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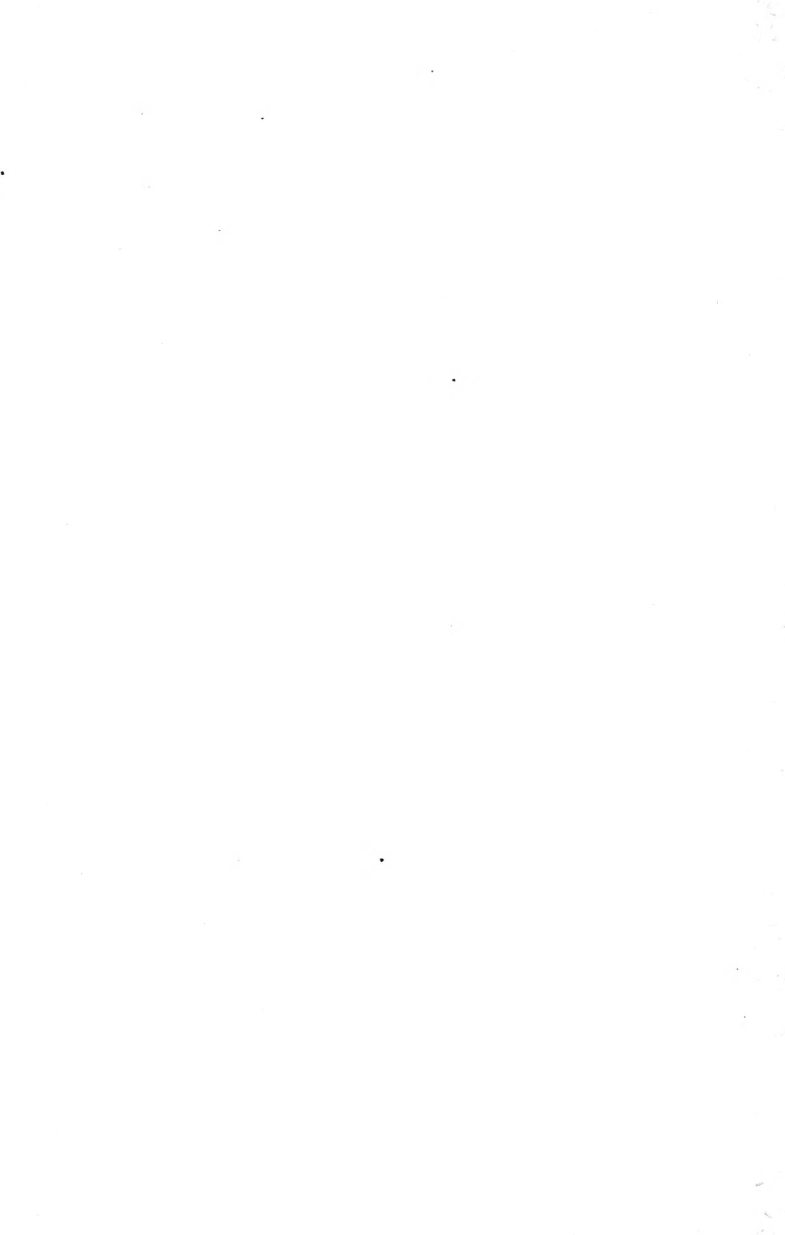
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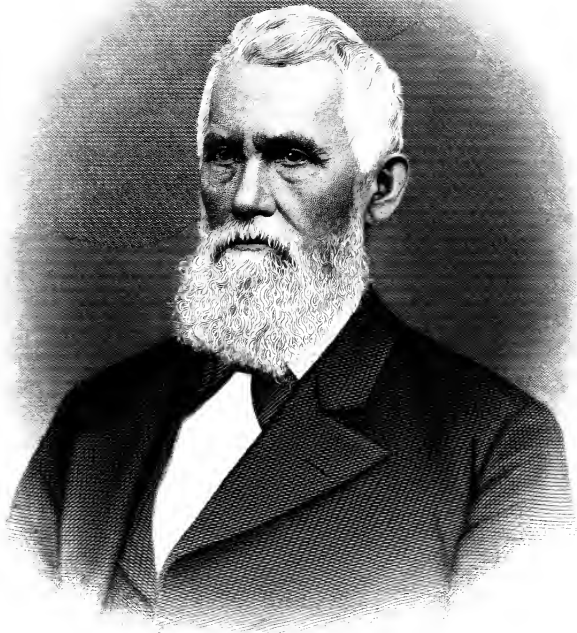
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A. C. Stevenson

THIRTY-FOURTH ANNUAL REPORT

OF THE

INDIANA

State Board of Agriculture.

== VOLUME XXVI, 1884. ==

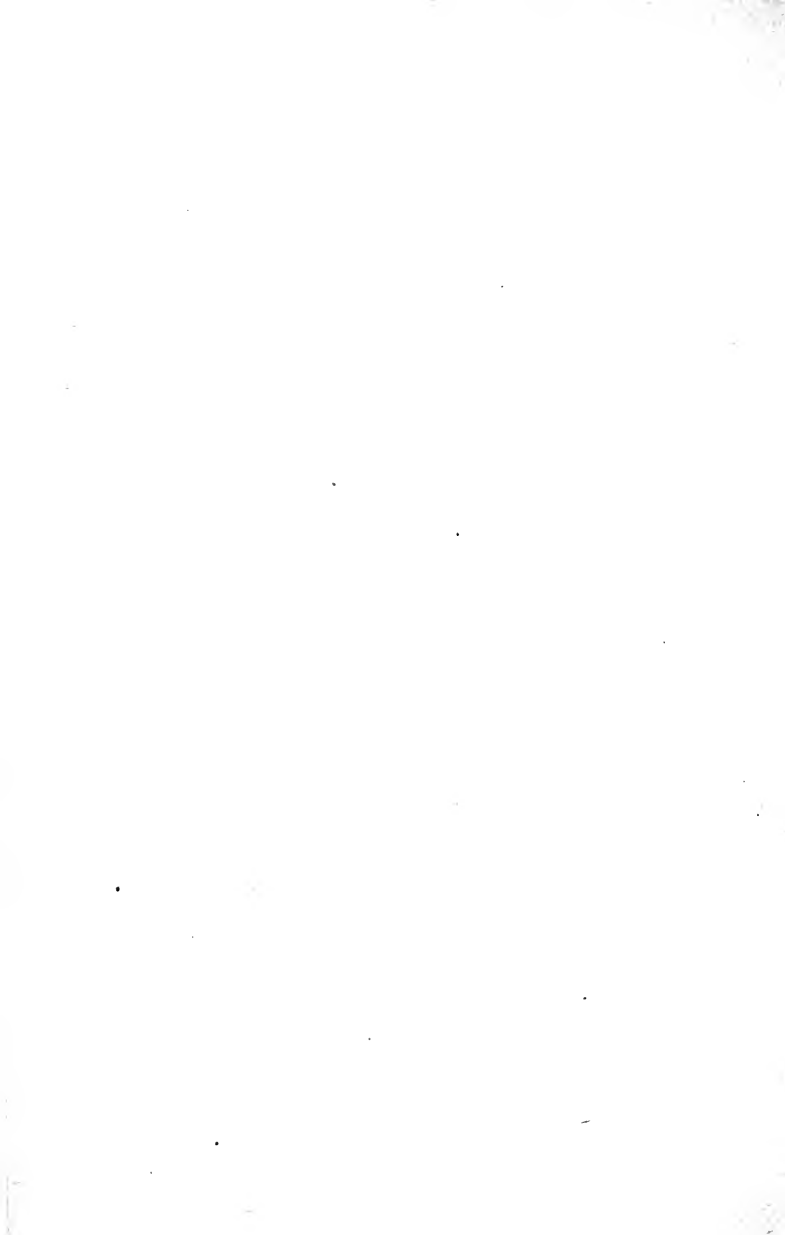
Including the Proceedings of the Annual Meeting, 1885; Meetings of the
Cattle Breeders, Swine Breeders, Wool Growers, Cane
Growers, and Bee Keepers, 1885.

TO THE GOVERNOR.

INDIANAPOLIS:

WM. B. BURFORD, CONTRACTOR FOR STATE PRINTING AND BINDING.

1885.



INDIANAPOLIS, February 3, 1885.

To His Excellency, ISAAC P. GRAY,

Governor of Indiana:

SIR—In compliance with the Act of the General Assembly, approved February 17, 1852, we have the honor to submit herewith the annual report of the Indiana State Board of Agriculture for the year ending December 31, 1884, together with such matter as is deemed interesting and useful.

Very respectfully,

ROBERT MITCHELL, President.

ALEX. HERON, Secretary.

STATE OF INDIANA, }
GOVERNOR'S OFFICE. }

February 3, 1885, received and examined by the Governor.

February 14, 1885, transmitted to the Secretary of State to be filed and preserved in his office and published according to law, by order of the Commissioners of Public Printing and Binding.

PIERRE GRAY,

Private Secretary.

Filed in this office February 14, 1885.

W. R. MYERS,

Secretary of State.

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INDIANA STATE BOARD OF AGRICULTURE, 1884.

(Elected by the Delegates from Agricultural Societies.)

- 1st District—ROBERT MITCHELL, Princeton, Gibson county.
- 2d District—SAMUEL HARGROVE, Union, Pike county.
- 3d District—J. Q. A. SIEG, Corydon, Harrison county.
- 4th District—W. B. SEWARD, Bloomington, Monroe county.
- 5th District—T. W. W. SUNMAN, Spades, Ripley county.
- 6th District—DICK JONES, Columbus, Bartholomew county.
- 7th District—W. W. COTTERAL, New Castle, Henry county.
- 8th District—S. W. DUNGAN, Franklin, Johnson county.
- 9th District—H. LATOURETTE, Covington, Fountain county.
- 10th District—JASPER N. DAVIDSON, Whitesville, Montgomery county.
- 11th District—JOHN M. GRAHAM, Muncie, Delaware county.
- 12th District—CHAS. B. STUART, Lafayette, Tippecanoe county.
- 13th District—JOHN RATLIFF, Marion, Grant county.
- 14th District—L. B. CUSTER, Logansport, Cass county.
- 15th District—W. A. BANKS, Door Village, Laporte county.
- 16th District—R. M. LOCKHART, Waterloo, Dekalb county.

OFFICERS FOR, 1884.

(Elected by the Board of Agriculture.)

ROBERT MITCHELL	President.
JASPER N. DAVIDSON	Vice President.
ALEX. HERON	Secretary.
SYLVESTER JOHNSON	Treasurer.
FIELDING BEELER	General Superintendent.

EXECUTIVE COMMITTEE.

ROBERT MITCHELL, President.

DICK JONES,

W. B. SEWARD,

JOHN M. GRAHAM,

W. W. COTTERAL.

BOARD OF AGRICULTURE.

A TABLE showing the Officers, Place and Receipts of each Fair held by the State Board of Agriculture.

Year.	PRESIDENT.	SECRETARY.	TREASURER.	GENERAL SUPERINTENDENT.	PLACE OF FAIR.	Premiums Paid.	Receipts of Fair.
1852	Gov. Joseph A. Wright.	John B. Dillon	Royal Mayhew	W. T. Dennis	Indianapolis	.....	\$4,651 55
1853	Gov. Joseph A. Wright.	John B. Dillon	Royal Mayhew	J. J. Bingham	Lafayette	.....	6,751 55
1854	Gov. Joseph A. Wright.	Wm. T. Dennis	Royal Mayhew	W. T. Dennis	Madison	.....	7,430 77
1855	Gen. Joseph Orr	John B. Dillon	S. A. Buell	Calvin Fletcher, Jr.	Indianapolis	\$3,753 00	10,823 75
1856	Dr. A. C. Stevenson.	Ignatius Brown	S. A. Buell	Calvin Fletcher, Jr.	Indianapolis	4,225 00	14,373 34
1857	Dr. A. C. Stevenson.	Ignatius Brown	S. A. Buell	Calvin Fletcher, Jr.	Indianapolis	4,127 00	14,058 75
1858	Dr. A. C. Stevenson.	John B. Dillon	Thomas H. Sharp	Calvin Fletcher, Jr.	Indianapolis	11,500 00	11,500 00
1859	George D. Wagner	John B. Dillon	Thomas H. Sharp	James L. Bradley	New Albany	6,163 00	8,589 50
1860	George D. Wagner	Wm. T. Dennis	Thomas H. Sharp	James L. Bradley	Indianapolis	3,827 00	11,902 00
1861	D. P. Holloway	Wm. T. Dennis	H. A. Fletcher	.....	No Fair	.....	.....
1862	James D. Williams	W. H. Loomis	H. A. Fletcher	J. A. Grosvenor	Indianapolis	3,994 00	4,127 55
1863	A. D. Hamrick	W. H. Loomis	H. A. Fletcher	J. A. Grosvenor	Indianapolis	.....	9,579 36
1864	Stearns Fisher	W. H. Loomis	Francis King	W. H. Loomis	Indianapolis	4,121 00	10,785 50
1865	Stearns Fisher	W. H. Loomis	Stearns Fisher	J. A. Grosvenor	Fort Wayne	4,078 00	11,587 55
1866	Stearns Fisher	W. H. Loomis	Stearns Fisher	J. A. Grosvenor	Indianapolis	.....	17,179 36
1867	A. D. Hamrick	A. J. Holmes	Stearns Fisher	J. E. Sullivan	Terre Haute	6,331 00	17,148 05
1868	A. D. Hamrick	A. J. Holmes	Stearns Fisher	J. B. Sullivan	Indianapolis	7,087 00	16,789 00
1869	A. D. Hamrick	A. J. Holmes	Stearns Fisher	J. B. Sullivan	Indianapolis	22,345 65	22,345 65
1870	J. D. Williams	Joseph Poole	Stearns Fisher	J. S. Benson	Indianapolis	7,914 00	19,155 23
1871	J. D. Williams	Joseph Poole	Stearns Fisher	Jacob Mntz	Indianapolis	8,564 00	20,549 90
1872	John Sutherland	Alex. Heron	Stearns Fisher	H. W. Caldwell	Indianapolis	9,619 20	23,484 35
1873	John Sutherland	Alex. Heron	Stearns Fisher	H. W. Caldwell	Indianapolis	8,864 75	52,309 10
1874	John Sutherland	Alex. Heron	Stearns Fisher	E. J. Howland	Indianapolis	10,754 00	45,330 48
1875	William Crim	Alex. Heron	Stearns Fisher	E. J. Howland	Indianapolis	12,068 20	43,214 99
1876	Hezekiah Caldwell	Alex. Heron	Stearns Fisher	J. L. Hanna	Indianapolis	8,179 70	6,342 70
1877	Jacob Mntz	Alex. Heron	Stearns Fisher	J. W. Furnas	Indianapolis	6,337 95	14,511 00
1878	W. R. Seward	Alex. Heron	Stearns Fisher	R. M. Lockhart	Indianapolis	5,057 00	15,991 33
1879	Robert Mitchell	Alex. Heron	Stearns Fisher	R. M. Lockhart	Indianapolis	5,472 00	22,919 50
1880	W. H. Ragan	Alex. Heron	J. A. Wildman	Fielding Beeler	Indianapolis	6,553 00	18,809 05
1881	R. M. Lockhart	Alex. Heron	J. A. Wildman	Fielding Beeler	Indianapolis	6,855 50	17,874 00
1882	H. C. Meredith	Alex. Heron	J. A. Wildman	Fielding Beeler	Indianapolis	8,006 00	23,631 10
1883	Robert Mitchell	Alex. Heron	J. A. Wildman	Fielding Beeler	Indianapolis	9,581 13	26,858 43
1884	Robert Mitchell	Alex. Heron	S. Johnson	Fielding Beeler	Indianapolis	10,414 30	24,479 40
1885	R. M. Lockhart	Alex. Heron	S. Johnson	Fielding Beeler	Indianapolis	.....	.....

A. C. Jameson filled the office of Treasurer for 1873, to the 27th of August, 1873, when he resigned, and Carlos Dickson was appointed all the unexpired term. H. C. Meredith died July 5th, and L. B. Custer, Vice President, came in as President for the unexpired term.
 Note.—In consequence of the loss of papers, incident to the military occupancy of the rooms of the State Board of Agriculture, during the late war, and in complete records preserved, the amount of premiums awarded at the several State Fairs is necessarily incomplete.

STATE INDUSTRIAL ASSOCIATIONS.

OFFICERS FOR THE YEAR 1885.

HEADQUARTERS IN THE AGRICULTURAL ROOMS, CORNER OF TENNESSEE
AND MARKET STREETS.

Indiana State Board of Agriculture.—President, Hon. R. M. Lockhart, Dekalb county; Secretary, Alex. Heron, Indianapolis, Marion county. Organized May, 1851.

Indiana Horticultural Society.—President, Sylvester Johnson, Irvington, Marion county; Secretary, C. M. Hobbs, Bridgeport, Marion county. Organized 1842.

State Association of Shorthorn Breeders.—President, Hon. Robert Mitchell, Princeton; Secretary, Walter J. Quick, Columbus, Ind. Organized May, 1872.

Indiana Jersey Cattle Breeders Association.—President, W. J. Hasselman, Indianapolis, Marion county; Secretary, T. A. Lloyd, Indianapolis. Organized January, 1883.

Indiana Swine Breeders Association.—President, D. L. Thomas, Rushville; Secretary, W. E. Jackson, Knightstown. Organized January, 1877.

Indiana Wool Growers Association.—President, Thomas Nelson, Bloomington, Parke county; Secretary, I. J. Farquhar, Trenton, Randolph county. Organized October, 1876.

Indiana Poultry Breeders Association.—President, H. C. G. Bals, Indianapolis Marion county; Secretary, D. H. Jenkins, Indianapolis, Marion county. Organized January, 1875.

