reasonable assurance for its continuance for at least five years.

A mill levy for a period of four to six or more years would be ideal for the support of this work, if it could be secured, and there would be plenty of money to take care of such a levy if a reasonable assessment of the property of the State could be secured for the purpose of taxation.

The vast extent of our territory, the great variation in soil, climate and altitude in this State, our comparatively new and untried conditions under which our agriculture is carried on, and the fact that farming population is almost entirely from sections where irrigation practices are unknown, make it especially important that the work of the Experiment Station should be strongly supported. Money put into agricultural experiment station and extension work in Colorado should not be considered a tax, but a good business investment that will bring big financial returns to all classes, whether taxpayers or not.

Station Revenues.—During the last biennial period the Station has received the full Hatch and Adams appropriations from the General Government, as follows:

	1911.	1912.	Total.
Hatch	$15,000.00	$15,000.00	$30,000.00
Adams	15,000.00	15,000.00	30,000.00
			$60,000.00

This money comes regularly and can always be depended upon, and consequently we are able to get maximum results from its expenditure. The sections sharing in these funds, during the past year, were: Chemical, Bacteriological, Irrigation Engineering, Entomological, Agronomy, Horticultural and Veterinary Science. The first four mentioned are the only sections receiving money from the Adams fund. As the Adams fund cannot be used for anything but technical research, and excluding all general office expenses and the expense of publishing bulletins and reports, and as the Station has had almost no money from other funds for these purposes, it has been necessary to bear these expenses very largely

from the Hatch Fund, which has left but a remnant of this fund for real experimental work.

Because of receiving only fifty per cent of our State appropriations, we have been compelled, in nearly all cases, to spend the full amount received, or more, in the prosecution of our investigations, which has left nothing for the expense of publishing information and popular bulletins and circulars. As a result only one such bulletin—"Some Poultry Diseases," by Dr. B. F. Kaupp; one press bulletin—"Flax Growing," by Professor Keyser, and two information circulars—"Preparation of New Land for Crops," and "Flax Growing," both by Professor Keyser, have been published by the Station during the biennial period. There are several bulletin manuscripts in my hands, and many others have been offered that can soon be prepared, whenever funds for publication are available.

I believe it is the duty of the Station to get the results of its experimental work carried on from State appropriations of two years ago, into the hands of the farmers of the State at as early a date as possible. I see no way by which this can be accomplished, however, unless the College can come to the support of the Station in the matter of providing funds for publication.

In my annual report for one year ago I announced the expenditure of $20,873.25 upon projects for which State appropriations had been made but for which no money had been received, the expenses of the work having been supported temporarily from other funds. During the year just closing we have expended a further sum of $17,198.72, or $15,571.97 more than has been received during the biennial period for the work.

The Chemical Section is supported in its investigations entirely from the Adams Fund. The investigations of the year have been rather closely confined to a study of the effects of excessive nitrates in the soil upon the development of the sugar beet. This investigation is concluded, at least for the present, and the most interesting and pertinent results reached are published in Bulletin 183, by Dr. Headden. This bulletin indicates the methods of cropping and cultivation that should be practiced to avoid the excessive and harmful accumulation of nitrogen in the soil. To impress the importance of these methods upon the farmers, it seems important that a demonstration farm or field should be used for a period of eight or ten years. Dr. Headden offered to go to the Arkansas Valley and undertake this work if I should urge it, but as it would practically require him to leave his home and family and his laboratory for the greatert part of the time during the next eight or ten years, I decided that the demonstration of the remedy should be left for others, and that he should take up another problem,

which he suggested and which seems to me to be of as much importance, and one that can be carried on at or near the Experiment Station.

This new project, which will probably occupy almost the entire attention of this Section for the next two or three years, is a study of the causes leading to the transformation of the hard into soft wheats when grown under our conditions. This project has been approved and work has already been started upon it.

