
UNIVERSITY OF MISSOURI.

COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

Agricultural Experiment Station.

BULLETIN NO. 70.

**ANALYSES OF COMMERCIAL
FERTILIZERS**

BY

P. SCHWEITZER AND R. M. BIRD

COLUMBIA, MISSOURI.

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UNIVERSITY OF MISSOURI.

COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

Agricultural Experiment Station.

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The Bulletins and Reports of the Station will be mailed free to any citizen of Missouri upon request. A cordial invitation is extended to all persons to visit the Station grounds at any time. Address, Director, Agricultural Experiment Station, Columbia, Boone County, Missouri.

REPORT OF THE DIRECTOR.

The present bulletin, No. 70, contains the report of analyses of commercial fertilizers collected during the fall of 1905. It also contains a financial statement of the receipts and disbursements of the Fertilizer Control Fund for the year ended December 31, 1905. The law governing the sale of commercial fertilizers is published in Bulletin No. 63, of this Station, and will be sent free upon request. In general, the workings of this law have been very satisfactory to both the producer and the consumer. Under the rigid inspection now practiced by the Experiment Station, any efforts to defraud the public are quickly exposed. A large number of farmers have taken advantage of the opportunity to have fertilizers analyzed by the Experiment Station chemist. In general we have found these samples uniform with the guaranteed analyses submitted by the fertilizer companies.

H. J. WATERS, DIRECTOR.

138	Bradley Formula.....	Globe Fert. Co., Louisville, Ky.	C.A. Hausmann Sullivan	Sept. 21	1.03	0.82	11.93	11.00	0.46	....	12.39	....	3.21	3.00	138
139	Globe Grain Grower...	"	"	" 21	1.02	0.41 to 0.82	11.41	9.00 to 11.00	0.72	....	12.13	11.00 to 13.00	1.80	1.50 to 2.00	139
155	Globe Acid Phosphate.	"	"	" 21	....	..	15.08	14.00 to 16.00	0.66	....	15.74	....	....	....	155
104	Ground Bone.....	T. J. Jenkins, Springfield	Diffendoffer Bros. Springfield	" 19	3.65	..	11.21	....	10.86	....	22.07	....	....	....	104
127	Extra Fine Ground Bone Meal.....	Mathiason Mfg. Co. St. Louis	Springfield Seed Co., Springfield	" 14	3.25	2.05	9.72	....	12.92	....	22.64	22.00	..	....	127
113	"Incescent" Raw Bone Meal and Potash....	"	Fehring & Co., Wentworth	" 13	2.90	2.47	8.82	....	9.31	..	18.13	18.00	3.12	3.00	113
89	"Incescent" Grain Grower.. .. .	"	"	" 20	1.74	1.65	9.33	8.00	1.68	..	11.01	..	1.65	1.50	89
156	"Incescent" Acid Phosphate.....	"	W. E. Thomp- son, Laddonia	" 19	....	....	17.05	16.00	1.10	....	18.15	18.00	..	....	156
112	"Incescent" Acidula- ted Bone and Potash.	"	J. W. Saunders Merc. Co., Billings	" 14	2.52	2.47	12.41	9.00	2.93	2.00	15.34	....	1.09	2.00	112
144	Acidulated Bone and Potash.....	"	Hensley & Sail- or, Montgom- ery City	" 21	2.37	2.50 to 3.00	12.79	8.00 to 10.00	1.25	3.00 to 4.00	14.04	....	1.68	2.00 to 2.50	144
145	Dissolved Bone	"	"	" 21	2.55	3.00	11.12	9.00	0.77	..	11.89	....	3.63	4.00	145
146	"Incescent" Alkaline Bone.	"	Strehlmann & Co., Leslie	" 23	....	....	10.32	10.00	3.46	....	13.78	....	2.48	3.00	146
133	Pure Bone Meal.	"	C. P. Pritchett Frankford	" 26	3.60	2.75	14.74	....	6.70	..	21.44	23.00	....	....	133
161	Pure Bone Meal. ...	"	Hensley & Sail- or, Montgom- ery City	" 21	3.54	2.75 3.50	16.21	..	6.51	....	22.72	23.00	....	....	161
126	Pure Raw Bone Meal..	"	Frank Brown, Everton	" 15	3.51	to 4.50	8.01	....	14.74	....	22.75	23.00 to 27.00	....	....	126