Indiana Bee Keepers Association.—President, Jonas Scholl, Connersville, Fayette county; Secretary, F. L. Daugherty, Indianapolis. Organized October, 1879.

Indiana Cane Growers Association.—President, Dr. A. Furnas, Danville, Hendricks county; Secretary, W. L. Anderson, Ladoga, Montgomery county. Organized December, 1882.

Indiana Tile Makers Association.—President, Robert Thomas, Indianapolis; Secretary, J. J. W. Billingsley, Marion county. Organized November, 1876.

Indiana Womens State Industrial Association.—President, Mrs. A. M. Noe, Indianapolis, Marion county; Secretary, Mrs. M. M. Finch, Indianapolis, Marion county. Organized September, 1878.

METEOROLOGICAL TABLES.

MONTHLY MEAN BAROMETER, THERMOMETER, ETC.

TABLE Showing Monthly Mean Barometer, Thermometer, Relative Humidity; Maximum and Minimum Temperatures; Prevailing Direction of Wind; number of Clear, Fair and Cloudy Days; average amount of Cloudiness; number of Days on which 0.01 Inch or more of Rain or Snow Fell; total amount of Precipitation, and number of Days on which the Temperature fell below the Freezing Point at Indianapolis, Ind., for each Month of the Year 1884, as Recorded at the United States Signal Office.

1884. MONTHS.	Mean Barometer.— Inches.	Mean Thermometer. Degrees.	Mean Relative Hu- midity. Per cent.	Maximum Tempera- ture. Degrees.	Minimum Tempera- ture. Degrees.	Prevailing Direction of Wind.	No. of Clear Days.	No. of Fair Days.	No. of Cloudy Days.	Average Cloudiness During the Month. Scale, 0-10.	No. of Days on which 0.01 Inch or more of Rain or Snow Fell.	Total amount of Pre- cipitation. Inches.	No. of Days on which Temperature Fell Below Freezing.
January	30.178	21.6	67.2	56.8	-25.0	S W	6	16	9	5.4	12	1.05	23
February	30.050	34.7	73.1	65.2	-1.6	N W	4	9	16	7.4	18	4.73	18
March	30.030	41.1	63.4	69.5	5.0	N W	3	14	14	6.9	16	3.01	13
April	29.938	50.2	59.1	80.5	31.4	N ^W E ^W	5	8	17	6.9	17	2.89	2
May	29.946	62.1	62.0	84.0	40.6	S W	10	13	8	5.0	15	4.80	. . .
June	29.999	73.2	64.6	92.8	54.7	S	8	12	10	5.8	9	4.11	. . .
July	29.908	73.7	64.5	90.0	55.2	N W	8	14	9	5.4	15	6.03	. . .
August	30.024	72.3	60.2	89.0	50.2	S	17	12	2	3.6	7	0.46	. . .
September	30.042	71.6	62.3	90.3	44.8	S	7	16	7	4.9	11	3.09	. . .
October	30.143	58.3	71.3	87.0	31.2	S	13	14	4	3.8	9	2.31	1
November	30.121	41.5	77.9	66.8	12.3	W	13	10	7	4.2	8	1.46	8
December	30.146	29.9	85.2	60.7	-12.3	S E	5	6	20	7.4	22	6.05	21
Annual Means	30.044	52.5	67.6	77.7	23.9	S	. . .	. . .	. . .	5.6	. . . . .	. . . . .	. . . . .
Annual Totals	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	99	144	123	. . . . .	159	39.99	91

DAILY AND MONTHLY MEAN BAROMETER.

Table Showing Daily and Monthly Mean Barometer at Indianapolis, Ind., for Each Day and Month of the Year 1884, as Recorded at the United States Signal Office.

BAROMETER CORRECTED FOR ELEVATION, TEMPERATURE AND INSTRUMENTAL ERROR.

DATE.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1 . . .	29.842	30.068	29.619	29.517	29.736	30.101	29.879	29.975	29.978	30.176	30.030	30.182
2 . . .	29.859	30.118	29.754	29.713	30.144	30.048	29.901	30.002	29.967	30.131	30.285	30.161
3 . . .	30.178	30.122	30.181	30.050	30.122	30.015	29.843	29.911	30.036	30.146	30.205	30.001
4 . . .	30.384	29.912	30.277	29.964	29.865	30.006	29.752	29.966	30.142	30.092	30.068	29.965
5 . . .	30.521	29.797	29.954	29.963	29.833	30.009	29.836	29.973	30.135	29.988	30.280	29.911
6 . . .	30.508	29.919	30.128	29.970	29.684	29.966	29.998	29.963	30.028	30.042	30.445	29.515
7 . . .	30.418	30.179	30.059	29.889	29.788	29.959	30.055	30.004	29.975	29.969	30.277	30.029
8 . . .	29.975	30.146	29.972	29.880	29.976	29.866	29.979	30.214	29.991	30.021	30.255	30.337
9 . . .	29.877	30.293	30.283	29.990	29.942	29.641	29.807	30.221	30.015	30.171	30.143	30.318
10 . . .	29.908	30.358	30.109	30.063	29.861	29.786	29.851	30.122	30.021	30.122	30.167	30.180
11 . . .	30.204	30.192	29.720	30.149	29.887	29.863	29.918	30.053	30.077	30.022	30.305	30.033
12 . . .	30.042	29.901	30.211	30.011	29.895	29.919	29.869	30.057	30.226	30.072	30.245	30.143
13 . . .	29.814	29.831	30.256	29.965	29.831	30.052	29.903	30.124	30.298	30.221	30.183	30.353
14 . . .	30.039	30.299	30.190	29.629	30.038	30.135	29.963	30.137	30.254	30.415	30.229	29.875
15 . . .	30.320	30.466	30.254	29.460	29.912	30.173	29.920	30.100	30.088	30.355	30.189	30.123
16 . . .	30.489	30.214	30.240	29.870	30.017	30.190	29.977	30.056	29.946	30.109	29.981	30.154
17 . . .	30.262	29.845	30.178	30.098	29.966	30.157	29.973	30.028	29.916	30.038	30.100	30.227
18 . . .	29.926	29.862	30.032	30.035	29.751	30.054	29.831	30.048	30.154	30.144	30.169	30.472
19 . . .	30.045	29.661	29.849	29.908	29.714	29.982	30.001	30.071	30.148	30.187	30.162	30.526
20 . . .	30.428	30.244	30.128	30.050	30.002	30.003	30.096	30.020	30.199	30.258	30.145	30.073
21 . . .	30.401	30.165	30.256	30.103	30.032	30.036	30.096	30.003	30.095	30.021	30.188	29.737
22 . . .	29.998	29.988	30.063	29.995	29.936	30.023	29.982	30.033	29.914	30.114	29.946	30.054
23 . . .	30.015	30.151	29.856	30.010	29.967	29.948	29.910	30.059	29.835	30.309	29.851	30.209
24 . . .	30.320	29.985	29.887	29.967	30.049	29.801	29.918	30.112	29.844	30.253	30.204	30.338
25 . . .	30.497	29.906	29.581	29.947	29.973	29.810	29.886	29.980	30.178	30.350	29.849	30.508
26 . . .	30.631	29.992	29.823	29.909	29.844	30.082	29.802	30.106	30.105	30.108	29.887	30.448
27 . . .	30.415	29.835	29.911	29.877	29.845	30.139	29.863	30.068	29.922	30.108	29.798	30.187
28 . . .	30.281	30.027	29.586	30.133	30.139	30.169	29.795	29.798	29.802	30.275	29.817	30.183
29 . . .	30.251	29.950	30.131	30.104	30.264	30.074	29.833	29.736	29.955	30.120	30.045	30.188
30 . . .	29.834	. . .	30.343	29.938	30.178	29.966	29.794	29.843	30.037	30.110	30.186	30.019
31 . . .	29.837	. . .	30.099	. . .	30.141	. . .	29.812	29.966	. . .	30.012	. . .	30.063

MONTHLY MEAN BAROMETER.

1884 . .	30.178	30.050	30.030	29.938	29.946	29.999	29.908	30.024	30.042	30.143	30.121	30.146
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DAILY AND MONTHLY MEAN TEMPERATURE.

Table Showing Daily and Monthly Mean Temperature at Indianapolis, Ind., for each Day and Month of the Year 1884, as Recorded at the United States Signal Office.

(Fahrenheit.)

DATE.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1 . . .	31.2	30.5	24.6	60.6	67.2	72.1	77.7	76.1	68.7	76.0	52.4	26.9
2 . . .	14.7	41.1	20.0	37.1	53.8	71.2	79.1	78.5	73.3	78.9	46.2	30.5
3 . . .	7.7	43.5	14.0	43.7	55.8	70.8	78.0	73.1	78.9	76.9	43.7	39.2
4 . . .	-5.1	43.9	18.2	50.9	61.8	71.3	79.0	65.0	80.2	77.2	44.7	47.9
5 . . .	-15.4	46.0	26.8	44.2	65.9	70.5	75.2	66.0	79.7	79.1	36.0	55.2
6 . . .	-6.6	38.0	28.8	44.7	60.6	69.6	68.0	70.7	80.7	69.9	37.2	52.0
7 . . .	7.9	36.6	28.5	43.8	59.8	71.5	70.8	69.4	78.5	69.7	43.9	43.5
8 . . .	13.3	45.2	28.5	36.1	59.8	68.0	70.9	62.9	81.7	61.0	46.2	38.4
9 . . .	18.5	33.7	25.1	39.3	62.0	69.4	72.7	61.6	79.4	51.5	52.6	35.2
10 . . .	28.8	33.7	31.1	41.4	58.3	57.8	72.7	63.9	79.7	55.7	53.0	40.1
11 . . .	17.8	40.3	46.7	44.4	58.2	65.0	75.9	67.3	72.0	63.0	42.7	34.3
12 . . .	25.9	52.5	37.2	45.8	63.9	69.3	77.8	71.6	66.8	66.7	42.1	30.6
13 . . .	41.2	34.5	43.1	51.1	58.8	69.9	69.8	74.2	65.8	62.3	46.9	28.9
14 . . .	32.6	15.5	38.3	62.0	57.1	66.7	71.0	75.8	66.6	53.4	47.9	35.0
15 . . .	24.3	25.1	39.0	53.9	62.4	69.8	70.0	76.4	74.3	51.7	46.2	25.3
16 . . .	19.8	37.1	48.0	44.2	55.5	76.8	70.0	78.9	71.3	54.1	51.7	25.0
17 . . .	28.8	44.8	50.1	52.3	61.7	76.4	65.5	75.7	67.0	57.9	44.2	6.2
18 . . .	33.7	44.8	52.7	52.3	66.3	79.7	71.7	80.0	63.0	55.2	35.1	-3.6
19 . . .	23.5	44.0	48.1	57.5	60.2	77.5	71.8	80.9	64.9	59.9	33.1	1.8
20 . . .	11.5	26.9	43.4	46.9	65.2	81.1	70.2	81.7	62.1	63.8	42.1	20.4
21 . . .	12.5	30.2	48.3	43.0	71.0	82.6	71.0	79.8	62.6	67.9	44.3	29.8
22 . . .	33.5	31.0	56.7	40.3	75.7	82.7	76.4	71.7	69.9	48.1	52.7	16.2
23 . . .	30.5	24.6	57.6	41.5	73.5	83.2	79.1	71.2	70.6	34.0	34.9	14.2
24 . . .	9.5	35.7	56.3	51.8	66.8	82.3	76.7	67.6	68.3	42.5	21.2	12.2
25 . . .	12.4	38.6	58.7	55.5	63.6	72.1	77.8	74.2	64.7	45.1	35.3	9.4
26 . . .	22.7	33.8	50.4	58.6	62.3	67.7	74.1	74.0	68.9	50.3	31.9	13.8
27 . . .	32.1	30.2	55.2	65.8	62.6	70.8	74.9	72.0	70.9	51.4	45.9	30.9
28 . . .	39.4	11.4	56.0	61.6	54.3	73.4	73.7	75.1	72.3	43.4	32.0	45.1
29 . . .	41.7	13.8	46.0	65.4	54.3	79.1	74.0	72.2	71.2	44.7	30.3	54.3
30 . . .	49.0	..	43.0	72.1	60.0	79.6	74.5	67.0	75.0	46.7	27.6	57.0
31 . . .	34.0	..	52.4	..	66.7	..	73.9	66.0	..	51.0	..	30.8

MONTHLY MEAN TEMPERATURE.

1884 . . .	21.6	34.7	41.1	50.2	62.1	73.2	73.7	72.3	71.6	58.3	41.5	29.9
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METEOROLOGICAL TABLES.

Table Showing Highest and Lowest Thermometer (° Fahrenheit) at Indianapolis, Indiana, during each Month for each Year from 1872 to 1885, as Recorded at the United States Signal Office.

MONTH.	1872.		1873.		1874.		1875.		1876.		1877.		1878.		1879.		1880.		1881.		1882.		1883.		1884.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.
January . . .	47	-6	60	-13	63	1	44	-18.5	69	9	58	-11	54	-2	57	-22	66	20	47	-6	61.5	7	45.0	-11.0	56.8	-25.0
February . . .	58	-4	63	1	59	17	55	-8	66	-3	63	20	61	18	58	-1	65	14	59	1	65	15	72.0	4.0	65.2	-1.6
March . . .	61	17	64	2	72	20	77	9	72	11	73	9	72	23	74	15	70	21	62	18	70.5	24	68.4	12.0	69.5	5.0
April . . .	83	32	81	22	71	27	79	19	77	29	80	28	80	35	82	21	83	27	78	20	80	24	85.3	30.4	80.5	31.4
May . . .	84	43	86	47	89	40	88	34	86	33	88	31	81	35	87	36	85	40	89	44	80.5	37	82.8	35.0	84.0	40.6
June . . .	93	56	94	62	96	50	91	51	91	51	89	45	91	50	91	47	91	54	92	48	94	45	89.0	50.0	92.8	54.7
July . . .	95	65	91	60	97	58	92	63	63	61	90	54	96	58	96	58	93.5	55	101	57	89	53	92.0	56.8	90.0	55.2
August . . .	96	51	95	61	95	56	87	51.5	89	48	89	57	92	53	93	53	94	51	101	55.5	90	52	91.0	53.0	80.0	50.2
September . . .	92	44	87	42	90	41	90	35	88	42	85	42	88	44	80	38	89	41	94.5	48	85	42	87.0	40.4	90.3	44.8
October . . .	82	33	76	25	78	28	75	28	75	26	83	35	81	23	86	30.5	78	31	81	39	79	35.5	81.0	35.0	87.0	31.2
November . . .	62	-1	59	13	71	-2	61	14	73	18	61	9	65	25	75	18.5	63	-5	63	10	72	22	65.0	10.0	66.8	12.3
December . . .	48	-11	62	12	61	12	68	-1	47	-15	67	20	48	-12	64	5	56	-13	63	14	57	-10	62.0	9.0	60.7	-12.3

TABLE

Of Annual Means for the years 1872 to 1884, arranged for comparative purposes, as compiled from the Records of the Weather Observation Office, at Indianapolis, Indiana.

YEAR.	Annual Mean Barometer —Inches.	Annual Mean Tempera- ture—Degrees.	Annual Mean Relative Humidity—Per Cent.	Maximum Temperature during the year—De- grees.	Minimum Temperature during the year—De- grees.	Annual Prevailing Direc- tion of Wind.	Number of Clear Days.	Number of Fair Days.	Number of Cloudy Days.	Average amount of Cloud- iness—Scale, 0—10.	Number of days on which 0.01 inch or more of Pre- cipitation.	Total amount of Precipi- tation.	Greatest Rainfall in 24 consecutive hours— Inches.	Number of days on which the Maximum Tempera- ture was below freezing.	Number of days on which the Minimum Tempera- ture was below freezing.	Number of days on which the Temperature was above 90°.
1872.	30.044	50.8	67.5	96.0	-11.0	N.W.	85	142	139	5.0	122	34.07	3.71	49	120	17
1873.	30.004	52.0	69.2	95.0	-13.0	S.W.	97	141	127	5.0	145	52.32	3.75	38	99	9
1874.	30.037	55.0	63.0	97.0	-2.0	N.W.	97	150	118	5.0	120	43.60	2.61	17	83	27
1875.	30.005	50.5	66.1	92.0	-18.5	W.	81	138	146	5.0	155	54.58	2.86	44	107	5
1876.	29.997	53.2	68.1	93.0	-15.0	W.	83	126	157	6.0	155	57.53	2.70	30	101	9
1877.	30.008	54.0	67.2	90.0	-11.0	S.W.	98	141	125	5.0	139	39.08	2.07	20	84	0
1878.	29.946	55.4	64.6	96.0	-12.0	S.E.	84	159	122	6.0	148	38.62	2.03	17	68	13
1879.	30.036	53.9	64.4	96.0	-22.0	S.	94	135	136	5.0	122	42.88	2.33	27	98	12
1880.	30.030	54.4	65.4	94.0	-13.0	W.	106	145	115	5.0	123	50.99	2.00	26	19	9
1881.	30.024	54.9	67.4	101.0	-6.0	S.W.	100	140	125	5.0	112	48.74	4.30	28	91	31
1882.	30.045	53.8	71.1	94.0	-10.0	N.W.	107	141	117	5.3	141	53.68	3.02	19	78	4
1883.	30.059	51.8	66.2	92.0	-11.0	S.W.	96	157	111	5.4	164	54.12	3.71	35	106	6
1884.	30.044	52.5	67.6	92.8	-25.0	S.	99	144	123	5.6	159	39.99	2.16	40	91	5

Verified and corrected at the Office of the Chief Signal Officer of the Army, Washington.

ANNUAL REPORT, 1884.