There is an endless amount of investigational work that the Chemical Section should do, if the Station had funds and men enough to do it. Our soils and ground waters are very unlike those of the older sections of the country and conclusions drawn from chemical analyses of soils and waters and agricultural crops in the eastern portion of the United States, are likely to be very erroneous when applied to Colorado conditions. The chemical work cannot be further extended, however, without larger laboratories and increased equipment and funds. The Section is seriously in need of a separate building for its research work, every foot of the present building being needed for educational purposes.

The Bacteriological Section is also supported in its work entirely from the Adams Fund. The work in this Section has been rather closely co-ordinated with that of the preceding Section.

The principal line of investigation has been devoted to a study of the effects of soil bacteria upon fertility. Professor Sackett, in speaking of his work, states: "The investigation has included a study of over thirty soils, the majority of which were affected with niter. The results point clearly to the unusual ability of most of these soils to convert organic nitrogen into ammonia, a form of nitrogen which is readily changed to the nitrate by nitrifying bacteria. In addition to the points of scientific interest which have been brought out, the work has an immensely practical bearing on the use of nitrogenous fertilizers on Colorado soils. * * * Cottonseed meal applied to our soils is three times as efficient as it would be if used on certain Iowa lands, for example." The investigations also show that certain fertilizing materials which are very valuable when applied to soils in the eastern portions of the country are of very little value when applied to the alkali soils in Colorado.

Professor Robbins has also done some important scientific work in co-ordination with the work of this Section, determining the microscopic forms of vegetable life living in the soils and the bearing which these living forms have upon the development of the nitrogen forming bacteria.

The Bacteriological Section has also done considerable work in co-operation with Mr. Fitch's potato investigations. In this

work Professor Sackett seems to have proven that the trouble known as "leaf roll" of the potato top, is quite distinct from the Fusarium disease, although it often accompanies this fungus infection. Upon this subject Professor Sackett says: "I doubt if it (Fusarium) plays an important part in our potato failures of the past two years. Invariably, when the leaf roll is accompanied by Fusarium in the vascular system, the mortality of the vines is very high, while, when the leaf roll occurs by itself, the destruction is slight."

Professor Sackett has also prepared and sent out to those requesting it, pure vinegar cultures, which may be used by any one who can follow simple directions, to convert apple cider into strong vinegar within a few weeks.

Irrigation Section.—There are two divisions of the work in this Section; one carried on wholly by Prof. E. B. House, and supported entirely from State funds; and one carried on by Mr. V. M. Cone, who is in charge of all of the co-operative work supported by funds from the Office of Irrigation Investigations and the Experiment Station. This work is, for the most part, of a true research type, and is consequently supported from the Station side principally by the Hatch and Adams funds, although the State appropriation has contributed somewhat to the work.

We are especially fortunate in being able to co-operate with the Office of Irrigation Investigations in the building of the hydraulic laboratory, where practically every problem connectd with the flow of water can be investigated. I wish to express to the members of the State Board of Agriculture, my gratitude for their hearty support and for the funds they have contributed that have enabled us to build the laboratory, which is now nearly completed. Mr. Cone, with the assistance of Mr. Robert E. Trimble and Mr. Paul S. Jones, devotes his entire time to irrigation investigations which are sanctioned by the Office of Experiment Stations, in Washington.

Mr. Cone and Professor Keyser have together undertaken co-operative work with the Costilla Estates Development Company for the purpose of determining, so far as possible, the duty of water in the San Luis Valley, and also the crops best suited for that valley. A large amount of preparatory work has been done in this investigation during the present season, and the real investigational work will be taken up next spring, and will probably require two or three years for its completion.

Mr. Cone also has in charge the investigation of the possibility of drainage for the land connected with the former Teller Indian School, at Grand Junction, and has done sufficient work upon this project to satisfy himself that the drainage of this tract of land

is entirely feasible. I will refer you here to complete plans which Mr. Cone has presented with blue prints attached, for the carrying out of this drainage work.