PERCENTAGE COMPOSITION

Number	Brand and Name	Manufacturer	Collected From	Date	Nitrogen N		Phosphoric Acid P ₂ O ₅						Potash K ₂ O		Number
							Available		Insoluble		Total				
					Found	Gua't'd	Found	Gua't'd	Found	Gua't'd	Found	Gua't'd	Found	Gua't'd	
162	Raw Bone Meal.....	Mathiason Mfg Co.	George Morris,	Sept. 25	3.18	3.50	15.06	....	7.95	....	23.01	23.00	...	...	162
111	"Anchor" Tobacco	St. Louis. Mayer Fert & J Co.	W. L. Culbert-	Sept. 19	1.48	4.50	...	....	....	...	0.51	27.00	0.94	Insoluble	111
117	Dust	St. Louis. Mayer Fert & J Co.	son, Carthage.	Sept. 18	2.16	1.75	...	....	....	...	to 1.50	1.00	to 9.00	...	117
122	Corn and Wheat	St. Louis. Mayer Fert & J Co.	D. S. King,	Sept. 18	2.16	2.00	8.36	8.00	5.14	3.00	13.50	....	1.75	3.00	117
122	Grower.....	St. Louis. " "	Stockton.	Sept. 12	2.38	2.05	8.65	6.50	2.01	2.50	10.66	....	2.77	3.00	122
177	Corn and Wheat	" "	Milton & Storey	Sept. 12	2.38	2.50	8.65	6.50	2.01	2.50	10.66	....	2.77	3.00	122
177	Grower.....	" "	Carl Jc.	Sept. 12	2.38	2.50	8.65	6.50	2.01	2.50	10.66	....	2.77	3.00	122
177	"	" "	W. I. Marshall,	Sept. 20	1.99	2.05	11.19	8.00	1.09	3.00	12.28	....	1.57	3.00	177
178	"	" "	Birch Tree.	Sept. 20	1.99	2.05	11.19	8.00	1.09	3.00	12.28	....	1.57	3.00	177
178	"	" "	W. L. Culbert-	Sept. 12	1.80	2.50	8.88	6.50	1.38	2.50	10.26	....	2.82	3.00	178
181	"	" "	son, Carthage.	Sept. 12	1.80	2.50	8.88	6.50	1.38	2.50	10.26	....	2.82	3.00	178
181	"	" "	W. L. Culbert-	Dec. 30	2.09	2.05	11.03	8.00	3.44	3.00	14.47	....	3.93	3.00	181
182	"	" "	son, Carthage.	Dec. 30	2.09	2.05	11.03	8.00	3.44	3.00	14.47	....	3.93	3.00	181
182	"	" "	A.C.Stemmons,	Dec. 30	2.26	2.05	11.33	8.00	2.39	3.00	13.72	11.00	4.30	3.00	182
179	Bone and Potash.....	" "	Avilla.	Dec. 30	2.26	2.05	11.33	8.00	2.39	3.00	13.72	11.00	4.30	3.00	182
180	"	" "	C. S. Bailey,	Sept. 12	1.00	1.66	11.31	8.00	3.09	3.00	14.40	11.00	2.52	2.00	179
180	"	" "	Jasper.	Sept. 12	1.00	1.66	11.31	8.00	3.09	3.00	14.40	11.00	2.52	2.00	179
180	"	" "	W. L. Culbert-	Dec. 30	1.25	2.05	11.28	10.00	2.24	4.00	13.52	14.00	3.15	2.00	180
123	Bone and Potash.....	" "	son, Carthage.	Dec. 30	1.25	1.66	11.28	8.00	2.24	3.09	13.52	11.00	3.15	2.00	180
124	"Anchor" Bone and	" "	W. I. Marshall,	Dec. 20	1.55	2.00	6.53	10.00	4.83	4.00	11.36	14.00	2.50	2.50	123
124	Potash.....	" "	Birch Tree.	Dec. 20	1.55	1.00	6.53	8.00	4.83	2.00	11.36	10.00	2.50	2.50	123
88	Special Wheat Grower.	" "	A. Lucheinger,	Dec. 9	1.24	1.25	14.48	8.00	2.53	3.00	17.01	....	2.74	2.00	124
88	"	" "	Appleton City.	Dec. 9	1.24	1.25	14.48	8.00	2.53	3.00	17.01	....	2.74	2.00	124
157	Acid Phosphate.....	" "	W. I. Marshall,	Dec. 20	1.13	2.00	9.62	10.00	2.10	2.00	11.72	....	3.37	3.00	88
157	"	" "	Birch Tree.	Dec. 20	1.13	1.00	9.62	10.00	2.10	2.00	11.72	....	3.37	3.00	88
157	"	" "	Britt & Son,	Dec. 22	....	....	15.53	15.00	1.52	...	17.05	....	....	....	157
157	"	" "	Montg'ery City	Dec. 22	....	....	15.53	16.00	1.52	...	17.05	....	....	....	157