We confess to a spirit of pride and enthusiasm in the compilation of this report, as it demonstrates the steady improvement and development of our State, and we are more than ever convinced that Indiana is the most favored locality for human existence, all things considered, on "God's green earth." We have all the requisites for prosperity, with the aid of knowledge and industry, and in former reports we have shown that it is a healthy locality. No other section of country has ever had a gathering of fifteen hundred pioneers whose ages ranged from 70 to 100 years, none having resided in the State less than 40 years. What better evidence of a healthful climate could be presented, or what other State can equal such a showing?

The geographical position is remarkably favorable, lying as it does, in the track of the great thoroughfares from the east to the great west, bounded by the great lakes on the north, and the Ohio river on the south, it must continue to be on the main highway between the seas. It is in the heart of the wheat growing region, with the highest record for production, and in the center of the corn belt of the United States, and also the geographical center of population.

The timber of the State is remarkable for the quantity and quality, the heavy growth of which has somewhat retarded the development of its productions compared with prairie land.

The coal is of superior quality and practically inexhaustible in quantity. The stone of fifty square miles in extent is pronounced unequalled for building purposes, and is now used for public buildings in the principal cities of the United States.

We have given a thorough description of the State as to the various resources in the Agricultural Report for 1882, and a general description by counties in the annual report for 1883, hence will avoid a repetition at this time.

It will be observed that this report for 1884, extends into the following year, as usual, for the reason that all the official reports of the Board are presented at the annual meeting of

the Delegate Board, which is set by statute law to convene the first Tuesday after the first Monday in January of each year; hence the business of the Board is contained in such reports, and could not consistently be compiled for publication until they have been properly and officially accepted, which in a manner, accounts for the delay in the published reports.

The time for the Annual Agricultural Convention should be changed to November of each year. It was fixed thirty-three years ago, before the days of railroads, when horseback was the principal mode of reaching the capital in the winter, and it was then arranged for one trip to answer the Agricultural Convention and attend the meeting of the Legislature.

We call attention to the weather tables in this report, which we have kept up for twelve years in succession. They are useful for reference, as nowhere else can such tables be found in a condensed published form. Perhaps the most remarkable feature in this connection at this date of writing (February, '85) is the unusual and impressive fact of three severe arctic winters in succession. The present one will be remembered as the most severe on record; sixteen times below zero. Such a succession of cold winters has puzzled scientists to account for. The winter of 1881 and 1882, which preceded the cold winters referred to, was one of the mildest ever known, as the grass and wheat continued to grow all winter, and the following season produced the extraordinary wheat crop of 47,000,000 bushels in Indiana.

The proceedings of the annual meeting of the Delegate Convention, with the valuable essay matter, will be found of unusual interest. The reports from the agricultural societies of the State are of special local interest, and show marked improvement.

The proceedings of the State Industrial Associations continue to be one of the important features of this report. They are growing in favor, and more appreciated as the real objects become known. These associations have been fostered and encouraged as branches of the Board of Agriculture, until the meetings have outgrown the accommodations of the Board, and

in one case a larger hall had to be secured for the meeting. This will be obviated in the new State House, where commodious and comfortable quarters are provided, and are expected to be ready for occupancy in two years. The last meeting of these associations was held in joint convention, so as to not conflict and follow immediately after each other, thus getting the full benefits of the agricultural rooms and accommodations, and securing railroad favors that could not be done otherwise; also, giving members interested an opportunity to attend more than one meeting without additional expense. For instance, the Short-horn Cattle Breeders met on Tuesday forenoon, held sessions afternoon, evening and next day forenoon; then the Jersey Cattle men took possession, held sessions afternoon, evening and next day forenoon, and then the Wool Growers took possession. These arrangements continued the following week with other State associations, and proved to be so very satisfactory that it is agreed on for the next annual meetings. The wisdom of holding separate sessions for each stock interest has been demonstrated by the thorough investigations of important questions that arise, and the dissemination thereby of useful knowledge through the printed Agricultural Reports, which could not be so thoroughly accomplished in a meeting of varied interests, or in too limited a time to bring out discussion.

We take pleasure in producing for a frontispiece of this book a portrait steel engraving of Dr. Stevenson, the pioneer in importing improved cattle in the State, one of the original incorporation of the Board of Agriculture; President of the Board for three years, at an early day; always foremost in agricultural matters; a liberal contributor as essayist; and a representative "Hoosier" at home and abroad. His biography will be found at the close of this report, and *good reading for young people as well as the elderly.*

The Board of Agriculture are much encouraged with the result of the last State Fair. It was a success in every particular, and professional exhibitors pronounced it second to none anywhere as an Agricultural exhibition; the full details of which are given in the officers reports beginning on page 47.

THE BUREAU OF STATISTICS.

In the sixth annual report from that department (a volume of 513 pages) the system of collating Statistics in an elaborate—but condensed form, have been so perfected, that we deem a repetition of the figures in this volume as unnecessary, except in a general way to show *the estimated gross value of the Agricultural products of Indiana for 1884*, based upon the statements therein, being a synopsis of the principal cereal crops, and the leading products of the soil, as may be properly represented under the name of "Agricultural Industries."

<i>Products.</i>	<i>Acres.</i>	<i>Bushels.</i>	<i>Estimated Value.</i>
Wheat.....	2,990,811	40,531,200	\$32,424,960
Corn.....	3,137,840	89,159,799	35,663,919
Oats.....	791,343	23,581,108	6,601,312
Barley	11,907	259,106	142,508
Rye	32,373	434,266	233,346
Buckwheat.....	5,382	62,251	37,350
Clover hay.....	908,238	1,501,860 tons.	} 9,995,328
Clover seed.....		246,042 bush.	
Timothy hay.....	1,247,099	1,946,342 tons.	} 15,616,788
Timothy seed.....		35,452 bush.	
Irish Potatoes.....	87,448	5,969,461 bush.	} 1,904,781
Sweet Potatoes....	2,509	142,429 bush.	
Flax seed.....	28,166	185,277 bush.	} 345,565
Flax straw		22,575 tons.	
Tobacco	20,592	15,592,400 lbs.	1,559,240
Garden products.....			4,775,350
Orchard products (including cider, wine, vinegar)			3,500,000
Dairy products			11,050,890
Poultry, eggs and feathers.....			5,224,943
Honey and sorghum and maple sugar and molasses			859,081
Wool, pounds, 4,773,708			995,039

FARM ANIMALS.

Horses (increase over 1883).....	\$2,017,440
Mules (increase over 1883).....	200,460
Cattle (increase over 1883)	2,203,080
Sheep and lambs (increase over 1883).....	34,053
Hogs.....	19,679,110
Total agricultural products.....	\$155,085,663
Products of coal mines and quarries	2,500,000
Manufactured products.....	163,851,872
Total value of Indiana products.....	\$321,437,535

Secretary.

STATE BOARD MEETINGS, 1884.

ORGANIZATION OF NEW BOARD.

AGRICULTURAL ROOMS,
January 10, 1884. }

On motion of Mr. Jones, the Board was called to order, and Mr. Seward appointed chairman.

On call of the roll all the members answered as follows: Messrs. Mitchell, Hargrove, Sieg, Seward, Sunman, Jones, Cotteral, Dungan, La Tourette, Davidson, Graham, Stuart, Ratliff, Custer, Banks and Lockhart.

On motion of Mr. Jones, the Board took a five minutes recess.

Being called to order by Chairman Seward, on motion of Mr. Sunman, the Board then proceeded to the election of officers for the ensuing year, which resulted as follows :

President Robert Mitchell, of Gibson county.
Vice President Jasper N. Davidson, of Montgomery county.
Secretary Alex. Heron, of Marion county.
Treasurer Sylvester Johnson, of Marion county.
General Superintendent Fielding Beeler, of Marion county.

EXECUTIVE COMMITTEE.

Dick Jones, of Bartholomew county.
W. B. Seward, of Monroe county.
John M. Graham, of Delaware county.
W. W. Cotteral, of Henry county.

NOTE—The condensed proceedings of the Board of Agriculture, as herewith presented, includes only such matter as may be useful for reference or of general interest.

On motion of Mr. Jones, a vote of thanks was tendered to the ladies for their attendance on the meetings of the Board.

On motion of Mr. Hargrove, the time of holding the next fair was fixed at September 29 to October 4, 1884.

Mr. Graham moved that the next meeting of the Board be held on the 12th of February next, and that all unfinished business of this meeting be referred to that meeting. Carried.

On motion of Mr. Stuart, President Mitchell was constituted a committee of one to canvass the business houses and hotels of the city to ascertain how much they will contribute to the contemplated fat cattle show next fall, and report at the February meeting.

On motion of Mr. Custer, it was determined that this Board will remain in the Michigan, Ohio and Indiana Agricultural and Mechanical Fair Circuit.

Mr. Seward moved that the proposed contract with the Water Works Company be taken up.

Mr. Lockhart moved to amend by postponing consideration of the matter until the February meeting, which was agreed to.

On motion of Mr. Lockhart, the salaries of members and officers were fixed the same as for the preceding year, 1883.

The Board then adjourned until February 12th.

MARCH MEETING OF THE BOARD.

FIRST DAY.

MORNING SESSION.

TUESDAY, March 4, 1884, 10 A. M.

Board met, with President Mitchell in the chair. The following members responded to roll call: Messrs. Mitchell, Hargrove, Sieg, Sunman, Jones, Cotteral, LaTourette, Davidson, Graham, Ratliff, Custer, Banks and Lockhart.

The minutes of the last meeting were read, corrected and approved.

The President announced the Superintendents of Departments as follows :

DEPARTMENT SUPERINTENDENTS.

Horse Department—Jasper N. Davidson.	Geology and Natural History—Professor John Collett.
Speed Ring Department—Dick Jones.	Exhibits on Lower Floor—John Ratliff.
Cattle Department—C. B. Stuart.	Exhibits on Upper Floor—S. W. Dungan.
Hog Department—W. A. Banks.	Ladies' Department, Upper Floor—Womans State Fair Association.
Sheep Department—T. W. W. Sunman.	Steam Engines—W. B. Seward.
Poultry Department—J. M. Graham.	Amphitheater—J. Q. A. Sieg.
Farm and Garden Products Department—H. LaTourette	Space in Exposition Building—S. W. Dungan.
Horticultural Department—L. B. Custer.	Gates—R. M. Lockhart.
Mechanical Department—Hargrove and Cotteral.	

COMMITTEES :

Committee on Reception—Messrs. Mitchell, Lockhart, Dungan and Stuart.

Committee on Pedigrees—Messrs. Banks, Sunman, Stuart and Jones.

On motion of Mr. Ratliff, the change of the time of this meeting, as ordered by the President for certain reasons, from February 12th to March 4th, is hereby approved.

President Mitchell, as Committee on Fat Stock Show, announced that he had been soliciting subscriptions for a fat stock show, which it is proposed to hold next November. He stated that his efforts in this work had been attended with decided success. On motion, the matter was referred to a committee, Messrs. Mitchell, Stuart, Sunman and Lockhart, to report tomorrow morning. A number of letters were then read from various individuals throughout the State, endorsing such a move, and offering to give it their hearty support.

The subject of the contract with the Indianapolis Water Works Company, referred at the January meeting, then came up, and considerable discussion ensued. On motion of Mr. Seward, the Secretary was instructed to contract with the company to extend their mains to the Exposition Building.

On motion, the President was instructed to appoint a Committee on Resolutions, in regard to the death of D. P. Holloway, an ex-President of the Board, and framer of the law creating the Board. Messrs. Seward, Lockhart and Nelson were so appointed, and requested to report to-morrow morning.

On motion of Mr. Lockhart, the President was instructed to appoint a member of the Board as Water Superintendent, to be in control of the water during the week of the State Fair. The President named Mr. Lockhart to serve in this capacity, the General Superintendent to take charge at all other times.

On motion of Mr. Sunman, Mr. Heron was appointed to represent the Board at the Fair Circuit meeting at Toledo, O., March 12. This was followed by a general discussion when, on motion of Mr. Sunman, the Board adjourned until 2 o'clock P. M.

AFTERNOON SESSION.

A communication was received from T. W. W. Sunman, relative to premiums on Red Polled cattle, which, on motion, was referred to the Committee on Premium List.

On motion of Mr. Dungan, the General Superintendent was authorized to renew the lease on the building owned by the Moline Plow Company, and accept propositions for other buildings for exhibition purposes.

On motion of Mr. Lockhart, it was resolved that the General Superintendent provide an office for the Superintendent of the Mechanical Department in the immediate vicinity of the machinery.

On motion of Mr. Lockhart, various communications, relative to specialties for the next State Fair, were referred to the Executive Committee and Secretary.

Mr. Seward introduced the following, which was adopted:

WHEREAS, Various propositions have been made, from time to time, for the purchase or exchange of our Fair Grounds for other locations; and,

WHEREAS, After due consideration of the propositions that have been made, we are of the unanimous opinion that we have nothing to gain, and much to lose, by moving to any other grounds; therefore,

Resolved, That we believe it to be to the best interest of this Board to continue to hold our fair at its present location, and that we, at this time, have no intention to seek a new location.

On motion of Mr. Sunman, the President named the following to serve on the committee appointed to consider the probable cost and advisability of holding a fat stock show during the coming fall: Messrs. Sunman, Stuart and Lockhart, and, by general request, Mr. Mitchell was added to the committee.

The Secretary was instructed to insure the stalls at the Fair Grounds at not more than one and a half per cent. premium.

On motion of Mr. Lockhart, the General Superintendent was instructed to remove the old Power Hall Building from the Fair Grounds.

On motion of Mr. Ratliff, all further repairs in the stalls and buildings will be made under the direction of the Executive Committee and General Superintendent.

On motion of Mr. Lockhart, the matter of renting the Fair Ground for trotting purposes, was referred to a committee consisting of the President, Secretary and General Superintendent.

On motion of Mr. Lockhart, the Board resolved itself into Committee of the Whole on revision of the Premium List, with Mr. Davidson in the chair.

At 6 o'clock P. M., the Committee rose. President Mitchell took the chair. The Committee, by Mr. Davidson, reported progress, and asked leave to set again.

On motion, adjourned to meet at 9 o'clock to-morrow morning.

3 SECOND DAY.

MORNING SESSION.

WEDNESDAY, MARCH 5, 1884.

Board met at 9 o'clock pursuant to adjournment, President Mitchell in the chair and all the members present. Minutes of yesterday's proceedings read, corrected and approved.

Mr. Lockhart, of the Committee on Water Supply, made verbal report, and moved to reconsider the action of the Board on yesterday, which was agreed to. He then moved that a committee of three be appointed by the President to ascertain the conditions and probable cost of water supply by the Water Works Company, which was carried, and Messrs. Dungan, Seward and Beeler appointed the committee.

Mr. Stuart, from the committee appointed to consider the probable receipts and expenditures of the contemplated fat stock show, reported as follows:

Your committee to consider the probable receipts and expenditures connected with the holding of a fat stock show in this city next winter, respectfully report that upon investigation they find the probable expenses will amount to \$4,000. This will include all expenses for premiums and incidental expenses of running the show five days.

We also find that the subscriptions amount to \$1,500. We estimate the receipts at \$500 to \$600, or a total of \$2,000 in sight. If now the members of the Board will each raise \$100 in their respective districts, that will add to the receipts \$1,600. It will then be necessary to raise an additional sum of \$500 by subscriptions.

Your committee, therefor, would recommend the holding of the fat stock show at the Union Stock Yards, Indianapolis, provided the members of this Board will agree to raise the sum of \$100 each in their respective districts; and provided further, that Indianapolis shall increase its subscriptions to \$2,000. If this can not be done, then we would report against the advisability of holding the show this year.

C. B. STUART,
For the Committee.

And asked to be discharged from further consideration of the matter.

On motion of Mr. Davidson, the report was received, and the committee discharged.

On motion of Mr. Sunman, members expressed their views as to the probability of raising the sum recommended by the committee, in their respective districts.

A free interchange of opinions followed, after which Mr. Sunman moved that members canvass their districts with a view to the probability of securing the necessary funds and report at some future day, and that if successful the fat stock show should be held, and if unsuccessful that it should be abandoned. The motion was not carried.

On motion of Mr. Lockhart, a committee of three was appointed to make final report on the matter of fat stock show and the advisability of offering premiums on fat stock to be shown at the fair.

The committee appointed is Messrs. Lockhart, Stuart and Sunman.

Mr. Sunman moved that there be an expert judge in each of the classes of cattle, sheep and hogs.

Mr. Stuart moved to amend by making the several experts judges in the sweepstakes class of each department, pending which considerable discussion was had, and Mr. Stuart's motion was withdrawn and the motion of Mr. Sunman was not carried.

Mr. Stuart then moved that one expert judge for each of the classes of live stock (except horses) be appointed, who shall act as judges in all the classes including sweepstakes.

Mr. Jones moved to amend by appointing the Committees on awards and making their duties the same as last year, which, after some discussion, was withdrawn.

Mr. Stuart, in support of his motion, then read a letter from Mr. Burleigh on the appointment of judges, and also extracts from the Breeders' Gazette.

A lengthy discussion followed, which was participated in by nearly all of the members, and the motion was carried.

Mr. Stuart moved that no animal that has not taken first prize in its class will be allowed to compete for the sweepstakes prize, which, after much discussion, was not carried.

On motion of Mr. Sunman, the Board adjourned to meet at 2 o'clock P. M.

AFTERNOON SESSION.

Board met pursuant to adjournment. All the members present.

Mr. Sunman moved a reconsideration of the vote in the matter of the appointment and duties of judges on awards, which was ruled out of order.

Mr. Dungan offered the following :

The sweepstakes ring in the Cattle Department on beef breeds shall be judged by a practical buyer, a feeder, and a butcher; two of these to act, and in case they can not agree, the deciding vote to be cast by the third judge. These judges shall be selected by the Superintendent, who shall arrange to have them present. These judges shall not be breeders or owners of thoroughbreds of either of the competing breeds in which they are called to judge.