Bulletin 182, on "Colorado Climatology," was prepared from this Section by Mr. R. E. Trimble, and distributed during the past year. Part 2, Bulletin 180, by Professor Carpenter, on "Seepage and Return Waters," has been sent out from the Station, and Part 3 of this bulletin is nearly ready for distribution. Part 1 of this bulletin, giving general conclusions in regard to this work, is expected will to be ready to issue in the near future.

Agronomy Section.—The work in this Section has been rather seriously handicapped because of the fact that only fifty per cent of the State funds was received, and the work is quite largely supported by State appropriations. The alfalfa investigations carried on at Rocky Ford, have made good progress this year, and are entirely supported by Hatch money. Professor Keyser also has a very important project entitled, "Correlation Work with Grains and Grasses," also supported on the Hatch Fund. A large amount of very valuable data has been gathered during the year.

The dry farming investigations closed the first of last April on account of the funds for the support of this work being entirely exhausted. Mr. J. W. Adams, who was living on the Cheyenne Wells Dry Farming Station, has carried on a series of observations upon his dry farming work for the year, which he has sent to my office. Mr. Adams remained upon the Station farm and carried on the experiments of the year on condition that we would spend $175 for needed improvements upon the place. There is plenty of data on hand for the preparation of several bulletins from this Section as soon as there is money available for printing.

Horticultural Section.—The Horticultural Section has been almost entirely without funds for experimental work during the past year. We have been compelled to remove our field men from the Western Slope for this reason, and we shall not be able to take up the work over there again until there are funds for carrying on the work. Professor Bennett reports sufficient data upon three of his projects for the preparation of bulletins; one of these is upon the Cherry Industry, and another upon Onion Growing, both of which he is quite anxious to publish as soon as funds are available. There is a large amount of very important investigational work that should be carried on in this Section with our orchard fruits, small fruits and vegetables. It is very much to be hoped that better appropriations can be secured for the support of this work during the next biennial period.

Entomological Section.—The principal line of work in this Section throughout the year has been that of plant louse studies.

This work is supported by the Hatch and Adams funds, and devoted almost entirely to a study of life habits and host plants, and the parasitic and pernicious insects that take part in the control of the plant lice.

Considerable attention has also been given to the habits and remedies for the bean beetle, which has been so destructive to the bean crop along the western slope of the foothills in Colorado and New Mexico each year. The tomato psyllid, which has been very destructive to the tomato plants during the last two or three years in Colorado, has also received considerable attention, and remedies have been developed for its control.

Early last spring this Section, in connection with the office of State Entomologist, undertook an investigation of the leaf roller injuries in the orchards of the Arkansas Valley, especially in the vicinity of Canon City and Pueblo. We have been successful in finding very efficient remedies for the control of this pest. The results of this investigation were published in Circular 5 of the Office of the State Entomologist. The field work in this investigation this year has been in charge of Mr. George P. Weldon.

Besides the circular just mentioned, the Office of the State Entomologist has issued, during the past year, Circular 3, "Loss from Foul Brood and Poor Managament," by Mr. Wesley Foster; Circular 4, "Suggestions for the Control of Prairie Dogs and Ground Squirrels," by Mr. W. L. Burnett; Circular 6, "Report on Rodent Investigations for 1912," by Mr. W. L. Burnett, and the report of the State Entomologist for 1911.

Animal Husbandry.—Two projects, "Ration Experiments with Swine," and "Beef Production," were completed early in the year by this Section, and there has since been no money to take up further work. Professor Morton is adverse to starting any further experiments until there is more money available to carry on the work to a satisfactory conclusion. There is a great deal of demand from the stockmen of the State for information along stock feeding lines, and we hope that money may be provided to carry on this investigational work during the coming biennial period. On account of the necessity of buying animals to feed at rather high prices, experiments in this Section are necessarily rather expensive.