118	"Anchor" Complete Fertilizer.	Mayer Fert & Junk Co., St. Louis.	A. Lucheinger, Appleton City	Dec. 9	1.21	1.66 to2.00	9.41	10.00 to 11.00	3.65	4.00 to5.00	13.06	14.00 to 16.00	1.42	2.00 to2.50	118
165	Complete Fertilizer...	"	Wilson & Rogers, Jonesburg	Dec. 22	1.63	1.66 to2.00	12.14	10.00 to 11.00	3.55	4.00 to5.00	15.69	14.00 to 16.00	3.19	2.00 to2.50	165
183	"	"	W. L. Culbertson, Carthage	Dec. 30	1.70	1.66 to2.00	9.78	10.00 to 11.00	2.36	4.00 to5.00	12.14	14.00 to 16.00	2.77	2.00 to2.50	183
105	St. Louis Bone Meal...	"	Springfld Seed Co., Springfield	Sept. 14	1.47	3.30	7.90	6.00	7.00	12.00	14.90	....	....	...	105
164	St. Louis Bone Meal...	"	Britt & Son, Montg'y City	Sept. 22	2.04	3.30	11.51	6.00	5.28	12.00	16.79	...	....	....	164
175	"	"	C. S. Bailey, Jasper	Sept. 12	2.83	3.30	18.69	6.00	1.24	12.00	19.93	....	....	....	175
176	"	"	A. Lucheinger, Appleton City	Sept. 12	2.50	3.30	15.56	6.00	3.85	12.00	19.41	....	....	....	176
185	Raw Bone Meal.....	"	W. L. Culbertson, Carthage	Dec. 30	3.52	3.70	13.62	7.00	7.81	13.00	21.43	....	....	....	185
184	"	"	A. C. Stemmons, Avilla	Dec. 30	3.29	3.70	14.59	7.00	8.07	13.00	22.66	....	....	....	184
94	Raw Bone Meal.....	"	C S. Bailey, Jasper	Dec. 12	3.49	3.70	8.68	7.00	12.58	13.00	21.26	....	....	....	94
163	Raw Bone Meal.....	"	W. E. Kuhne, Wellsville	Dec. 23	3.54	3.70	12.83	7.00	8.65	13.00	21.48	....	....	....	163
95	Special Bone Meal....	Northwestern Fert. Co., Chicago.	E. B. Campbell, Auxvasse	Sept. 20	1.39	1.23 to2.05	13.85	....	16.56	....	30.41	25.00 to 30.00	....	....	95
106	Pure Ground Bone....	"	"	Sept. 20	2.51	2.46 to3.23	10.20	....	16.85	....	27.05	20.00 to 22.00	....	....	106
103	Bone and Potash.....	"	"	Sept. 20	0.20	....	9.02	10.00 to 12.00	2.87	....	11.89	12.00 to 13.00	2.15	2.00 to2.30	103
149	National Bone Dust....	"	W. W. Wells, Carso	Sept. 25	2.37	2.50 to2.87	8.85	8.00 to 10.00	2.90	2.00 to3.00	11.75	....	1.61	1.50 to2.00	149
168	National Bone Dust....	"	Britt & Son, Montg'y City	Sept. 22	2.34	2.50 to2.87	9.06	8.00 to 10.00	3.45	2.00 to3.00	12.51	....	1.67	1.50 to2.00	168
148	Missouri Complete Fertilizer	"	Belle Hd.w. Co, Belle	Sept. 22	1.15	0.82 to1.64	8.95	7.00 to 9.00	1.15	1.00 to2.00	10.10	8.00 to 10.00	0.88	1.00 to2.00	148
167	"Horseshoe" Missouri Complete Fertilizer.	"	C.A.Hausmann, Sullivan	Sept. 21	1.02	0.84 to1.64	12.66	7.00 to 9.00	2.37	1.00 to2.00	15.03	....	1.18	1.00 to2.00	167
160	"Horseshoe" Bone and Potash.....	"	Ed Weeks, Eldon	Sept. 23	....	....	11.25	10.00 to 12.00	2.16	2.00 to3.00	13.41	12.00 to 13.00	1.98	2.00 to2.50	160
114	World of Good super-phosphate..	Packers Fert. Assn, Chicago	Robert Rogers, Fulton	Sept. 21	2.62	2.50 to3.50	9.43	8.00 to 10.00	1.10	1.20	10.53	....	1.61	1.50 to2.00	114