The matter was discussed by Messrs. Jones, Dungan, Stuart, and others.

Mr. Lockhart moved the previous question, and the resolution was adopted.

Mr. Lockhart offered the following, which was adopted:

Resolved, That the General Superintendent shall, in all cases when the State Fair Grounds are rented to any person or persons, for any purpose whatever, incorporate in such lease the provision that no liquors of any kind shall be sold by them on said grounds while in their possession, and a violation of said provision shall be a forfeiture of any and all rights they may have had for the use of said grounds.

Mr. Hargrove offered the following, which was adopted:

Resolved, That this State Board extend to the Executive Committee of the Ohio, Michigan and Indiana Agricultural and Mechanical Fair Circuit, an invitation to hold the next annual meeting of said committee in the city of Indianapolis, in the months of December or January next.

On motion of Mr. Ratliff, the Board resolved itself into committee of the whole, to consider revision of the premium list. The President called Mr. Ratliff to the chair.

The President and Secretary of the Woman's Fair Association being present, and desiring to present certain matters of interest in their department, on motion of Mr. Lockhart, the committee rose, reported progress and asked leave to sit again, which was granted.

Mrs. Noe, President, and Mrs. Adkinson, Secretary of the Woman's Fair Association, then presented the following:

Gentlemen of the State Board of Agriculture :

The Executive Board of the Woman's State Fair Association beg leave to submit the following :

At the fair of 1883, a number of articles were exhibited for which no premiums were offered in the list, and of these articles we would recommend the following as specially deserving the award of the sums mentioned :

PAINTED PLAQUE.—First, Mrs. Howland	\$2 00
Second, Miss Alice Ross	1 00
DOLL BODY—Miss Belle Worland	\$1 00

In view of the increased interest taken in Art, we suggest that a larger amount of premiums for fine and decorative art would bring out an exhibit that would greatly add to the attractions of the fair, and respectfully request the appropriation of an additional \$100.00 in the Woman's Department for that purpose, increasing the whole amount of premium money offered in that department from \$800.00 to \$900.00.

MRS. A. M. NOE, *President,*

FLORENCE M. ADKINSON, *Secretary.*

Both of which, on motion of Mr. Lockhart, were approved and the appropriations made.

On motion of Mr. Lockhart, the Board again resolved itself into committee of the whole, to consider revision of the premium list—Mr. Lockhart in the chair.

At 5:30 o'clock the committee again rose, reported progress and asked leave to sit again.

President Mitchell resumed the chair. Mr. Lockhart, at his request, was excused from further attendance on this meeting.

Mr. Seward, from the Committee on Water Supply, submitted

the following report, and moved that the secretary be authorized to make contract with the Water Works Company in accordance therewith. Carried.

Your committee appointed to inquire into the matter of water supply for the Fair Grounds, have made inquiry of the Indianapolis Water Works Company as to quantity and cost of same, and find that 1,000,000 gallons will be furnished at a cost of \$200 per annum. All that is used in excess of this amount will be charged for at the rate of 10 cents per 1,000 gallons—less than half a cent per barrel. The supply would be equal to 3,000 gallons per day.

W. B. SEWARD, for Committee.

On motion of Mr. Stuart, the superintendents of gate and amphitheater were authorized to select and employ gate keepers.

On motion of Mr. Banks, the superintendent of speed was authorized to employ Mr. David Webb, of Covington, as an expert judge on speed.

On motion of Mr. Hargrove, adjourned to 9 o'clock to-morrow morning.

THIRD DAY.

MORNING SESSION.

THURSDAY, MARCH 6, 1884.

Board met pursuant to adjournment, President Mitchell in the chair. All the members present. Proceedings of yesterday's meeting read, corrected and approved.

President Mitchell made assignment of committeemen, to be furnished by members of the Board, as follows:

On Horses.—Messrs. Mitchell, Hargrove, Jones, Dungan, LaTourette and Davidson, one each.

On Cattle.—Messrs. Mitchell, Dungan and Stuart, one each.

On Sheep.—Messrs. Sunman, Cotterall, LaTourette, Graham, Ratliff and Banks, one each.

On Hogs.—Messrs. Hargrove, Sunman, Jones, Davidson, Graham and Custer, one each.

On Agricultural Products.—Messrs. Graham, Cotteral, Dungan, Ratliff and Custer, one each.

On Machinery and Implements.—Messrs. Seward, Jones and Banks, one each.

Amphitheater.—Jno. Q. A. Sieg, three men.

Gate Keepers.—R. M. Lockhart, eight men.

Mr. Stuart, from the committee appointed to make final report concerning the proposed fat stock show, and to arrange list for premiums on fat stock to be exhibited at the fair of 1884, made the following report, which was accepted and concurred in:

Gentlemen—Upon a second and more careful review of the proposition to hold a fat stock show this year, your committee finds that there exists throughout the State a very strong feeling that such a show should be held. But, owing to the depressed condition of the business interests of the State, caused in part by the failure of crops last year, and by the recent floods; and, also, because of this being the year for holding a presidential election, we do not think the Board would be justified in attempting to hold the fat stock show. We recognize and appreciate the very cordial and substantial support given this Board by the citizens of Indianapolis in their efforts to raise the fund and provide buildings for the holding of the show, and it enables us to say that we can see no possible obstacle in the way of holding a fat stock show in 1885.

R. M. LOCKHART,
T. W. W. SUNMAN,
C. B. STUART,

Committee.

The list of fat stock premiums submitted was, after some discussion, rejected.

Mr. Stuart moved that judges on awards be paid \$5 per day, and expenses allowed, for their services.

Mr. Custer moved to amend by making the pay \$5 per day and railroad fare, which was not adopted.

Mr. Sunman moved to amend by adding hotel fare, to which there was no second.

Mr. Dungan moved to amend by fixing the pay at \$3; not carried.

Mr. Stuart moved to amend by fixing the pay at \$5, which was carried.

On motion of Mr. Banks, the Secretary was directed to furnish the Department Superintendent with the names of members who are to furnish judges in their respective departments.

On motion of Mr. Stuart, the Board resolved itself into committee of the whole to consider the premium list.

At 12 o'clock M. the committee rose, and President Mitchell resumed the chair. Mr. Stuart, of the committee, reported progress, and asked leave to sit again, which was granted, and the Board adjourned until 2 o'clock P. M.

AFTERNOON SESSION.

Board met pursuant to adjournment, President Mitchell, in the chair. All the members present except Mr. Lockhart.

Mr. Davidson offered the following :

Resolved, That the Superintendent's of the Horse, Sheep and Hog Departments shall have the power to appoint judges of Sweeptakes and herds in the same manner as in the Cattle Department, the President to approve the appointment so made.

Adopted.

On motion of Mr. Davidson, Mr. Mitchell was allowed the usual per diem for eight days services in canvassing and soliciting subscriptions for the proposed Fat Stock Exhibition.

On motion of Mr. Seward, the Board again resolved itself into Committee of the Whole on revision of the premium list, and Mr. Seward was called to the chair.

The committee rose, President Mitchell resumed the chair, and called the Board to order.

Mr. Seward, chairman of the committee of the whole, reported that the committee had finished its work, and moved the adoption of the premium list as revised, which was carried, and ordered published.

President Mitchell introduced Dr. G. B. Northrop, of Clinton, Conn., who made a short address, showing the importance and value of "Arbor Day," and requested that the Board take some action in relation to the same.

Mr. Stuart offered the following, which was adopted :

Resolved, That this Board approve and commend the plan of Arbor Day, as appointed by the State Horticultural Society and the State Teachers' Association, and advise the farmers of the State to devote the 11th day of April, next to both ornamental and economic tree planting.

On motion of Mr. Stuart, the thanks of the Board were tendered to Mr. Northrop for his interesting address.

By their request leave of absence was granted to Messrs. Hargrove and Banks.

On motion of Mr. Jones, all unfinished business was referred to the Executive Committee.

Mr. Sunman moved, that in case any member can not provide committeemen as assigned, the superintendent of department in which said committeeman was selected to serve, be authorized to appoint such committeeman. Carried.

The President appointed the following Standing Committees :

Finance.—The Executive Committee.

Rules and Regulations.—Dungan and Lockhart.

Fair Grounds.—Hargrove and Davidson.

Unfinished Business.—Sieg and Ratliff.

Premium List.—Banks, Stuart and Sunman.

Credentials.—LaTourtte and Custer.

On motion of Mr. Jones, Assistant Superintendents of the Horse and Cattle Departments are to furnish their own horses, and be paid five dollars per day for their services, and Assistant Superintendents in other all departments to be paid three dollars per day for their services.

On motion of Mr. Ratliff, the pay to outside gate keepers was fixed at three dollars per day, and the pay of gate keepers at the amphitheater at two dollars per day.

On motion of Mr. Cotteral, the General Superintendent was instructed to provide and furnish a suitable office room for the use of the President during the fair.

On motion of Mr. Dungan, the Board adjourned to meet at the Fair Grounds at 10 o'clock A. M., Monday, September 29, 1884.

EXECUTIVE COMMITTEE MEETINGS.

APRIL SESSION.

AGRICULTURAL ROOMS, April 16, 1884.

Agreeably to call of the President, the Executive Committee of the Board of Agriculture met at 10 o'clock A. M. Present, Messrs. Mitchell, Jones, Seward, Graham, and Cottrel. On motion of Mr. Jones, the owners of Holderness cattle were invited to attend the State Fair; and that quarters be provided for them free of charge, in the absence of any premium on that class.

On motion of Mr. Graham, Rule 3, regulating supply wagons of lessees was adopted.

Mr. Jones presented the following list of premiums on speed, which, on motion of Mr. Graham, was adopted, the aggregate being the sum appropriated by the Board, and referred to the Executive Committee for distribution:

Tuesday, Sept. 30, 3 years' old trot, 3 premiums	\$150
Tuesday, Sept. 30, 2:37 pace, 3 premiums	150
Wednesday, Oct. 1, 2:37 trot, 3 premiums	200
Wednesday, Oct. 1, 3 minute trot, 3 premiums	200
Thursday, Oct. 2, running race, 3 premiums	150
Thursday, Oct. 2, free-for-all pace, 3 premiums	300
Thursday, Oct. 2, 2:30 trot, 3 premiums	250
Friday, Oct. 3, stallion trot, 3 premiums	150
Friday, Oct. 3, free-for-all trot, 3 premiums	400
Friday, Oct. 3, consolation purse for runners	50

On motion of Mr. Seward, it was ordered that the school children of the State be admitted to the State Fair free, on Thursday of fair week, on tickets issued for that purpose.

A committee of citizens representing mechanical and machinery interests was present by special invitation, and presented matters in connection therewith, which were freely discussed by Mr. Haywood, of the McCormick Harvester Company, and others. The result of the conference was a determination on the part of exhibitors in this department to co-operate with the Board in making the fair a success.

The committee adjourned to the Fair Ground to investigate as to needed improvements, and ordered that the General Superintendent be authorized to make all necessary repairs of the floor in main building, and prepare headquarters for the Superintendents of the Mechanical Department.

AUGUST SESSION.

AGRICULTURAL ROOMS, August 12, 1884.

The Executive Committee met, agreeably with the call of the President, at 10 o'clock A. M.

Present, Messrs. Mitchell, Seward and Cotteral; also, General Superintendent Beeler and S. W. Dungan, of the Board, by invitation.

Minutes of the April meeting of the Executive Committee were read and approved.

Ordered, That the General Superintendent endeavor to arrange with the Wabash Railway to locate a station east of the Fair Grounds for the loading and unloading of exhibition stock and machinery.

On motion of Mr. Seward, two additional sections of cattle stalls were ordered to be erected.

Ordered, That 200 feet of 1½ inch hose be purchased by the General Superintendent and Mr. Seward for use in the Exposition Building.

Ordered, That Mr. Seward and Superintendent Beeler be authorized to make inventory and estimate values of the boilers, pumps, shafting and pulleys not needed, and dispose of the same to best advantage.

Ordered, That Superintendent Beeler be authorized to erect a suitable building for use of the express companies and Superintendents of the Mechanical Department, east of the main Exposition Hall.

Ordered, That the General Superintendent have the horse and cattle stalls, and sheep and hog buildings, coated with hydraulic lime wash.

AFTERNOON SESSION.

On motion of Mr. Seward, it was ordered that Prof. S. A. King be engaged to make balloon ascensions at the State Fair.

Ordered, That contracts be entered into with the When Clothing Store to advertise the State Fair in manner and extent same as in 1883.

The General Superintendent was authorized to contract with the firemen for use of the Fair Grounds on July 4, 1885.

Ordered, That the Secretary advertise for bids to furnish music, and for the sale of privileges at the fair.

Ordered, That only such shows as have immoral and other objectional features be excluded from the Fair Grounds.

SEPTEMBER SESSION.

SEPTEMBER 22, 1884.

The Executive Committee met on call of President Mitchell at 10 o'clock A. M.

Present, Messrs. Mitchell, Graham, Jones, Cotteral and Seward; also Messrs. Dungan and Superintendent Beeler.

Minutes of the meeting of August 12th read and approved.

A committee of citizens requested that the Board extend an invitation to Hon. B. F. Butler to be present at the State Fair.

After some interchange of thought on the subject, Mr. Seward moved that the President appoint two of the committee to act with himself as a committee of invitation, and to endeavor to secure the attendance of all the present presidential candidates at the State Fair. Which was adopted, and Messrs. Seward and Graham appointed.

At the solicitation of Mr. W. B. Holton, of the David Bradley Manufacturing Company, who wished to send out a large number of fair tickets to the friends and customers of the firm, a commutation rate was made as follows: 100 and under 200, 10 per cent.; 200 and under 300, 15 per cent.; 300 and under 400, 20 per cent.; 400 and under 500, 25 per cent.; 500 and over, 50 per cent. off regular rates.

Ordered, That all musical bands in uniform be admitted to the fair free of charge.

On motion, a premium was authorized on match teams in light harness horses, Book 5, as follows:

Best pair matched horses.....	\$20 00
Second " "	10 00

The same having been omitted by inadvertence from the printed list.

The Indianapolis Light Infantry Company offered proposal to have an exhibition drill one day of the fair, provided the Board of Agriculture will contribute \$150 as premium for the same.

The Board declined the proposal, but on motion of Mr. Graham, offered a premium of \$75 for the best drilled and uniformed military company for Wednesday of the fair.

On motion of Mr. Lockhart, the Superintendent of Gates was authorized to pass all pioneers over 75 years of age on Wednesday.

Mr. Graham presented the following:

WHEREAS, The Illinois and St. Louis Boards of Agriculture

have, on account of the disease known as pleuro-pneumonia prevailing among cattle, and especially the Jersey breed, prohibited the exhibition of this breed at their fairs; and,

WHEREAS, Believing it to be our duty to exercise all practicable precaution to prevent the spread of said disease, but at the same time to encourage the exhibition of all breeds of cattle; therefore,

Resolved, That all cattle will be allowed to compete at the Indiana State Fair as usual, but that before entering the grounds, they must be subjected to inspection by two veterinary surgeons, who shall judge that they are free from disease, and safe in this respect to be admitted among other cattle; and that a veterinary surgeon will be provided by the Board for this purpose, who shall have his office at or near the cattle entrance gate for this purpose.

Which was adopted.

EXPOSITION GROUNDS.

FIRST DAY.

SEPTEMBER 29, 1884.

Board met at 10 o'clock A. M., President Mitchell in the chair. Members present were: Messrs. Hargrove, Secretary Seward, Sunman, Graham, Custer, Banks and Lockhart.

Mr. Banks called attention to the contradiction in herd premiums on hogs, in books 30 and 31, and the rule at the head specifying of what they shall consist.

Mr. Sunman moved that the premiums as offered be adhered to.

Mr. Sieg moved to amend by offering a premium for herd of hogs, as specified in the rule, of \$30 for first and \$20 for second premium.

Mr. Hargrove moved to amend by making the premiums \$20 and \$10, which was adopted for both books.

On motion of Mr. Seward, it was ordered that all who claim to be exhibitors be passed through the gates this A. M., and that ticket offices be opened at 12 M.

The Board then took a recess until 2 o'clock P. M.

SEPTEMBER 29, 2 P. M.

Board met pursuant to adjournment, President Mitchell in the chair. All the members present.

On motion of Mr. Jones, it was decided to supply passes to the Department Superintendents, who shall use their discretion in issuing them to exhibitors.

On motion of Mr. Stuart, the Broom Brigade of Capt. Richardson will be admitted to the grounds for the purpose of making an exhibition, free of charge.

On motion of Mr. Lockhart, the vote to offer additional premiums in books 30 and 31 was reconsidered, and it was, after some discussion, decided to let the premiums remain as published.

The Board then adjourned until 9 o'clock to-morrow morning.

SECOND DAY.

SEPTEMBER 30, 1884.

The Board met, President Mitchell in the chair, and all the members present.

There being no business before the Board, recess was taken until 9 o'clock to-morrow morning.

THIRD DAY.

OCTOBER 1, 1884.

Board met, President Mitchell in the chair, and all the members present.

A protest was presented by Cyrus Matler against the exhibit by —— of stallion 4 years old and over, in class-book 2, which being informal, was referred back to him for affidavits in accordance with the rules regulating protests.

On motion of Mr. Stuart, Superintendent of Gates Lockhart was authorized to exercise his discretion concerning certain admission tickets issued in the Mechanical Department, it appearing that the privilege was being abused.

The Board then took recess until 2:30 P. M. Meeting at this hour, and there being no business to transact, recess was continued until 9 o'clock to-morrow morning.

FOURTH DAY.

OCTOBER 2, 1884.

Board met, President Mitchell in the chair and all the members present.

A communication was received from the Newark Machine Company, of Newark, Ohio, presenting a challenge to other manufacturers of clover hulling machines, and proposing a contest to determine the relative merits of their respective machines, to take place during the present State Fair, at such time and under such regulations as the State Board of Agriculture may determine, and inclosing a check for \$100 to defray their portion of the expense thereof. Consideration was given the communication.