The Poultryman, who has carried on his work in connection with the Section of Animal Husbandry, has taken care of the poultry plant throughout the year, but has not undertaken any expermental work owing to the fact that the funds for the support of this work did not permit of anything more than maintaining the plant.

Veterinary Section.—Only $1,250 has been available for investigational work in this Section during the biennial period just

closing. To this sum the counties of Bent, Prowers, Otero and Pueblo contributed $1,500 in order to have an investigation of the Kansas horse plague, which broke out in the Arkansas Valley early in the fall. A small amount of money was also allowed from the Hatch Fund. Apparently Dr. Kaupp was able to discover the cause and prepare a vaccine for the protection of animals, as well as a serum for the cure of the disease. On account of our not being able to undertake this work until near the close of the outbreak, Dr. Kaupp was unable to try out his vaccine and serum on as large a number of animals as he desired. The results obtained, however, seem to warrant the conclusion that both the vaccine and serum were efficient in controlling the malady.

Bulletin 185, on "Some Poultry Diseases," written by Dr. B. F. Kaupp, was published and distributed during the past year. This Section has also prepared bulletin manuscripts upon the following subjects: "Equine Infectious Anemia," "Equine Cerebro-spinal Meningitis," "Necrotic Stomititis," and "Sugar Beet Poisoning," all of which are in my hands awaiting publication.

Horse Investigation.—The work in this Section, for the purpose of developing a standard breed of American carriage horse, has progressed very satisfactorily during the past year. There are at the present time, over eighty animals in the stud, all of which are doing well. A small number, which do not come up to the standard, are culled out each year. The appropriation which has been made by the State for the support of this work during the past six years, has not been sufficient to bear our half of the expenses. We should have an appropriation of not less than $3,000 or $3,500 a year in order to meet our half of the expenses for carrying on the work of the horse breeding section.

Potato Investigation.—This work has been entirely in charge of Mr. C. L. Fitch during the past biennial period. Mr. Fitch, at the present time, is at the University of Wisconsin taking special work preparatory to continuing his studies of the potato diseases in this State, which we hope we shall be able to take up again next spring. Potato growing has been one of the most important agricultural industries in this State. Over a large section of our potato growing area, the potato crop has been greatly reduced during the past few years, by some unknown disease which has gone under the names of potato blight, leaf curl, and Fusarium. Up to the present time it is uncertain whether or not the trouble is due primarily to some disease organism, or whether it may be due to peculiar climatic or soil conditions in the arid section. If it is due to a disease organism, it is not certain what that organism is, although it has been thoroughly demonstrated that at least two plant diseases—Fusarium and Rhizoctonia—have been more or less prevalent in

their attacks on the potato plant. We have arranged for co-operative work in the investigation of potato troubles, with the Bureau of Plant Industry of the Department of Agriculture at Washington. The Bureau is offering to co-operate with us upon very liberal terms, but it will be necessary for us to give them a reasonable assurance that we shall be able to continue our part of the expense entailed by this investigation for a period of at least five years. For the support of this work the Station should have at the very least $5,000 a year, and it is doubtful if this amount would be sufficient to properly carry on the work.

Publications.—The following publications were issued by the Experiment Station during the past year:

150—On The Measurement and Division of Water, by L. G. Carpenter.

182—Colorado Climatology, by Robert E. Trimble.

183—Deterioration in the Quality of Sugar Beets Due to Nitrates Formed in the Soil, by Wm. P. Headden.

184—(I) The Ammonifying Efficiency of Certain Colorado Soils, by W. G. Sackett.

(II) Algae in Some Colorado Soils, by W. W. Robbins.

185—Some Poultry Diseases, by B. F. Kaupp.

Press Bulletin—55—Flax Growing, by Alvin Keyser.