PERCENTAGE COMPOSITION.

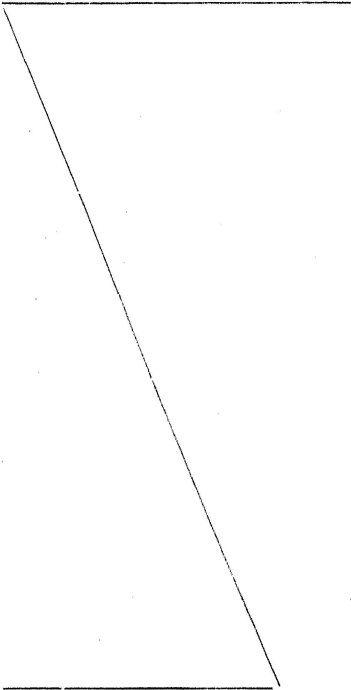
Number	Brand and Name	Manufacturer	Collected From	Date	Nitrogen		Phosphoric Acid, P ₂ O ₅						Potash K ₂ O		Number
							Available		Insoluble		Total				
					Found	Gua't'd	Found	Gua't'd	Found	Gua't'd	Found	Gua't'd	Found	Gua't'd	
96	Special Bone Meal..	Packers Fert. Assn. Chicago.....	Robt. Rogers, Fulton.	Sept. 21	1.44	1.23 to 2.05	14.17	.....	16.51	.....	30.68	25.00 to 30.00	.....	.....	96
90	Faultless Grain Grower	"	"	" 21	1.23	0.82 to 1.04	8.26	7.00 to 9.00	1.57	1.00 to 2.00	9.83	.....	1.16	1.00 to 2.00	90
158	Soluble Phosphate.....	"	A.A. Vitt & Co., Union.	" 22	.....	.....	11.85	12.00 to	1.00	3.00 to	12.85	12.00 to 15.00	.....	.....	158
134	Chicago Bone Meal....	"	Tucker Bros., Frankford....	" 26	2 29	2.47 2 50 to	17.73	.....	2.88	.....	20.61	20.00 to 20.00	.....	.....	134
166	"Boarshead" Chicago Bone Meal.....	"	Vitt & Co., Union.....	" 22	2.76	3.25 to	19.88	.....	3.20	.....	23.08	22.00 to 22.00	.....	.....	166
150	Potash Phosphate.....	"	"	" 22	.....	.....	11.15	12.00 to	0.72	.....	11.87	12.00 to 15.00	3.41	4.00 to 5.00	150
120	Pure Superphosphate..	Swift & Co., East St. Louis	D. G. Evans, Carl Junction	" 12	1.81	1.64 to 2.47	8.49	8.00 to 10.00	3.02	4.00 to 8.00	11.51	12.00 to 18.00	2.02	2.00	120
97	Pure Raw Bone Meal..	"	Webb Bros. Mer Co., Jasper...	" 11	3 87	3.75 to 4.50	10.33	.....	14.03	.....	24.36	23.00 to 27.50	.....	.....	97
131	Pure Raw Bone Meal..	"	Gus M Schaefer Billings	Oct. 2	3.88	.....	10.79	.....	13.42	.....	24.21	.....	.....	.....	131
126	Pure Ammoniated Bone	"	Thos. Egger, Lamar.....	Sept. 11	4.40	5.00 to 6.00	12.10	.....	5.20	.....	17.30	17.00 to 18.00	.....	.....	126
159	Pure Ammoniated Bone	"	G. R. Weeks, Eldon.....	" 23	4.63	5.00 to 6.00	16.68	.....	1.56	.....	18.24	17.00 to 18.00	.....	.....	159
119	Pure Special Phosphate and Potash	"	Thos. Egger, Lamar.....	" 11	.....	.....	10.90	10.00 to 12.00	0.43	1.00 to 2.00	11.33	11.00 to 14.00	1.85	2.00 to 3.00	119
171	Special Phosphate and Potash.....	"	Hopson & Seiver Kirksville....	" 29	.....	.....	12.87	10.00	0.86	1.00	13.73	.....	2.11	2.00	171
91	Special Grain Fertilizer	"	D. G. Evans, Carl Junction	" 12	1.50	1.64	9.85	10.00	0.34	.....	10.19	.....	1.96	2.00	91
170	Special Grain Fertilizer	"	Webb Bros. Mer Co., Jasper...	" 11	2.16	1.64	14.17	10.00	1.26	15.43	2.10	2.00	170