On motion of Mr. Davidson the proposition was declined, for reasons that space on the grounds being limited, it could not well be spared without too much inconvenience to other exhibitors, and also the danger to life attending such contests, and the check be ordered to be returned to the Newark Machine Company.

Mr. Davidson called attention to the matter of an erroneous entry of heavy draft team in Book 3, heavy draft grade horses, and the award of the premium on same as being contrary to the provisions of Rule 6 of the rules governing exhibits, as one or both of the horses constituting the team had been entered for other premiums, and asking the sense of the Board thereon.

Mr. Banks moved that the premium be withheld, for the reason that the entry had been made in violation of the rules, which was carried.

The Board then took recess until 2:30 P. M.

AFTERNOON SESSION, 2:30 P. M.

Board met, President Mitchell in the chair.

There being no business requiring special attention, recess was taken until 9 o'clock to-morrow morning.

FIFTH DAY.

OCTOBER 3, 1884.

Board met, President Mitchell in the chair, and all the members present.

On motion of Mr. Sunman it was ordered that, at the discretion of Department Superintendents, such exhibitors as were intending to make exhibits at other distant fairs, or for other

good reason, would be greatly accommodated by an early removal of their animals or articles from the Fair Grounds, would be permitted to do so after 4 o'clock P. M. to-day.

Mr. Sunman also moved that the Secretary be authorized to issue premium orders and the Treasurer authorized to pay the same after 1 o'clock P. M. to-day, which was carried.

Mr. Jones presented the matter of the races of yesterday, and stated that some of the drivers of the horses manifested a disposition to jockey, and render the race uninteresting and unfair to the Board and spectators; and that in view of this he, as supervising member of the speed ring, removed the drivers of such horses and substituted other drivers, who won the race; that in accordance with the rules of the National Trotting Association in such cases, the driver is entitled to a fee for his services, which may be retained from the award due the winning horse for this purpose, and that he had so ruled, and asking an expression as to the sense of the Board in the matter. He was sustained in his action by prompt consent of the Board.

On motion of Mr. Stuart, President Mitchell was appointed delegate to represent the Board at the meeting of the National Stockmen's Association, at Chicago, on the third day of December, 1884.

Mr. Davidson, as Superintendent of the Horse Department, stated that there was reason to think that the entry to which award to teams for general purpose, in book four, was made, was in violation of the rule that "all double teams must be owned by the exhibitor," and moved that the matter be referred to the Executive Committee for investigation. Carried.

On motion of Mr. LaTourette a special award of \$25 was made to Wm. Sigerson & Son for the very extensive and tasteful display of grain in stalk and ear, and grasses, made by them, as grown in Pulaski county, Indiana.

SIXTH DAY.

OCTOBER 4, 1884.

Board met. President Mitchell in the chair, and all the members present. Proceedings of all the previous meetings at the Fair Grounds read and approved.

An appeal from the decision of the judges in awarding only first premium in the 2:37 pacing race of yesterday, was made by E. D. Morse, for the reason that as his horse had distanced the field he was therefore entitled to the purse (\$150), as this was in accordance with the rules of the National Trotting Association.

On motion of Mr. Davidson, it was decided that the horse distancing the field be allowed first money only.

A protest was presented by Mart L. Hare against the award made in Book 6 to stallion showing three best colts, alleging that after a committee, who had acted under instructions from the Superintendent of the Horse Department, had made the award to the horse and colts of Mr. Sam'l Granger, he, the Superintendent, had appointed another committee that placed the award to another horse and colts.

Superintendent Davidson made general denial of the allegations.

On motion of Mr. Jones, the action of the Superintendent and awarding committee were sustained.

A communication was received from the International Association of Fairs and Expositions, soliciting this Board to become a member thereof, the terms being \$10 initiation fee and \$10 annual dues.

On motion of Mr. Sunman, that this Board become a member of said Association, the vote was a tie, and the motion was laid on the table.

A communication was received from the Model Clothing Company, representing that they had made an extensive and fine exhibit of clothing; that no premium was offered for such

exhibit, and asking that some suitable recognition of the same be made by the Board. The communication was considered, and in view of the fact that other similar and meritorious exhibits had been made by other parties, it was, on motion, laid upon the table.

On motion of Mr. Seward, a diploma was awarded to the United States Encaustic Tile Company for the very beautiful display and great variety of tiles made, this being a new industry in this State, and highly deserving of encouragement.

On motion of Mr. Dungan, it was ordered that Mr. Seward and Secretary Heron be authorized to settle with the Treasurer as soon as practicably convenient to him.

Mr. H. C. Green, one of the judges on poultry, presented the matter of exhibit of Wyandotte chickens by A. T. Layton and Isaac N. Lane, for which no premium is offered, and represented that they were as worthy of a premium as other poultry specified in the list.

Mr. Dungan moved that a premium be allowed same as to Plymouth Rocks. Carried.

On motion of Mr. Cotteral, the varieties of poultry entered for exhibit at the fair of 1884, not included in the list, be referred for future action of the Board.

On motion of Mr. Seward, it was ordered that hereafter no person be allowed to wear any insignia as members of the Board of Agriculture but the members.

Mr. Davidson called attention to the fact that the mare entered for premium by Sylvester Johnson, in Book 4, one year and under two, by reason of oversight by the committee in calling the number of entry, was not exhibited, and recommended that the stall rent (\$2.00) for same be remitted, which was consented to.

By request, Mr. Banks was excused from further attendance on the meetings of the Board.

The minutes were read, and, on motion of Mr. Sunman, approved.

The Board then adjourned *sine die*.

EXECUTIVE COMMITTEE MEETING.

AGRICULTURAL ROOMS. November 11, 1884.

Committee met at 10 o'clock A. M., agreeably with call of the President. Present, Messrs. Mitchell, Jones, Seward and Graham. Secretary made report of the result of the fair, the general condition of agriculture in this State, the financial condition of the Board, and other matters of interest to be presented at the January meeting, which was approved.

The programme for the January meeting was made up, and the Secretary directed to invite the following persons to deliver essays at that meeting: Prof. C. H. Hall, of Franklin College; Geo. Finley, of Allegheny City, on Fish and Fish Ponds; Rev. G. L. Curtis, of Jeffersonville, on Adulterations of Foods and Medicines; Rev. Dr. Fisk, of Greencastle, on Diversified Labor; Col. J. A. Bridgeland, of Richmond, on The Norman Horse; Jasper N. Davidson, on Farmers' Recreations and Amusements; W. B. Seward, on The Autobiography of a Plow.

Communications were received from the David Bradley Manufacturing Company, making suggestions concerning the conducting of fairs. From Devereaux Pennington, judge of Jersey Cattle Class, concerning the awards of premiums, and from Prof. Robert B. Warder, of Purdue University, concerning analyses of fertilizers, all of which were referred to the January meeting. Adjourned until 2 o'clock P. M.

2 O'CLOCK P. M.

Committee met. Present, President Mitchell, and Messrs. Jones, Seward, and Graham. A communication was presented from the International Association of Fairs and Exhibitions, at St. Louis, Mo., requesting the Indiana State Board of Agriculture to become a member of the same. After some discus-

sion, Mr. Mitchell was appointed a delegate to attend the meeting of the association on December 3d, and the matter of becoming a member was left to his discretion.

The meeting of the Tri-Fair Circuit, which is to take place at the Agricultural Rooms on the third Wednesday of December next, was brought up. On motion of Mr. Graham, Messrs. Lockhart, Seward, Mitchell and Heron were appointed a committee to invite the Illinois, St. Louis and Wisconsin Fair Associations to send delegates to the meeting.

On motion of Mr. Graham, it was ordered to continue to carry insurance on the Exposition and other buildings on the Fair Grounds, in the sum of \$25,000.

On motion of Mr. Seward, the Indianapolis Light Infantry were allowed \$75.00 on account of exhibition drill at the fair.

On motion of Mr. Graham, the committee adjourned *sine die*.

ANNUAL MEETING, 1885.

AGRICULTURAL ROOMS,
TUESDAY, January 6, 1885, 10:30 A. M. }

Board met, President Mitchell in the chair. On call of the roll of members of the Board proper, the following members answered to their names :

- 1st District—Robert Mitchell, Princeton, Gibson county.
- 2d District—Samuel Hargrove, Union, Pike county.
- 3d District—J. Q. A. Sieg, Corydon, Harrison county.
- 4th District—W. B. Seward, Bloomington, Monroe county.
- 5th District—T. W. W. Sunman, Spades, Ripley county.
- 6th District—Dick Jones, Columbus, Bartholomew county.
- 7th District———, ——, ——
- 8th District—S. W. Dungan, Franklin, Johnson county.
- 9th District—H. LaTourette, Covington, Fountain county.
- 10th District—Jasper N. Davidson, Whitesville, Montgomery county.
- 11th District—John M. Graham, Muncie, Delaware county.
- 12th District—Chas. B. Stuart, Lafayette, Tippecanoe county.
- 13th District—John Ratliff, Marion, Grant county.
- 14th District—L. B. Custer, Logansport, Cass county.
- 15th District—W. A. Banks, Door Village, Laporte county.
- 16th District—R. M. Lockhart, Waterloo, Dekalb county.

On call of counties, the following delegates responded :

LIST OF DELEGATES.

COUNTIES.	DELEGATES.	POST OFFICE.
Bartholomew Ag'l & Indust'l	S. M. Glick	Columbus.
Bartholomew Ag'l Society . .	Dick Jones	Columbus.
Boone	Jno. W. Kise	Lebanon.
Cass	L. B. Custer	Logansport.
Clark	D. F. Willey	Charlestown.
Clay	R. S. Hobbs	Bowling Green.
Clinton	M. H. Belknap	Kilmore.
Dearborn	Will O'Brien	Lawrenceburg.
Decatur	Will Cumback	Greensburg.
Delaware	Jno M. Graham	Muncie.
Elkhart	Joseph Reppey	Syracuse.
Fulton	N. A. McClung	Rochester.
Gibson	Wm. M. Cockrum	Oakland City.
Grant	Hezekiah Steelman	Marion.
Hamilton	Geo. W. Wheeler	Noblesville.
Harrison	Jno. Q. A. Sieg	Corydon.
Henry	J. P. Nicholson	New Castle.
Howard	David Smith	Vermont.
Huntington	L. T. Bagley	Huntington.
Jackson	J. H. Matlock	Brownstown.
Jay	Jonas Votaw	Portland.
Jennings	C. D. Shank	Vernon.
Johnson	John Tilson	Franklin.
Knox	Gerard Reiter	Vincennes.
Lagrange	L. L. Wildman	Walcottville.
Lake	Henry R. Ware	Crown Point.
Laporte	John P. Oakes	Laporte.
Madison	Wm. Crim	Anderson.
Marion	Sylvester Johnson	Irvington.
Monroe	Jno. F. May	Bloomington.
Montgomery	J. N. Davidson	Whitesville.
Noble	E. B. Gerber	Ligonier.
Parke	R. C. McWilliams	Rockville.
Perry	Jno. C. Shoemaker	Indianapolis.
Pike	H. G. Billmeyer	Petersburg.
Pulaski	J. B. Agnew	Winamac.
Putnam	W. S. Cox	Green Castle.
Ripley	Nicholas Cornett	Versailles.
Rush	T. W. Hall	Raleigh.
Shelby	J. L. Carson	Shelbyville.
St. Joseph	W. O. Jackson	South Bend.
Steuben	A. W. Hendry	Angola.
Tippecanoe	Jno. M. Boggs	Lafayette.
Tipton	W. A. Maze	Sharpsville.
Vigo	James M. Sankey	Terra Haute.
Wabash	Nathaniel Bannister	Dora.
Warren	James Goodwine	West Lebanon.
Warrick	T. B. Hart	Boonville.
Washington	E. W. Shanks	Salem.
Wayne	Joseph C. Ratliff	Richmond.
Whitley	M. D. Garrison	Columbia City.

The roll of District Agricultural Societies was next called, and the following delegates responded :

DISTRICT.	DELEGATES.	POSTOFFICE.
Acton	J. E. McGaughey . . .	Gallaudet, Marion co.
Bridgeton Union	Dempsey Seybold. . .	Perth, Clay county.
Eastern Indiana.	N. B. Newnam.	Kendallville.
Edinburg	Jacob Mutz	Edinburg.
Fountain, Warren and Vermillion.	D. O. Webb	Covington.
Henry, Madison and Delaware . . .	W. H. Keesling	Mechanicsburg.
Knightstown Union	W. H. Jackson	Knightstown.
Lawrence Township	W. B. Flick	Lawrence.
Loogootee	Henry J. Johnson . . .	Loogootee.
Miami and Fulton	N. A. McClung.	Rochester.
New Ross.	John Lockridge	Mace.
Northeastern Indiana	Jas. N. Chamberlain . .	Waterloo.
Plainfield Agricultural	Daniel Cox	Plainfield.
Southeastern Indiana	W. A. Greer	Aurora.
Switzerland and Ohio	Jesse W. Stewart. . . .	Rising Sun.
Urmyville	John Tilson	Franklin.
Wayne, Henry and Randolph	B. B. Beeson	Dalton.

The roll of State Industrial Associations was called, and the following delegates responded :

ASSOCIATIONS.	NAMES.	POSTOFFICE.
Women's Industrial	Mrs. A. M. Noe	Indianapolis.
State Horticultural	Sylvester Johnson . . .	Irvington.
Purdue University	Prof. James H. Smart.	Lafayette.
Short Horn Breeders	J. W. Robe	Greencastle.
Swine Breeders	Dick Jones	Columbus.
Wool Growers	C. T. Nixon	New Albany.
Bee Keepers	Mrs. C. Robbins	Indianapolis.
Cane Growers.	Dr. Allen Furnas	Danville.

President Mitchell appointed as Committee on Credentials Messrs. Custer, LaTourette, Crim, Cockrum and Newnam.

On motion of Mr. Jones, the Board adjourned until 1:30 o'clock, P. M.

PROGRAMME—ANNUAL MEETING.

TUESDAY, JANUARY 6, 1885.

Organization of the Convention at 10:30 A. M., by roll call of counties.

President's address at 1:30 P. M., followed by reports from Officers and Department Superintendents.

Appointment of joint committees of delegates and members.

Address by Governor Porter, at 3:00 P. M.

3:30 o'clock P. M. Address by President J. H. Smart, of Purdue University. Subject, "What can our Agricultural College do for the Farmers of our State?"

4:00 o'clock P. M. Address by Professor C. H. Hall, of Franklin College. Subject, "The Farmer and Higher Education."

WEDNESDAY, JANUARY 7—8:30 A. M.

Reports from Committees: Finance, Rules, etc., Fair Grounds, Premium List, Geology, and Unfinished Business. Review of business matters.

1:30 o'clock P. M. Address by Dr. E. W. Fisk, of Greencastle. Subject, "Diversified Labor."

2:30 o'clock P. M. Address by Col. J. A. Bridgeland, of Richmond, Ind. Subject, "French Agriculture and Breeding of Norman Horses."

3:30 o'clock P. M. Address by W. S. Vannatta, of Fowler, Ind. Subject, "Herefords as Grazing Cattle."

Nominations to fill places of retiring members.

THURSDAY, JANUARY 8.

8:30 o'clock A. M. Unfinished business.

9 o'clock A. M. Address by Prof. John N. Hurty, of Indianapolis. Subject, "The Adulteration of Foods and Medicine."

10 o'clock A. M. Address by Enos B. Reed, of Marion County. Subject, "The Fish Interests of Indiana."

11 o'clock A. M. Address by J. N. Davidson, of Montgomery County. Subject, "Farmers' Recreation and Amusements."

1:30 o'clock P. M. Election of eight members.

The following carefully prepared papers will be presented subject to the pleasure of the Convention, as time will permit:

"*The Proper Application of Fertilizers*," by F. G. Wiselogel, of Marion County.

"*Fish Culture, Profits of*," by Hon. I. N. Cotton, of Marion County.

"*The Destruction of Crops by Insects*," by J. G. Kingsbury, of the Indiana Farmer.

"*The Value of Birds as Insect Destroyers*," by Fletcher M. Noe, of Marion County.

Other appropriate Essays are expected. General remarks and discussion will be in order, and follow each address or essay.

AFTERNOON SESSION, 1:30 O'CLOCK.

Board met pursuant to adjournment. The President called Mr. Davidson to the chair, and delivered to the Convention his annual address:

PRESIDENT'S ADDRESS.

Gentlemen of the Delegate and State Board of Agriculture:

The swift wings of time brings us to the beginning of another year, and we have assembled again to counsel together upon the present condition and future prospects of the agricultural interests of the State, and, from the experience of the past, recommend such measures as may seem necessary to promote the welfare of those engaged in the cultivation of the soil. Our State has been blessed with usual health, and the crops of 1884 abundant, the wheat crop (one of the largest ever produced) being 40,531,200 bushels.

Corn was of good quality, and amounted to 89,159,799 bushels. The oat crop was 23,576,117 bushels, the largest ever produced in Indiana by 3,000,000 bushels. The potato crop reached the immense amount of 5,969,461 bushels.

As the farmer lives near to Nature, and Nature's God, our hearts go out to him in gratitude and thanksgiving for such rich returns to the labor of the husbandman.