Station Needs.—In order to carry on the work of investigation during the next biennial period, the Station needs at the very least, the following appropriations:

Horse Breeding Experiment	$ 6,000.00
Fruit Investigations	10,000.00
Potato Investigations	10,000.00
Plant Investigations	10,000.00
Dry Farming Investigations	5,000.00
Irrigation and Drainage Investigations	10,000.00
Animal Husbandry (including Veterinary Science)	20,000.00
Poultry Investigations	5,000.00

In addition to this amount, our Station should have at least one new building for the Chemical Section and Bacteriological work, to cost not less than $20,000.

Respectfully submitted,

C. P. GILLETTE,
Director.

ANNUAL REPORT OF EXTENSION WORK OF THE COLORADO AGRICULTURAL COLLEGE.

To the President:

SIR: The following is the tabulation of such meetings as have been held under the direction of the Extension Department of the Colorado Agricultural College for the year ending December 1, 1912:

Farmers' Intstitute meetings, 113; sessions, 246. Total attendance, 28,231.

Special trains, 2; total stops, 65. Total attendance, 7,411.

Movable schools, 5; sessions, 41. Total attendance, 680.

Farmers' Short Courses, 2. Total attendance, 97.

Housekeepers' Short Courses, 2. Total attendance, 56.

Colorado Farmers' Congress, 1. Delegates, 44.

Normal Institutes, 14; sessions, 85. Total attendance, 5,535.

Fairs, 4. Total paid attendance, 43,836.

Total attendance for year ending December 1, 1912, 85,890.

Total attendance for year ending December 1, 1911, 63,057.

Total attendance for year ending November 1, 1910, 32,839.

Aside from the above lines of work, there have been conducted Boys' and Girls' Agricultural Clubs, Demonstration Farms and miscellaneous special lines of work and the issuance of publications.

Farmers' Institutes.—The total number of Farmers' Institutes held has been 112, with a total of 242 sessions and an aggergate attendance at all sessions of 27,031. It is gratifying to note that this attendance is about 25 per cent greater than has ever been reached by the College before. This fact indicates the success of the plan of requiring local management and responsibility in farmers' institute work. In order that these local organizations may be formed as rapidly and extensively as possible, a state law requiring county support of farmers' institutes is urgently needed. Your Superintendent recommended that an effort be made to secure the passage of such a law at the coming session of the legislature, and has placed in your hands the text of a bill based upon the farmers' institute law now in successful operation in the State of Kansas.

Train Institutes.—A Dry Farming Special Institute train has been operated on the lines of the Burlington and Union Pacific railroads under the direction of the College, and assistance has been given in the operation of a similar train on the Rock Island lines. The topics presented have been Supplementary Irrigation, Poultry Raising, Dairying and Silo Construction. The lectures presented were published and distributed in printed form.

Movable Schools.—A movable school in Fruit Growing was conducted at five points in Mesa County, classes being in charge of Mr. R. S. Herrick, the arrangements being made by the Mesa County Y. M. C. A. Forty-one sessions were held with an average attendance of 16.6. Total attendance, 680.

I attach to this report a circular showing the topics presented at these schools It is the opinion of this department that his line of extension work is most important, and it is hoped that funds will permit extensive work of this kind in the near future both in Agriculture and in Domestic Science.

Farmers' Short Courses.—Two Farmers' Short Courses have been held, lasting one week each. One at Fort Collins at the Agricultural College, and one at the Fort Lewis School. The number at the former course was disappointing, the paid registration being 57. At the Fort Lewis School there was an average enrollment of 42, with a maximum enrollment of 60. The attention was good and the discussion by members of the class was particularly active and interesting. In this course we were assisted by Mr. L. A. Moorhouse, of the U. S. Department of Agriculture, and Miss Ida Baldwin, senior student in Home Economics, who conducted the Housekeepers' Short Course.

Housekeepers' Short Courses.—Housekeepers' Short Courses were conducted in connection with the above mentioned Farmers' Short Courses. The total paid enrollment for the two courses was 56.