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121	Pure Ammoniated Bone and Potash.....	Swift & Co., East St. Louis.....	Thos. Egger, Lamar.....	Sept. 11	4.71	4.75 to 5.75	9.56	...	7.29	16.85	16.00 to 17.00	2.86	3.00 to 4.00	121
115	Pure Bone and Potash.	"	"	" 11	1.89	2.50	16.36	....	8.89	....	25.25	....	2.31	2.49 to 1.85	115
151	Pure Complete Fertilizer.....	"	G. R. Weeks, Eldon..	" 23	1.18	1.00 to 1.75	9.90	8.00 to 10.00	1.08	3.00 to 5.00	10.98	11.00 to 15.00	1.32	3.70	151
135	Pure Bone Meal.....	"	J. Cunningham Montg'm'ry C'y	" 21	2.40	2.50 to 3.75	21.27	....	5.43	....	26.70	.... to 23.00	...	....	135
169	Pure Bone Meal and Blood.....	"	Rood & Cook, Fulton....	" 20	3.76	4.50	20.56	....	4.13	....	24.60	27.50 to 23.00	...	....	169
152	"Ox" Alkaline Bone...	Tenn. Chem. Co., Nashville, Tenn..	Strehlmann & Co., Leslie...	" 23	....	....	12.00	12.00	1.28	....	13.28	.... to 9.00	1.84	2.00 to 4.00	152
98	Big Four.....	Tuscarora Fert. Co., East St. Louis...	Planters Seed Co., Springf'd	" 14	1.74	1.64 to 2.47	8.75	7.00 to 9.00	0.80	....	9.55	9.00 to 11.00	4.20	5.00	98
137	Steamed Bone.....	"	J. Cunningham Montg'm'ry C'y	" 21	2.81	3.29 to 0.82	21.58	....	4.23	....	25.81	28.00 to 24.00	....	....	137
153	Ammoniated Phosphate	"	Szymanski & Max, Union..	" 22	1.14	1.64 to 0.82	9.17	7.00 to 9.00	0.60	....	9.77	9.00 to 11.00	1.39	2.00 to 2.60	153
154	Tuscarora Standard...	"	"	" 22	1.78	2.47 to 3.29	10.02	8.00 to 10.00	1.03	....	11.05	10.00 to 12.00	2.28	3.00	154
107	Animal Bone.....	"	Judd & Craighead, Fulton.	" 20	3.99	3.29 to 2.47	9.41	....	10.51	....	19.92	28.00 to 24.00	....	....	107
173	Animal Bone.....	"	Szymanski & Max, Union..	" 22	3.67	3.29 to 3.70	18.75	....	4.35	....	23.10	28.00 to 22.00	....	....	173
109	Raw Bone.....	"	Planters Seed Co., Springfield	" 14	4.08	4.53 to 3.70	9.51	....	12.00	....	21.51	25.00 to 22.00	....	....	109
172	Raw Bone Meal.....	"	J. S. Cunningham, Montg. C'y	" 21	4.25	4.53 to 3.70	16.37	....	6.99	....	23.36	25.00 to 22.00	....	....	172
99	Bone and Potash... ..	"	Planters Seed Co., Springfield	" 14	....	....	9.68	10.00 to 12.00	0.43	....	10.11	12.00 to 14.00	2.70	2.00 to 3.00	99
101	Royal High Grade Guano.....	Va-Carol. Chem. Co., Memphis, Tenn..	J. F. Harrison, Carthage.	" 19	1.88	1.65 to 2.50	11.69	10.00 to 12.00	0.95	2.00 to 3.00	12.64	.... to 12.00	2.43	3.00 to 2.00	101
100	Scott's Gossypium Phospho.....	"	Adams Furn. & Hdw. Co. Lamar	" 11	1.70	1.65 to 2.50	10.08	10.00 to 12.00	1.68	2.00 to 3.00	11.76	12.00 to 15.00	2.26	3.00	100
108	Pure Raw Animal Bone	"	"	" 17	3.42	3.30	7.84	6.00	12.71	14.00	20.55	20.00	....	....	108