The financial condition of the Board is about the same as in my last annual address. The gross receipts of the State Fair were \$24,429.40, and the gross expenditures were \$20,702.80, so that but a small balance is left over for the current expenses. The bonded debt is \$40,000, and the interest annually accruing is \$2,400. Thus the prospects of the indebtedness being soon wiped out is not encouraging. Repeated efforts have been made by the Board to get the State to pay off the bonded debt, so they could go forward with the great work before it. Our grounds are now too small for the accommodation of the large annual exhibitions, and to further increase the indebtedness by purchasing more grounds seems to be a step that can not be taken under the present condition of affairs, therefore I hope this Delegate Board will consider well the indebtedness, and if any action can be taken to influence the incoming Legislature to give the Board such relief, as the great and growing interest of agriculture should have, then the spirit of the law creating the State Agricultural Association can be carried out, and the Board can further increase its usefulness in all the various branches of agriculture. These great and growing exhibitions can not be maintained and pay off this indebtedness on the State Fair grounds unless the fostering care of the State is extended to assist in the work.

During the last fair it rained three days, and the great political campaign then at full height, tended to lessen the receipts, as the people at that time seemed to let all business and pleasure go, and stood with bated breath awaiting the result of the election. Another discouragement at that time, caused us considerable uneasiness; the prevalence of pleuro-pneumonia among cattle in the country pre-

vented some exhibitors from attending the State Fair, and some that had engaged stalls, annulled the contract. A meeting of the Executive Committee was called and decided to secure the services of two Veterinary Surgeons to guard against any diseased animals entering the Fair Ground. This proved to be very satisfactory, and not only every stall was occupied, but additional quarters had to be provided.

At the close of the fair of 1883, some dissatisfaction was manifested by several of the agricultural implement men, which was alluded to in my last annual address, but I am now happy to say that all discontent among that class of exhibitors has disappeared, and the best of feeling prevails, as evidenced by their grand exhibit and hearty co-operation at the last State Fair. Many of the manufacturers have erected beautiful building for their exhibits, and others are making arrangements to build, which adds much to the comfort of that class of exhibitors, and also a saving to the Board.

The live stock exhibit was far in advance of any former year, and to accommodate all the exhibitors a large number of additional stalls and pens were built after the fair had opened. The improvement of live stock is very evident and the exhibitor of to-day has to be an expert in preparing his stock for exhibition to be successful in the show ring.

The system of expert judging, adopted by the Board can not be said to have given entire satisfaction, yet as an experiment it was worthy of a trial, but where there is no standard of excellence to be relied upon, I have doubts as to the expert system being the best, although it has many advocates among fair managers. The new system of committees on awards as adopted by many of the leading fairs of the West will probably be generally adopted; where it has been tried, it gives good satisfaction. The new system provides that three competent judges be selected, two to act, in case the two so acting do not agree, the third man then comes in the ring and places his vote with one or the other of the two, his vote being strictly confined to the two animals, or articles voted for, by his two associates. In my judgment the umpire ought to be the best of the three judges.

Our ticket system last year gave better satisfaction than heretofore, yet further improvement might be made, and I would earnestly recommend that ticket sellers and ticket takers at the gates be abolished, as far as possible, and turn stiles adopted instead, by so doing much expense would be saved, which would in one or two years be equal to the price of the turn stiles. Where complimentaries, carriage and other pass tickets are taken, gate-keepers will be necessary. Yet it is great wisdom in the management of fairs to have just as few pass tickets out as possible.

FAT STOCK SHOW.

As the year rolls by and the great live stock exhibitions at Chicago of prime fattened cattle of all the various breeds increase, the importance of this State attempting a fat stock show is more forcibly brought to view. The large cities all around us are spending millions to help exposition and fair managers to establish all kinds of exhibits, thereby bringing into public notice the capabilities and facilities for producing and handling the product of the different sections of the coun-

try. A year ago an attempt was made by this Board to get the city of Indianapolis to assist in bringing into existence an exhibit of the beef product of the State. The city, however, gave but little encouragement.

The proprietors of the Stock-yards and Belt railroad, and commission men were very anxious that such an exhibit should be made, and would willingly have contributed of their means to assist in starting a fat stock show. At the time the effort was made the Ohio valley was submerged in a destroying flood, and the city of Indianapolis was responding to the call of the suffering thousands of people along the Ohio river with wonderful alacrity. A further canvass of the city was abandoned, with the hope that during the winter another effort would be made by the Board and citizens of Indianapolis to hold a fat stock show during the fall of 1885. The Industrial Associations of the State have been actively at work, meeting and discussing subjects of special interest. The practical experience of the most successful farmers is in this manner annually furnished by these associations to the Board for publication in our annual reports, thereby increasing their usefulness. Cattle breeders, swine breeders, sheep breeders, bee keepers, sorghum growers and tile makers all strive to see which can make their meetings the most interesting.

A word in regard to the use of tiling. Nothing is being done in the State that gives such good returns to the farmer as a free use of tile. The public health is benefited by its use; the land made more productive and easier of cultivation; it can be plowed much earlier in the spring, and I may safely make this assertion, that when the farms have been properly drained the productiveness of the soil of the State will be largely increased. When tile-draining was first introduced in Scotland by the Scotch farmers, the government of Great Britain, seeing the immense benefit it was in bettering the condition of the lands, loaned money to all the farmers of Scotland that would take it, at a very low rate of interest, to underdrain these lands, with the condition only that when the interest paid had equalled the principal the debt was to be cancelled.

Tile draining leads to better farming, better farming leads to diversified agriculture, and the time is now here when the farmers of our State cannot but see that to continue in sowing all their lands to wheat will be ruinous to them.

Europe is the market for our surplus products. Great Britain has been, and is now, actively at work stimulating the production of wheat in her colonies. India five years ago only exported a few million bushels of wheat, but by the fostering care of the British government—giving to India the necessary help to bring her wheat lands into cultivation and by extending the railroads into that immense territory—India this year will export about forty million bushels of wheat, grown upon lands worth less than five dollars per acre, and by labor at an average of seven cents per day. But the thought may occur that that country is so far from the markets of Europe that the freights for carrying wheat such a long distance will favor us to maintain a fair market price in European markets. Steam navigation and the railroad system bring all the world together, and the steamships of Great Britain carrying the products of her factories and manufactured goods to India, Egypt and other countries, on their return trips bring back wheat and other products of these countries at a nominal price by freight as ballast.

Let us compare our lands worth from thirty to sixty dollars per acre; our labor from one dollar and fifty cents per day to two dollars during harvest time, and with our railroads continually charging higher freight rates during the carrying season of the wheat product. Under this condition of facts, is it possible for us to compete successfully in the wheat markets of the world? I answer no. Then what is best for us to do as an agricultural people? Turn our attention more to diversified agriculture by having an equal amount of pasture and stock to that of grain.

The World's Exposition at New Orleans is now open, where the industries of many of the nations of the world will come into contact with one another in friendly competition. When the public press first announced that a World's Fair was to be held at New Orleans, and that the General Government of the United States had appropriated half a million of dollars towards its success, and that the money so appropriated was to be distributed pro rata between the States composing the Union in order to assist them in making a creditable display at that great fair, I felt it to be my duty as President of this Board, and feeling a just pride that the exhibit of our Indiana agricultural products should fairly represent the best products of our State, I took the liberty to call upon our Governor, suggesting that an early appointment of Commissioners for our State was very necessary, also proffering all the help that the officials of this Board could give in collecting samples of our agricultural products. This was done before the commencing of our fairs. My object being for the officials of this Board to make a call upon all the county and district societies of the State to contribute their premium samples of grain to be put on exhibition at the World's Fair at New Orleans.

The first appointments of Commissioners by the Governor was a failure, as they both declined to accept the position, and by the time the second appointment was made it was too late to secure the premium samples from the counties. However, we turned over to the Commissioner all the available specimens of grain that we had on exhibition, and the glass jars for exhibition purposes. It is a source of regret that there was not a larger amount of money at the disposal of the Commissioner to make a display worthy of our State.

The fish interest of our State is attracting much attention, and promises to become one of the important industries, both pleasant and profitable. There has been a large number of fish ponds constructed in the State during the last eighteen months. We know of one person with six acres of ponds, who has furnished the stocking for 400 artificial ponds, and we hope to have him present at this meeting to enlighten us in regard to this new business.

In June last a call was made by several of the leading agricultural societies of the West to meet at St. Louis for the purpose of forming an association of fair and exposition managers. Quite a number of delegates, also two representatives from the Dominion of Canada, met in St. Louis according to call, and formed an organization, having for its objects the discussion of fair management and a uniform system of tickets, advertising, and treatment of exhibitors, and by such action, work together for the common good. Another object being, as far as possible, to prevent a conflict of time of holding fairs. I feel that great good will grow out of this organization, and I earnestly hope that this Board will extend an invitation to that

body to hold the next annual meeting, which will be the 3d of December, at some point in this State. Many of the leading agricultural societies would be benefited by becoming members and sending delegates to these annual gatherings of fair managers.

The Agricultural College at Purdue is still calling for pupils from the ranks of the farmers' boys. Since Professor Smart assumed the duties as President of that institution, he has been earnest in his appeals for more students. Why is it that this, the farmers' school of agriculture, should be so long in filling up to overflowing? We fear that it is because it is not appreciated by the agricultural community. The exhibit of mechanical work shown at the last State Fair by the boys in that University, was good, and showed great proficiency in workmanship, and it is to be hoped that this, the only school in the State that teaches the principles of agriculture, should be liberally supported by appropriations from the State.

The State Geological Department, as a branch of the Board of Agriculture, contributed largely to the success of the fair. The report of the department has given the State a reputation abroad, as to the vast resources of coal, stone and other products, that could not have been accomplished through any other source, much of which is due to the untiring energy and perseverance of the State Geologist, Professor John Collett.

We would also call your attention to the published annual reports from the Board of Agriculture. They have received flattering notices from the agricultural press, and any suggestions from the delegates, wherein they could be improved, will be in order.

There is, perhaps, no subject of more serious importance than the adulteration of food and medicine, and the necessity of putting a check on this growing evil. Other States are adopting stringent laws to punish such adulteration, and it would be well for some expression in reference thereto, to emanate from this body.

There is also a species of fraud being extensively practiced upon the farmers of our State, which this delegate body ought to lay before the State Legislature in the form of a memorial, and this is to require that all articles manufactured in the penitentiaries of this or other States, be branded as such. For example, Tennessee is flooding this State with wagons made by convict labor, which are sold as a first class wagon. Now is it right that purchasers should thus be imposed upon? If that wagon was required by law to be branded as penitentiary made, the purchaser who buys it would do so with a full knowledge that it was made by convict labor, and of course an inferior article. While I would not advocate a special law to protect the wagon manufacturers of our State, or to help them to maintain remunerative prices for their wagons, it is but simple justice to them, and also to the purchasers of penitentiary made wagons, that they should be branded as such. The law ought also to apply to boots and shoes, stoves, and all other articles made by convict labor. I repeat, brand them as "penitentiary made."

To the officers and members of the several industrial associations—I take great pleasure in extending the kindest feelings of the Board for your earnest work in helping to advance the cause of agriculture. Your persistent labors and earnest purposes have overcome all difficulties. The Ladies' Department at the last State Fair spoke for its management in brighter words than I can do, and if efforts are

put forth during the coming year, as in the past, nothing short of the entire upper floor of the Exposition building will be required for the exhibit in this department.

The State Board are under great obligations to the managers of the various railroads centering at the capital of our State for reduced rates to exhibitors and visitors during the fair, and I hope that an effort will be made by the railroad officials of the Belt railway to give us a connection with the fair grounds, so that stock and heavy machinery can be unloaded at the grounds, and thereby save much annoyance to the exhibitor, and a good return upon the cost of construction of the belt extension.

The press of the city has generally given to the Board a generous support during the season preparing for the fair, and, while it may seem to the city press that the Board ought to more liberally patronize them in the matter of advertisements of the fair, it must be kept in view that the fair is in no sense a private affair, but for the public good, and that there are several hundred papers in the State that would expect an equal share in the advertising patronage, and that to advertise in all the papers of the State would be an expense too great for the Board to undertake. The press of the State, outside of the city press, has generally given very flattering notices of the State Fair, for which the Board feels very grateful.

To all the officers and members of the Board—I return my grateful thanks for the high honor you have conferred upon me by selecting me to preside over your deliberations during the year just closed. Your kind and generous support at all times has been appreciated. In my zeal to do all I could for the interests of the Board, I sincerely hope that no word has been uttered to wound the feelings of any, and when the delegates here assembled cast their votes for men to fill the places of those whose terms expire at this session, I most earnestly hope that it will be for men who will work for the advancement of the industrial interests of the whole State.

Mr. Lockhart moved that the President's address be referred to a committee of three, who shall consider the suggestions contained therein, and report to the Convention as soon as practicable, which was carried, and the President appointed Messrs. Lockhart, Reiter, and Nelson as the committee.

SECRETARY'S REPORT.

AGRICULTURAL ROOMS, December 31, 1884.

GENTLEMEN—I have the honor to submit herewith the annual report and financial exhibit of the business of the Indiana State Board of Agriculture, for the year ending December 31, 1884.

FINANCIAL EXHIBIT.

Total receipts from all sources \$35,291 82

EXPENDITURES.

General cash orders	\$16,927 64	
Premium cash orders	10,414 30	
		\$27,341 94
December 31st, balance on hand		7,949 88
Total		\$35,291 82

ITEMIZED RECEIPTS.

January, 1884, cash in treasury and interest-bearing notes	\$9,202 17	
Regular appropriation, State Treasury	1,500 00	
Ground rents, summer season	617 40	
Insurance company, damage by lightning	\$60 25	
City Treasurer, old bridge claim	100 00	
		160 25
From State Fair, 50-cent admission tickets	\$16,837 50	
From State Fair, 50-cent exhibitors' tickets	173 50	
From State Fair, 50-cent railroad coupons	1,337 50	
From State Fair, 25-cent admission tickets	1,057 50	
From State Fair, 10-cent admission tickets	614 80	
		20,020 80
Entry fees, speed ring	415 00	
Rents, stalls and pens	935 80	
Sale privileges	2,440 40	
		3,791 20
Total		\$35,291 82

STATEMENT SHOWING DISTRIBUTION OF EXPENSES.

GENERAL EXPENSES.

Members' per diem	\$1,621 45	
Salaries Secretary, Treasurer, and General Superintendent	1,650 16	
Printing and advertising	1,620 03	
Postage and stationery	225 00	
Express, telegrams, litigation	150 48	
Water rents	200 00	
Janitor, hose, tools, etc	353 58	
Insurance	415 92	
Old claims paid	150 00	
Interest accounts	2,400 00	
Total		\$8,780 62

CONSTRUCTION AND REPAIRS.

Lumber	\$1,589 41	
Labor	1,224 21	
Pipes and machinery	470 22	
Roofing	118 04	
Hardware	176 46	
Whitewashing	246 00	
Painting and signs	19 51	
Repairing in hall.	75 70	
Total		3,899 55

CURRENT EXPENSES, STATE FAIR.

Gate keepers.	\$153 00	
Police.	818 70	
Ticket sellers	225 85	
Labor, sweepers, etc	441 79	
Awarding committees	508 50	
Assistant superintendents	259 00	
Straw and sawdust	276 41	
Fuel	12 50	
Gas	70 00	
Music	120 00	
Ribbon	10 50	
Extras and supplies	80 98	
Closets	37 00	
Incidentals	125 10	
Rebates	38 65	
Specialties.	493 55	
Woman's department	569 94	
Total		4,241 47

PREMIUM AWARDS.

Horses, mules, etc	\$3,376 30	
Cattle	2,877 00	
Sheep	663 00	
Hogs	878 00	
Poultry	316 00	
	<hr/>	
Total live stock		\$8,110 30
Agriculture, grains, etc	451 00	
Horticulture	964 00	
Geology, natural history	134 00	
	<hr/>	
Total		1,549 00
Woman's department:	677 00	
Children's department	78 00	
	<hr/>	
Total		755 00
		<hr/>
Total amount of premium orders		<u>\$10,414 30</u>

RECAPITULATION.

General expenses.	\$8,786 62	
Construction and repairs	3,899 55	
Current expenses, State Fair.	4,241 47	
	<hr/>	
Total		\$16,927 64
Premium awards.		10,414 30
Balance in treasury		7,949 88
		<hr/>
Season's operation		<u>\$35,291 82</u>

FINANCIAL EXHIBIT.

STATE FAIR—INCLUSIVE.

Receipts.

Admission tickets	\$19,406 00
Amphitheater	614 80
Entry fees, speed ring	415 00
Rents, stalls and pens	935 80
Rent of grounds	617 40
Sale privileges	2,440 40
	<hr/>
Total	\$24,429 40

Expenditures.

Members' per diem (season)	\$1,621 45
Salaries, Secretary, Treasurer and General Superintendent	1,650 16
Printing and advertising	1,620 03
Postage and stationery	225 00
Express, telegrams, litigation	150 48
Current expenses of fair	3,671 53
Twenty per cent. of construction and repairs	779 91
Woman's department	569 94
Premium awards	10,414 30
Total	<u>\$20,702 80</u>
Net profit from State Fair	<u>3,726 60</u>
Total	<u>\$24,429 40</u>

The above estimate is based on the calculation of 20 per cent. of the cost of improvement, as all of that outlay is for a class of building of permanent character to be used for future fairs. The additional 80 per cent. is in the nature of capital invested. To add all to this one fair would reduce the net profit to \$606.96.

LIABILITIES.

The liabilities of the Board are concentrated in the \$40,000 of bonds of the Board, bearing 6 per cent. interest, payable semi-annually, and due in three years. The necessary improvements made during the last two years, costing \$9,604.37, and the failure of the last Legislature to appropriate the usual amount of \$5,000 for interest on the bonded debt, has prevented the redemption of any of the bonds during the last two years, as had been intended. There are also about \$13,000 of non-interest bearing notes, given for assessments paid on guarantee bonds of 1873, due after the bonded debt is paid. The parties holding such notes refuse to dispose of them at a discount, although four years ago they were offered at twenty-five cents on the dollar.

The assets of the Board are the State Fair Ground property lying within the city limits, which is variously estimated in value at \$125,000 to \$200,000. Its high value arises from its eligibility as residence sites, and the improbability of it ever being separated from the city by steam railroad crossings.