Colorado Farmers' Congress.—The annual session of the Colorado Farmers' Congress was held January 12th and 13th. There were present 44 accredited delegates, while at the preceding session there were over 90. This falling off was not due, we think, to lack of interest, but rather to the fact that the Good Roads convention occurred at the same time and that this week immediately preceded the Stock Show, for which many people were making final preparation, and found it impossible to be away. There was, moreover, an aggregate of about 650 students in the College and School at that time whose absence from home makes difficult the attendance of their parents.

Normal Institutes.—In order to assist teachers to prepare for including some agricultural and domestic science subjects in their instructional work, assistance was given in fourteen normal institutes. These institutes covered a period of 17 weeks with an average of five lectures or demonstrations each week, making a total of 85 sessions. The attendance and interest was fully equal to that of the preceding year, when there was a total attendance of 5,535.

In preceding years this work has been offered for expenses

only. During the past season it was thought better to equalize the expense by making a flat charge of $25 per week. This sum was found to be insufficient; about $35 per week will be necessary from all normal institutes in order to fully recover the expenses of lecturers.

This work was carried on by nine instructors, of whom four were from Agronomy, one from Horticulture, one from Animal Husbandry, and one from Zoology.

Rural School Visitor.—To supplement the vocational work initiated by teachers as a result of normal institute instruction, a Rural School Visitor has been employed for the next year who will devote his entire time to the successful working out of the problems confronting these teachers.

Fairs.—Exhibit: An educational exhibit was prepared and exhibited at four of the leading fairs of the State during the month of September. This exhibit attracted a great deal of attention. A direct result was the addition of nearly one thousand names to the Experiment Station mailing list through the keeping of a register of those desiring to receive the Experiment Station's bulletins who are not now on the mailing list. The total paid attendance at these four fairs aggregaed 43,836. Aside from these there were a considerable number of complimentary admissions which are not included in this summary.

Judges: Judges were furnished for live stock and farm and orchard products at nineteen fairs. These included practically every fair of any importance in the State, both county and local, as well as the State Fair, and afforded an excellent opportunity for the establishment of correct standards in different lines for the exhibitors and attendants.

Boys' and Girls' Clubs.—Boys' and Girls' Agricultural Clubs were conducted in Mesa and Routt counties during the past crop season. In Mesa County these clubs were organized and carried on by the County Y. M. C. A. with the assistance of the Agricultural College. There was a total enrollment of 54 in the boys' club growing potatoes. Of these, 36 exhibited at the Mesa County Fair—an unusually high percentage. A considerable number of girls in the same county were interested in a flower growing contest, the enrollment and details of which have not been reported to me. In Routt County the boys' work was carried on under the direction of the County Superintendent, the plans and score cards being furnished by this office which also furnished a judge for the exhibit.

A club has been formed in Douglas County for keeping records of production from dairy cows. This club was formed by Mr.

Paul V. Maris and is being conducted by the County Superintendent with the assistance of the Agricultural College.

Demonstration Farms.—A co-operative demonstration farm has been established at Julesburg. This farm is owned and operated by the Sedgwick County Fair Association under the direction of the Agricultural College. The farm consists of 320 acres purchased from the State under the condition that it be operated as a demonstration farm for ten years, and a contract has been entered into between the purchasers and this Institution for that period of time. One hundred and sixty acres have been broken and put in crop. Substantial buildings have been erected and the farm has been fenced. The progress made during this year may be regarded as satisfactory from our point of view, as I think it is to the owners.

Other co-operative demonstration work has been undertaken. It seems impossible to extend this important branch at present because of the inability to command the time of men competent to give it adequate supervision. If not properly supervised, this work is worse than useless. This feature of the work will be extended as rapidly as proper supervision can be assured.

Publications.—During the year, nineteen regular and four special editions of *New Notes* have been published from this office. The *News Notes* mailing list has been revised; this now includes about 700 publications.