**DETAILED STATEMENT OF RECEIPTS AND DISBURSEMENTS
ON THE FERTILIZER CONTROL ACCOUNT FOR
THE YEAR ENDING DECEMBER 31, 1905.**

To Balance.....	\$2,700 73	By F. B. Mumford, Salary.....	118 75
To Sale of Tags	99 00	By Paul Schweitzer, Salary.....	91 67
To Sale of Tags	967 50	By R. M. Bird, Salary.....	54 17
To Sale of Tags.....	547 50	By M. F. Miller, Salary.....	41 67
To Sale of Tags.....	1,255 49	By Estelle Hickok, Salary.....	25 00
To Sale of Tags.....	1,387 50	By Clarence Fairs, Salary.....	14 00
To Sale of Tags.....	1,155 00	By Eimer & Amend, Sci apparatus	8 00
To Sale of Tags.....	354 90	By Shields & Courts, Fertilizer...	7 00
To Sale of Tags.....	390 20	By National Paper Co. Stationery	2 80
		By F. B. Mumford, Salary.....	118 75
		By P. Schweitzer, Salary.....	91 67
		By R. M. Bird, Salary.....	54 17
		By Estelle Hickok, Salary.....	25 00
		By Clarence Fairs, Salary.....	14 00
		By National Paper Co. Stationery	106 00
		By Eimer & Amend, Chemicals...	58 51
		By Chas. Matthews, supplies	4 80
		By F. B. Mumford, Salary.....	118 75
		By P. Schweitzer, Salary.....	91 66
		By R. M. Bird, Salary.....	54 16
		By M. F. Miller, Salary.....	41 66
		By Clarence Fairs, Salary.....	14 00
		By Sabra E. Kennedy, Salary.....	9 80
		By Elizabeth Sinclair, labor.....	5 75
		By E. W. Stephens, Publications.	511 66
		By F. B. Mumford, Salary, etc....	123 75
		By Bausch & Comb Opt. Co., Sci.	
		Apparatus	109 98
		By H. J. Waters, Salary.....	95 83
		By P. Schweitzer, Salary.....	91 67
		By Kampmeyer & Wagner, Lib'ry	80 55
		By R. M. Bird, Salary.....	54 17
		By A. E. Grantham, Salary.....	50 00
		By M. F. Miller, Salary.....	41 67
		By T. F. Irvin, Salary.....	40 65
		By Meyer Bros, Drug Co. Chemical	80 90
		By Sabra E. Kennedy, Salary.....	25 00
		By Clarence Fairs, labor.....	14 00
		By Maude Higginbottom, labor...	5 80
		By Crane Company, supplies.....	1 80
		By E. A. Remley, supplies.....	1 00
		By F. B. Mumford, salary.....	118 75
		By Paul Schweitzer, salary.....	91 67
		By R. M. Bird, salary.....	54 17
		By T. F. Irvin, salary.....	35 00
		By Sabra E. Kennedy, salary.....	25 00
		By Clarence Fairs, salary.....	14 00