INSURANCE.

The amount of insurance on the main hall has been reduced to \$25,000, owing to the improved fire protection by connection of the water pipes in the building with the City Water Works, 100 feet of hose on each floor kept attached and ready for use, and the refusal of the insurance companies to lower the rate of premium which is now 1½ per cent. The risk is divided among sixteen companies. The amounts and rates on the other buildings remain the same as reported one year ago (page 64 of published Annual Report).

The success of the last State Fair surprised those not aware of the inside work to accomplish such result. The business of the office the past year has required about 2,500 letters, 1,500 postal cards, 10,000 premium lists and 5,000 circulars. The State Fair advertising required 4,000 mounted lithograph posters, 1,000 double sheet lithographs, 1,000 3-sheet printed posters, 5,000 single sheet and 10,000 half-sheet posters, with more or less advertisements in every newspaper in the State. Hence, after due inquiry, we can safely assert we lead all other State Fairs in the matter of advertising.

The State Fair occurring, as it did, near the close and in the hottest of the presidential campaign, with four days of incessant rain at the opening, not showers, but floods, such as were never known at the time of an Indiana State Fair, and which were preceded by a serious drought of many weeks in a large portion of the State, and the great scare at the opening of the fair, caused by the prevalence of pleuropneumonia among cattle, which kept several exhibitors away after they had engaged stalls. Considering these drawbacks and discouraging features, it was simply marvelous to see such a complete success in every department of the fair, as will no doubt be reported by the Department Superintendents.

Our worthy President has referred to so much that relates to the workings of the Board that I will avoid any repetition.

It is a satisfaction to know and report to you that there has not been a case of litigation with the affairs of the Board for two years past, and not a case of protest on file, as is usual at the annual meeting.

Statement of Comparative Entries.

DIVISION.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Live Stock	1,229	1,453	1,347	918	1,404	1,419	1,524	1,382	1,328	1,476	1,566	2,176
Agricultural	419	494	392	309	560	625	462	381	534	483	689	652
Horticultural	169	291	260	94	116	159	143	130	134	153	234	319
Textile fabrics	523	361	345	212	471	906	1,230	1,063	980	1,081	1,223	1,500
Total No. entries	2,340	2,599	2,344	1,633	2,551	3,109	3,359	2,956	2,976	3,193	3,712	4,617

NOTE.—No entries in the Mechanical Department are included in the above, as there were no premiums offered of late years in that department. It was estimated that about twenty-five hundred articles were exhibited by five hundred exhibitors.

Thus is shown that the State Fairs have steadily increased the last five years, and 935 more entries at the last fair than any one preceding, 610 of which were of live stock.

Premiums of the State Fair.

Division.	1883.			1884.		
	Entries.	Offered.	Awarded.	Entries.	Offered.	Awarded.
Horses	300	\$1,823 00	\$1,670 00	565	\$1,995 00	\$1,919 00
Speed	40	1,575 00	1,575 00	42	2,000 00	1,300 30
Jacks, etc.	23	236 00	134 00	24	236 00	157 00
Cattle	291	2,974 00	2,304 00	387	3,018 00	2,877 00
Hogs	352	928 00	876 00	536	878 00	878 00
Sheep	261	683 00	678 00	329	663 00	663 00
Poultry	300	360 00	326 00	298	375 00	316 00
Farm and garden products . .	689	481 00	433 00	651	470 00	451 00
Horticultural products	234	925 00	885 00	319	1,065 00	964 00
Ladies' Department	1,223	798 00	628 00	1,447	888 00	755 00
Geological and Natural History	57	146 00	132 00	31	162 00	134 00

The well organized system of State Industrial Associations continues to be an important auxilliary to the Board, and accommodations furnished for the meetings are appreciated, and recognized by votes of thanks, from time to time.

The railroad companies deserve more than a passing notice for their interest in the State Fair; and for the first time in the history of the Board, all the railroads centering at this point, with one exception, have agreed to return the delegates from this meeting at one-third fare, on certificate of attendance to be furnished here during the meeting, by which the party named thereon can purchase a return ticket at the Union Depot at the rate as named, and we hope for the same arrangements for the meetings of the Industrial Associations to take place here in a few days. This is the result of persistent effort for several years, to induce a trial of such arrangement. As the sending of certificates in advance of the meeting to purchase a round trip ticket at reduced rates, from the station whence starting, as required heretofore, is not practical, owing to the change of officers of the Agricultural Societies at this season of the year, and not reported to the Board of Agriculture, hence are not reached by the mail matter from this office; and we again repeat that for several reasons there should not be any changes of officers of the County and District Agricultural Societies, until after this annual meeting as fixed by statute law.

The Street Railway Company is entitled to some acknowledgement for their efforts in moving the crowd of visitors at the State Fair, and come as near a success in that way as could be expected without steam transportation

The press of the city and State are indispensable to make a successful fair, and as such, are entitled to the thanks of the Board for their aid and encouragement.

With all the complicated business incident to a State Fair, there has not been a single jar or ruffled tone of voice in connection with the office affairs the past year, and we close with thanks for favors, and extend kind feelings of regard to each and all of my associates. Respectfully submitted,

ALEX. HERON, *Secretary.*

TREASURER'S REPORT.

Mr. President and Gentlemen :

I herewith submit the following report as Treasurer of the Indiana State Board of Agriculture for the year ending December 31, 1884 :

RECEIPTS.

Cash on hand January 1, 1884	\$7,258 42
Receipts from sale of tickets	20,020 80
Receipts from all other sources	6,662 60
Total receipts	\$33,941 82

DISBURSEMENTS.

Paid on general orders	\$16,598 95
Paid on premium orders	10,333 70
Cash on hand	7,009 17
Total	\$33,941 82

GEOLOGICAL FUND.

Cash on hand January 1, 1884	\$10 05
Paid State Geologist	10 05

Your Treasurer also holds a note given for real estate by J. D. Campbell and wife, on which there is \$1,410.75 balance of principal, and \$68.16 interest.

Respectfully submitted.

SYLVESTER JOHNSON, *Treasurer.*

January 1, 1885.

The Secretary's and Treasurer's reports were referred to the Committee on Finance.

REPORT OF GENERAL SUPERINTENDENT.

Mr. President and Members of the Indiana State Board of Agriculture:

I would respectfully report that the business under my charge for the past year has been reasonably successful, and that the grounds and buildings are generally in good condition. In obedience to the orders of the Board, the lower floor of the main building has been thoroughly repaired, by renewing the floor where found necessary, and placing new joists between the old ones, over nearly the entire floor. New timbers were placed on the sides of the posts supporting the upper floor and roof, to add to their strength.

On account of the arrangement to receive our supply of water, from the City Water Works for the buildings and grounds, it became necessary to make an entire change in the arrangement of the water pipes in the buildings which was done, the old pipes being used as far as found in proper condition and size, and new when found necessary. Lines of pipe were also laid through the grounds for the purpose of supplying engines, etc. This work was all done after consultation with Mr. Seward, Superintendent of Machinery, as to proper plans, etc., and much of it under his direct supervision. This improvement has been found a good one, and I have no doubt it will, in the end, be found a great saving in expense, besides a great protection in case of fire, both during fairs and at all times. I would say in this connection, that two hundred feet of first class rubber hose has been purchased for use in case of fire, one hundred feet for each floor, which are kept constantly at hand ready for use.

Connection with the Water Works renders the boiler and large force pump of no further use, and I would recommend their sale as soon as a price at all reasonable can be obtained, also the sale of the brick in the building enclosing them.

On a careful inspection of the roof of the main building, and consulting with the President and other members of the Board, and also with several gentlemen engaged in the roofing business, it was concluded to be rather too good to throw away, but not good enough to pay for thorough repairing, so I had it repaired temporarily.

The north half of the roof requires entire renewal. The south half and towers may be temporarily repaired to last another season, but I think it would be best to renew the entire main roof. The deck roof is in good condition. The southeast tower also, as in consequence of a stroke of lightning in July last, it was necessary to renew entirely.

The roof of Power Hall No. 2, a felt roof, required considerable patching and a heavy coat of roofing paint; also some repairs on No. 1. Both are now in fair condition. The roof, a shingle one, on the frame building at the west end of the main building, used for the exhibition of agricultural products, is in bad condition and needs renewing. A neat, convenient and tasty building was erected east of the

main building, corner Lockhart and Mitchell avenues, combining an office for Superintendents of Implements and Engines, and Machinery, and a Union Express office. This proved to be a great convenience to the officers in charge of these departments, to exhibitors and the express companies.

Two buildings, constructed on a plan similar to that of the hog and sheep pens, were built for cattle, with a capacity to accommodate forty-eight head. Lumber for their construction had been ordered and most of it on the ground, and work commenced, when the excitement in regard to pleuro-pneumonia developed into quite a panic, and several who had applied for stalls recalled their applications, orders aggregating about seventy stalls being countermanded, many advocating the idea of abandoning any cattle show at all.

At this juncture the President called a meeting of the Executive Committee and others, for consultation, and it was, as results proved, wisely determined to proceed with the show, which resulted in all the stalls, including the new ones, being occupied, excepting a few which had been allotted to horses when it was expected we would have a large surplus, and it became necessary to erect some temporary sheds.

The horse stalls were all occupied, and horses to the number of forty or fifty had to be provided for in the city.

Had it not been for the pleuro-pneumonia excitement, I think we should have had from 150 to 200 more cattle on the ground than we had, provided, of course, that they could have been crowded onto the ground.

Of hogs there was a regular avalanche. It looked more like the stock-yards under the excitement of a big advance in the hog market than a fair. All the regular pens were filled, generally doubly filled, and a part of the sheep pens, and it was necessary to erect a number of temporary pens, and all were filled to overflowing, and every available nook and corner occupied.

Heavy rains during the preparation and opening days of the fair seriously interfered with exhibitors in arranging their displays and greatly retarded the work unexpectedly required to be done; but all seemed to appreciate the condition, and accepted it without complaint. The rain also added materially to some of the expenditures, especially straw and sawdust, and lessened considerably the receipts from sale of privileges.

Doors have been placed on all the horse stalls. The horse and cattle stalls, hog and sheep pens, have all been whitewashed; also, poultry house inside and out, agricultural hall inside, and main building inside, both lower and upper stories.

The great annual increase in the machinery, implement, and live stock departments of the fair should call the attention of its managers to the solving of the problem of what shall be done for room to meet their increasing requirements, as it must be plain to all that there is not sufficient room on the present grounds to properly accommodate exhibitors and visitors, and more must be secured by some means at no distant day, if the fairs are to continue to increase in interest and usefulness in the future as in the past. Lands immediately north of the grounds could now be purchased at what is considered by those competent to judge a reasonable price, and on favorable terms as to time, etc. I take it, however, that under the present financial outlook, the Board will not be likely to feel like assuming any new obligations without due consideration.

As a remedy I think it might be well to consider the proposition of holding a two weeks' fair, allotting one week to the exhibition of horses and sheep and one for cattle and hogs, or reversing, as might be thought best, and having a two weeks' show in other departments. This would obviate a great and just complaint of exhibitors, that the time of exhibition is too short to justify the expense and trouble of preparing for and fitting up their exhibits, and would also remedy the lack of room for stock, as our stalls will accommodate either cattle or horses, and pens answer equally well for sheep or hogs. Should this plan be tried, I believe the increase in receipts from privileges would go far towards meeting the necessary increase in expense.

The Exposition building has been rented for the winter by Mr. John B. Doris, proprietor of the great Inter-Ocean Show, for the storage of his fine cages, band wagons, chariots, etc., and the general property of his show, excepting live animals, at a rental of \$375. He also keeps a watchman on duty, for the security of his property, who, while looking after that, must necessarily look after ours.

As itemized statements of my receipts and expenditures are filed with the Secretary and appear in his report and that of the Treasurer, I deem it unnecessary to repeat them.

I desire to tender my thanks to the members for the uniform kindness and consideration which has been extended to me, and especially to President Mitchell and Secretary Heron, for their advice and coöperation in all matters tending to advance the success of the fair.

Respectfully submitted.

FIELDING BEELER,
General Superintendent

Referred to the Committee on Fair Grounds.

HORSE DEPARTMENT.

JASPER N. DAVIDSON, SUPERINTENDENT.

Mr. President, and Members of the State and Delegate Board:

GENTLEMEN—In compliance with the rule of the State Board, I herewith submit the following condensed report of the Horse Department:

In this department I have the pleasure of stating that the exhibit was unusually large, exceeding in numbers any exhibit ever made on the State Fair Grounds:

The number of entries in Book 1	35
The number of entries in Book 2	32
The number of entries in Book 3	62
The number of entries in Book 4	160
The number of entries in Book 5	92
The number of entries in Book 6	184
The number of entries in Book 7	20
The number of entries in Book 8	4
The number of entries in Book 9	42
Total number of entries	631

Including 42 for speed and 24 for jacks and mules, against 310 last year, and 314 two years ago.

Among the many exhibitors, the principal were: The Indianapolis Importing Co.; Dillon & Bro., Normal, Ill.; J. B. Ayres, Danvers, Ill.; Thomas Roberts, Carmel, Ind.; Peed & Co., New Castle, Ind.; Hare & Granger, Fisher's Station, Ind.; Door Village Live Stock Importing Association, Door Village, Ind.; D. Fisher, Goodrich, Canada; W. P. Swaim, Bellmore, Ind.; and Thomas Levi, Noblesville, Indiana.

The 279 stalls were occupied, and 40 horses were compelled to find stalls outside the enclosure. This was not only a large, but a very fine display of horses. Never before has our own State made so large and fine an exhibit. The high prices paid for horses the last two years have brought about these results.

Importers have been to the best markets in the world to buy the best breeds in their several classes, thereby bringing competition very close, and rendering it nearly impossible, in many classes, for the judges to make intelligent awards. This is especially so in sweepstakes.

In jacks and mules there were twenty-four entries. Though few in number, the showing was good. The breeding of mules within the State is on the decline, or the premiums are insufficient to bring out a fair exhibit.

The committee in this department worked very hard to make honest awards, and succeeded generally in giving satisfaction, although the thermometer marked 90° in the shade, and the over-crowded condition of ground conspired against all concerned.

The interest manifested by the visitors was at all times during the four days unflagging to such an extent that during the after part of the day it was at times almost impossible to find space to make the exhibit. Some plan should be adopted by the Board to fix a limit for the spectator, which would give the horsemen a better chance to show, and perhaps avoid serious accidents.

The large increase of entries in this department renders it apparent that for the future the present fair grounds are inadequate for the holding of the State Fair. I would suggest that the State Board should lose no time in acquiring more ground adjoining, either by lease or purchase. Also, in the Horse Department that two should be a collection instead of three, giving the exhibitor a chance to compete both single and double; making an equal display with a less number of horses.

And, further, for the benefit of the Superintendent of the Horse Department, that the present headquarters be turned over to the horsemen for sleeping quarters, and the old music stand be repaired and furnished with seats for the especial use of the Superintendent and his committees. With these recommendations, this report is respectfully submitted.

CATTLE DEPARTMENT.

CHARLES B. STUART, SUPERINTENDENT.

Mr. President and Gentlemen:

The outlook for a large and excellent exhibit of cattle at the State Fair for 1884, was unusually bright until the supposed pleuro-pneumonia made its appearance in the adjoining States. The early action of this Board in providing ample safeguards for all cattle exhibited at our fair served, in a measure, to restore the confidence of stock owners, and the cattle brought here compared very favorably in quality and quantity with any preceding fairs. The breeds were represented as follows:

Short-Horns	53
Herefords	16
Polled Aberdeen Angus	33
Devon	50
Jersey	61
Holstein	25
Ayrshire	24
Total in 1884	262
Total in 1883	278

The writer knows of several other herds of beef cattle, and of dairy cattle, all fitted and expecting to compete at our fair, but at the last moment they concluded to leave their cattle on their farms, rather than take any risks of bringing them in contact with cattle that might have been exposed to the supposed pluro-pneumonia.

In conformity with the expressed will of the Board, the different breeds of cattle were judged in their classes by single judges. Of course all exhibitors were not satisfied, because there were not ribbons sufficient to go round, but that very general satisfaction was given was readily apparent to any one mingling with the owners and spectators.

Your Superintendent has only one suggestion to make regarding the judges, and that is, the Superintendent of this department should in the future have the selection of the expert judge, with the concurrence of the President, and the selection should not be left to the different members of the Board. It makes no difference *where* the judge comes from, but he should be an *expert* in the full meaning of the term, or the practice of using single judges will certainly fall into disfavor. The expert system has been perfectly satisfactory in every case where the judge has been an expert. If he is a novice in the business no one is satisfied.

Where the responsibility is placed on the Superintendent, he is naturally very desirous that the best of satisfaction should be given, and he will scan the individual closely, and, unless thoroughly qualified, he will not be appointed. Not so where the members of the Board are directed by the President to select judges for different breeds of cattle, and where he is practically limited to a person residing in his district. The selection of the judge requires an acquaintance not only with the party to do the judging, but it especially requires that the person making the selection shall have some acquaintance (and the more the better) with the different breeds of cattle to be judged. It is respectfully suggested to this Board that the Superintendent of the Cattle Department should always be some one fully acquainted with the different breeds of cattle, and that upon him should be placed the responsibility of selecting honest, capable and determined judges. And it is equally important that the Superintendent should have the privilege of bringing judges from a distance, if necessary; and to that end an allowance should be made for the time and the expenses of the judges. To have your liberal premiums awarded by incompetent judges is merely a farce, and brings the Association into disrepute, and discourages the showing of the best stock. In the sweepstakes rings for herds of beef cattle, we had nine herds of very superior cattle. The judges were all men of experience, and had the will to tie the ribbons where their honest judgment dictated. And while we were pleased that Indiana should have carried off the first and second premiums, the judges themselves were greatly surprised when they learned that both herds were owned by the same exhibitor. They only knew the ownership of two of the herds in the ring, and neither award went to these herds.