Among the special numbers of *New Notes* has been the lectures presented on the Dry Farming Institute Special and an information bulletin upon Silage Feeding and Silo Building. The latter bulletin was prepared by Mr. Paul V. Maris while in the employ of this department.

County Farm Advisers.—A contract has been made between the Agricultural College and the Office of Farm Management of the U. S. Department of Agriculture for the establishment of a State leader who shall supervise County Farm Advisers in such of the counties of Colorado as make provision for the establishment of this office.

Two counties, Logan and El Paso, and one district, the San Luis Valley, have already established this work, and it is hoped that it may extend as rapidly as suitable men can be found and proper provision made for their maintenance in the various counties which could support such work.

Special Lines of Work.—Aside from the above general lines of extension work, there have been various miscellaneous activities difficult to classify. These have included assistance in silo construction, library extension and special work in various lines, the

most notable of which was that done in the Arkansas Valley relative to the Kansas horse disease.

It is to be hoped that the demand for special work will be greatly increased and that it may be found possible to carry on a large amount of it. In particular this department especially desires to render service in Home Improvement, giving the sort of supervision to the construction of pressure water systems, septic tanks, and the installation of modern heating and lighting devices that is now given in silo construction.

Silo Construction.—Over forty silos have been constructed the past season under the supervision of the Agricultural College and the U. S. Department of Agriculture. The greater number of these were supervised by Mr. W. A. Barr, special agent in Dairying in the U. S. Department of Agriculture. Assistance has been given in this work by various members of our own Animal Husbandry Department. This makes an aggregate of over 60 silos constructed in this manner during the past two years, nearly all of which are of concrete, and all of which have proved entirely satisfactory. This successful Colorado experience affords a basis for the rapid promotion of this most important farm improvement.

Library Extension.—Eighty-seven pamphlets upon some phase of agricultural education have been loaned to rural schools. About 125 pieces have been catalogued and bound in pamphlet binding for this purpose. The Librarian has visited the following public libraries in Colorado: Eaton, Fort Morgan, Loveland, Greeley, Longmont, Boulder, Denver and Pueblo. She has also visited the libraries of the State Teachers' College and the State University, speaking at the latter place to the library class. She has also visited public libraries at Marysville and Lancaster, Ohio, the Ohio State University, Buffalo Public Library, New York Public Library, libraries of Montreal and Ottawa, Canada, and the Canadian Parliamentary Library.

Relative to the "package libraries" the Librarian reports as follows: "There are in Colorado 900 postoffices and only 33 public libraries. Of these, 23 have less than 2,500 volumes, and I have reasons for believing that these libraries are largely fiction. Over 49 per cent of the students of the School of Agriculture come from homes that have no library accessible. If the package libraries are to be pushed, it must be through the personal work of the Rural School Visitor."

Expense.—Your attention is called to the fact that this work has been conducted upon a total net expenditure of $4,787.35.

Very truly yours,

C. H. HINMAN.

INVENTORY OF PROPERTY, 1912.

Agricultural College and Experiment Station:

College Farm, 320 acres	$128.000.00	
East Farm, 152 acres	76,000.00	
Pasture, 1,350 acres	21,000.00	
Cheyenne Wells, 160 acres (Substation)	4,000.00	
Rocky Ford, 40 acres (Substation)	10,000.00	
Total Lands		$ 239.000.00
Total Buildings	$375.900.00	
College Equipment	172,625.00	
Experiment Station Equipment	50,018.00	
Total		598.543.00

Fort Lewis School of Agriculture:

Landsn, 6,400 acres	$160,000.00	
Buildings	145,000.00	
Equipment	10,000.00	
Total		315.000.00

Grand Junction School of Agriculture:

Lands, 178 acres	$ 8,900.00	
Buildings	140,000.00	
Equipment	10,000.00	
Total		158.900.00
Grand Total		$1,311,443.00