		By M. F. Miller, salary, etc.....	62 97
		By C. H. Hechler, trav. expenses.	88 13
		By Eimer & Amend, sundry sups.	33 84
		By T. A. Harris, seeds.....	5 50
		By R. E. Hyslop, labor.....	5 10
		By G. Cramer, D. P. Co. supplies	3 12
		By F. B. Mumford, salary.....	118 75
		By P. Schweitzer, salary.....	91 66
		By R. M. Bird, salary.....	54 16
		By A. E. Grantham, salary.....	50 00
		By Sabra E. Kennedy, salary.....	25 00
		By Clarence Fairs, salary.....	14 00
		By Dinsmore & Singleton, appar's	146 71
		By Swift & Co., fertilizer.....	5 00
		By Bausch & Lamb, apparatus....	3 81



By H. Bainbridge, supplies.....	2 00
By F. B. Mumford, salary.....	118 75
By H. J. Waters, salary.....	95 83
By Paul Schweitzer, salary.....	91 67
By R. M. Bird, salary.....	54 17
By M. F. Miller, salary.....	41 87
By Oscar Rawlings, labor.....	35 00
By Sabra E. Kennedy, salary.....	25 00
By Clarence Fairs, labor.....	14 00
By E. W. Stephens, publications..	11 44
By E. H. FAVOR, supplies.....	7 60
By W. R. Wilkinson, supplies....	5 65
By Combe Bros., supplies.....	5 00
By Lowery & Morris, heat, etc....	2 60
By F. B. Mumford, salary.....	118 75
By Paul Schweitzer, salary.....	91 67
By R. M. Bird, salary.....	54 17
By E. W. Stephens, publications..	47 80
By R. B. Gordon, supplies.....	3 50
By M. E. Sherwin, salary, etc.....	95 64
By Paul Schweitzer, salary.....	91 66
By R. M. Bird, salary.....	54 16
By H. J. Waters, salary.....	116 67
By Paul Schweitzer, salary.....	91 67
By R. M. Bird, salary.....	54 17
By Ethel M. Fine, salary.....	25 00
By Sabra E. Kennedy.....	25 00
By Otis Moore, labor.....	24 00
By National Paper Co., publi'tns	137 20
By W. F. Lauffert, labor, etc....	77 70
By E. W. Stephens, publications..	28 61
By H. J. Gribble, sci. apparatus..	2 00
By H. J. Waters, salary.....	193 52
By Paul Schweitzer, salary.....	91 67
By R. M. Bird, salary.....	54 17
By Otis Moore, labor.....	17 14
By Eimer & Amend, chemicals...	400 30
By Columbia P. O., postage & sta	32 40
By Paul Schweitzer, salary.....	91 66
By R. M. Bird, salary.....	54 16
By Otis Moore, labor.....	17 71
By Eimer & Amend, chemicals...	45 00
By Balance.....	2,702 43

\$8,857 82

\$8,857 82