Your Superintendent would call attention especially to the services of the expert in the Jersey rings, Mr. Pennington, of New Jersey. The different classes to be judged were well filled and the competition sharp, yet he patiently examined each animal, and his award carried conviction to all observers.

For another year additional stall room must be provided in order to induce exhibitors to attend your fair. Some of the cattle were kept out of doors and without shelter for thirty-six hours after arrival, and were shown in the ring before they had been under cover.

The manner of setting apart stalls was quite faulty, and in one case the cattle of one exhibitor were scattered in three different places on the grounds.

There should be some arrangement made for a ring where cattle can be shown. The ring should be of ample size to accommodate all the cattle. At the last fair it was a source of great annoyance to owners and judges that we had no adequate

method of keeping the spectators at such a distance that the cattle could be seen to good advantage. It is not pleasant, and at all times not possible, to keep the crowd back from the cattle and away from the awarding committee. It would also be a good plan to provide seats for the judges, as on some days they are at work for several hours continuously, and in the interim between classes they would find seats very acceptable.

Some changes can be made in the premium list with credit to the Society, and with satisfaction to exhibitors. The aged bulls in the dairy breeds should be shown with three or five of their get. I think this is being generally adopted at the leading fairs. In the herd prizes there should be separate herd prizes for each of the dairy breeds. It is impossible for any judge to pass intelligently on the merits of the different dairy breeds in competition, and greater satisfaction would be given if the herd prizes were so divided that each breed would be by itself. This relates only to the dairy breeds.

The fine exhibit of young beef herds was a credit to the State Fair, a credit to the owners, and of especial interest to the spectators, and properly encouraged, it can be made the great show in the beef classes, because owners have no hesitation in properly fitting cattle under two years of age; and it is especially designed to show the early maturity of the different breeds of cattle, and this is the chief end sought to be attained by the modern breeder. If any of the premiums are increased, we would call particular attention to this prize, and suggest that any increase made would be money well expended, and will serve to greatly increase the exhibit in that class.

To the owners and exhibitors of cattle at the fair of 1884, the thanks of the Board are tendered, and a cordial invitation extended for 1885.

SWINE DEPARTMENT.

W. A. BANKS, SUPERINTENDENT.

As Superintendent of the Swine Department of our late State Fair, I beg leave to submit the following report:

The show of hogs was very large and good, I think the largest and best we have ever had. The pens were all filled and we were obliged to erect a number more, and also to use some of the sheep pens, but all were accommodated and we did not know where we could have put another hog. There was an exhibition from Indiana, 442; Ohio, 127; Illinois, 61; Maryland, 25, and Michigan, 14. Of the different breeds, Poland China first, 314; Berkshire second, 153; Chester Whites third, 110; Suffolk fourth, 37; Vectors fifth, 30; Essex sixth, 24. In all 670, against 332 last year and 298 the year before.

We found our new pens very convenient, and the admiration of all. On account of the rain and rush on Sunday and Monday, it was thought best not to try to classify the different breeds, which caused some inconvenience to the judges, but we got along very well and did our work as well as possible. The plan of using one expert committeeman on Poland Chinas, gave good satisfaction, and enabled us to get through with our work on time. The exhibitors were all courteous, which made our work a pleasure.

SHEEP DEPARTMENT.

T. W. W. SUNMAN, SUPERINTENDENT.

Mr. President—I report as follows: The exhibit at the fair of 1884, in this department, was the best it probably ever was. The number of sheep shown was not so great as in some years, but the class was far superior to any previous exhibition. Taking into consideration the drawbacks attending sheep husbandry, it is almost a wonder that there are any sheep raised at all; but luckily for the sheep they have fallen into the hands of gentlemen who have more energy and pluck than the breeders of any other class of live stock, and are bound to succeed in spite of the drawbacks.

The show of fine wools was fully up to previous years. We are sorry to say, however, that Indiana was poorly represented—Ohio, Illinois, and other States furnishing the majority. Southdowns were good and attracted considerable attention. They were exhibited by parties from a number of States. Cotswolds were good, but few in number, while some of the other long wools, Leicesters, etc., were conspicuous by their absence.

Shropshires attracted attention for the reason that they are a worthy breed, and were fine specimens; but the breed that attracted the most attention was the Oxfords, several yearling ewes being on exhibition that weighed over 300 pounds; one two year old ram weighing 420 pounds. They are a hardy sheep, dark faces, good medium wool, and we are told make mutton of a superior quality.

The expert, or one judge plan, was tried this year in all classes, and the decisions seemed to give general satisfaction to the exhibitors and the public.

POULTRY DEPARTMENT.

JOHN M. GRAHAM, SUPERINTENDENT.

As Superintendent of the Poultry Department at our last State Fair I beg leave to submit the following report: There were on exhibition about two hundred and thirty coops of chickens, turkeys, geese and ducks, consisting of all breeds that were enumerated in the poultry list, or nearly so. Some of them were as fine chickens as any one would wish to see, and all were good. Some chickens that were afflicted with rouse I was compelled to exclude from the exhibition. The turkeys were numerous and large, one of them weighing forty-one pounds, and several thirty pounds and upward. Geese and ducks were shown in good numbers and fine quality. Here let me say that the necessity for larger coops for the accommodation of turkeys and geese was made apparent, as we had to crowd some of these larger fowls into the chicken coops, wherein they could not stand erect, and thereby doing great injustice to the exhibitors.

The awards of premiums in this department were made by an expert judge with general satisfaction to the exhibitors.

Poultry raising has grown into a large and highly remunerative business. As now conducted it is a business for every day in the year. There is in almost every city and town of considerable population in the country one or more establishments that make an exclusive business of buying and shipping to the larger cities poultry and poultry products, and yet the cry is for more. Indiana appears to be doing her share of this production and trade.

The general statistics for 1882 give the poultry product at \$560,000,000, being \$72,000,000 greater than the wheat product. Notwithstanding this immense production we import from Canada, France and Germany many millions of dollars worth of eggs.

"The egg crop of this country last year amounted to \$475,682,889, being only \$8,992,890 less than the wheat crop, not counting the millions of eggs and chickens consumed by farmers and others, of which no reports are made."—*Farming World*.

AGRICULTURAL DEPARTMENT.

H. LATOURETTE, SUPERINTENDENT.

M. President—As Superintendent of the Agricultural Department, I submit the following report:

The exhibits in this department for this year was good, particularly in wheat, of which there were over twenty varieties, quite a number being new and, were very fine. In corn, also, there was a large and very fine exhibit, the best I have

ever seen at our fair. The display of seeds was in greater variety than usual. There was a finer display of Indiana grasses than ever before exhibited. In vegetables there was a larger exhibit and in greater variety than usual. The most marked improvement was in potatoes, there being a number of new varieties that could not fail to attract the attention of visitors. The display of dairy products was quite large; there were fine samples of both butter and cheese. The apiary was also represented with some fine samples of honey. The whole exhibit shows that Indiana is up with her sister States in the production of all the grain, seeds and vegetables, known to this climate.

HORTICULTURAL DEPARTMENT.

L. B. CUSTER, SUPERINTENDENT.

As Superintendent of the Horticultural Department, it gives me pleasure to be able to say that the display in this department was very good, possibly not so large as a few years ago, when the fruit growers were more fortunate in having a full crop of apples throughout the State. The past year the fruit crop in the central portion of the State was comparatively short, almost a failure. The first specimens came from the north and south sections of the State.

In the professional list Mr. Fickel, of Cass county, made a very fine display of twenty, twelve and six varieties of apples, with pears, quinces, grapes, etc.

In the amateur class the competition was very close, with over one hundred and fifty entries of apples, besides pears, quinces and grapes. Among the grapes, those new candidates for public favor, the Prentiss and Niagara, were represented by several plates of fine specimens. The show of melons was unusually fine.

T. A. Peffer, South Bend; G. W. Graves, Bunker Hill, Miami county; W. B. Flick and Peter Raab, of Marion county; S. A. Hays, of Elizabethtown, Ohio, and J. Hutchison, of Worthington, were the principal exhibitors in the amateur class.

The State Horticultural Society failed to make the exhibition of fruit that was expected of them, and which they intended to make until a short time previous to the fair, when they abandoned the project entirely. Many of you will remember the fine display of fruit made by that society at the fair of 1877, of which its President, in his annual address, said: "The result proved entirely satisfactory. The display was in every way a success. The exhibition of apples particularly fine, and elicited the highest encomiums of a vast multitude of visitors. There can scarcely be a doubt but that this exhibition elicited such an interest among the many thousands that witnessed it as will in the future work greatly to the interest of horticulture and pomology throughout the State."

At the annual meeting of this Board, President Mutz, in his address, after his respects to the press, says: "Especially will I mention the State Horticultural Society, whose members have been present in force, joining with us in making an attractive display of horticultural products, and notwithstanding the adverse circumstances of a bad fruit season, made a show of native fruits that would be a credit to the State at any fair."

It is to be regretted that since 1877 the existence of a State Horticultural Society has been entirely unknown at the State Fair. But I may be digressing.

In the Floral Division the space was all occupied that could be obtained. The contributors arranged their plants so as to produce a very fine effect, which added much to the attractions of the exhibition. The floral displays made by Messrs. Charles Reiman & Co. and Berterman Brothers were of wonderful beauty, and a very close examination was necessary to enable the committee to decide between them.

Among the amateur exhibitors were Mrs. Frank Williamson, Zionsville; Mrs. Mary B. Danley, M. C. Stewart, and Ely M. Bronson, of Indianapolis, all of whom made very attractive exhibits.

MECHANICAL DEPARTMENT.

SAMUEL HARGROVE, SUPERINTENDENT.

Mr. President:

As Superintendent of the Mechanical Department, I beg leave to submit the following report:

I arrived on the grounds on Friday morning preceding the fair, and found things in this department in good shape, the General Superintendent having had charge of the same up to this time.

For the next two days the arrival of machinery and other articles for exhibition in this department was immense; and the space allotted to this show was full to overflowing.

Rule 15, as made by the Board, would have been strictly adhered to, had the weather permitted; but owing to the constant rain for two days, the time for making entries had to be extended until Tuesday evening.

Both power halls were very much crowded, and we would suggest the building of additional halls.

The building erected for headquarters of this department and express office, was found to be just the thing needed, and of great convenience both to the Superintendents and exhibitors.

The ticket system, adopted for exhibitors in this department, was found to work admirably, there being no confusion in the distribution, and so far as we could learn, no advantage taken in their use, the number of tickets issued being 571.

It was the general expression of both exhibitors and visitors, that this was by far the best show in this department ever had at this State Fair.

CARRIAGES, WAGONS AND FURNITURE.

JOHN RATLIFF, SUPERINTENDENT.

The exhibits in this department were good. The merits of the displays in my department are written up by expert judges, and their reports embodied in the annual report of the Board, and it is, therefore, not the duty of the Superintendent of the department to speak of that matter in detail; but it may not be amiss or a trespass upon the duties of the experts to state the displays rendered very general satisfaction to visitors at the State Fair, as well as reflecting credit to exhibitors.

The spacing of the hall and assignment of space to exhibitors had been done as economically as possible, yet there were a number of exhibitors who applied for space after all was taken that was thought to be available. Several articles were crowded into nooks and corners; and arrangements were made with other exhibitors, who surrendered small portions of space which had been assigned them, to accommodate those who came in later, and in this way all exhibitors were provided for.

There were displays made from probably one-fourth of the States of the Union.

The articles, or goods, displayed in the department which were not entitled to premiums, by the rules of the Board, should be of the value of \$50 to entitle the exhibitor to free, or exhibitors' tickets. This rule, in a few cases, may have been waived to accommodate exhibitors from other States, or from a distance, who wished to exhibit a meritorious machine which, of itself, would not be of the required value, but a valuable exhibit to the citizens of our State visiting the State Fair. The rule making some value the test or criterion by which exhibitors' tickets may be issued is undoubtedly a good one, and relieves the Superintendent of embarrassment. In all cases of the display of goods, or a collection of goods, the rule has been strictly adhered to, and in no case was space occupied and tickets issued merely to admit the exhibitor to the fair.

The ticket system adopted this year was quite an improvement over that of last year, being quite a relief to both the Superintendent and exhibitor. I issued 126 exhibitor's tickets during the week in my department, which, I think, were probably all accepted and used in good faith.

I recently received a letter from a gentleman who stated he had attended every State Fair for the last ten years, and had never known such universal satisfaction throughout the various departments as at the last one.

Your Superintendent can not do less than to say, in this connection, that he was universally treated with courtesy by exhibitors in his department, and that a general good feeling prevailed throughout.

W O M A N ' S D E P A R T M E N T .

MRS. A. M. NOE, PRESIDENT.

Mr. President:

The year 1878 marked a new departure in the history of the State Board of Agriculture, in the organization of a Woman's Department. And as each succeeding year has come and gone, greater success has crowned our efforts, until what was begun in a small portion of the west end of the Exposition Building, has grown until one-half of the upper floor has been given to this department. Although recognized in 1878 as the Woman's Department, it still had one of the members of the State Board as its Superintendent, and it was not until 1880 that entire control was given to the Woman's Board. So marked has been its progress that the prophecy made in our petition of 1879, viz.: "It will mark a new era in woman's industrial relations," "it will be as bread cast upon the waters, to return, *not after many days, but at once*," "and continue returning, increased a thousand fold," has more than been fulfilled. And the prediction, that it would make the State Board of Agriculture known far and wide as a body of progressive, liberal-minded, magnanimous men, whose epitaphs should be written on tablets more lasting than marble; the grateful hearts of the daughters of the State is also verified.

Since the organization of this department several of the members of the State Board have been called from labor to reward, and while memory lasts their names will be honored and revered by the members of the Woman's State Fair Association. To-day Indiana's State Board of Agriculture stands before the world as the only one showing this confidence in women. By so doing, it has given them the opportunity to prove their ability to carry on such an enterprise, and to bring before the public the labor of their hands and brains on an equal footing with that of men. The efficacy of the organization has been demonstrated in the display made in the Woman's Department of the World's Industrial Exposition at New Orleans. In less than two months prior to the time of the opening, it was enabled to gather a creditable exhibit, and to place it in position before any other State in the department allotted to such displays.

The whole number of entries made in this department for the exhibit of 1884, were 1,447, being 224 in excess of the preceding year. These figures, do not, by any means, give a correct idea of the number of articles entered, for many of them were collections of from three to ten articles under each entry. The amount offered as premiums was \$900. The amount paid in premiums in the Woman's Department was \$677, and in the Children's Department \$78, making a total of \$755. Current expenses \$569.94. The last exhibit excelled in numbers and excellence any former display, the Art Department alone, requiring the erection of two additional booths; and if it should continue to increase in the next two years, as it has in the past two, it alone will soon require the entire north side of the upper floor. The attractions offered in the Old Ladies' Day, Piano Contest; and the Young Ladies' Broom Drill, proved very attractive features. In a word, it can truly be said, success crowned every effort in this department.

Before closing, it is but due you, gentlemen of the State Board, and your worthy Secretary, that I return to you our sincere thanks for your hearty coöperation with us in all our plans, for the confidence reposed in us, for the kindness and courtesy extended towards us. With these kindly remembrances of the past, we feel assured that whatever the needs of the future may demand, we can come before you without fear or trembling and make our requests known, feeling confident that we will be received with the same magnanimity that has heretofore been extended us.

GEOLOGY AND NATURAL HISTORY.

DR. R. T. BROWN, SUPERINTENDENT.

The space assigned to exhibits in the Department of Geology and Natural History at the State Fair of 1884, was entirely filled, and yet there were several important products of the State, on which premiums were offered, that were not represented by any entries—coal, coke, building stone, cement, lime, potters' clay, commercial fertilizer, etc., were among them. This was the more remarkable, as in several of these lines Indiana stands in the foremost rank. But the premiums offered were small; and the articles are heavy and expensive in transportation and handling.

•In general collections of fossils there were two entries, complete and well arranged.

Two extensive collections of minerals were exhibited.

Of Mound-Builders relics two collections were displayed, representing nearly all the implements of the Stone Age.

In natural history we had two entries of mounted birds, quadrupeds and reptiles, and one entry of the skins of birds, etc., unmounted.

Two collections of diurnal, and three of nocturnal Lepidoptera (moths) were exhibited. These were very extensive collections, and were handsomely mounted and arranged. Two miscellaneous collections of insects were on exhibition, making altogether a very fine display in entomology.

One entry of botanical specimens, and four collections of Indiana wood, were displayed.

Three collections of coins and medals were entered, but only two were exhibited.

A collection of stamps, and one of miscellaneous curiosities, attracted much attention of visitors.

If I had received earlier notice of my appointment to this superintendency, it is probable that I could have greatly enlarged the exhibit, but in that event we would have required double the space, which probably could not have been furnished.

AMPHITHEATER.

 JOHN Q. A. SIEG, SUPERINTENDENT.

Mr. President—The Superintendent of the amphitheater has not much to report. I would say that the seats on Thursday and Friday were crowded to their greatest capacity, but I have not the figures of the receipts so as to determine whether they were greater than previous years or not; but I do know that on Thursday and Friday it was entirely filled.

RECOMMENDATIONS.

If there were space on the ground, I would recommend the extension of the amphitheater, so as to accommodate a greater number of persons and to insure greater comfort to those occupying it. As it is, I would recommend the removal of the gate at the crossing of the track at the west end of the amphitheater to a greater distance from it in order to give more open space around the ticket office and gate at the entrance of the amphitheater at the west end. And I would further recommend that the Superintendent be required to clean out the amphitheater and open the gates at ten o'clock in the morning, which I think would be of great pecuniary advantage to the Board and save much confusion in the management of this department. I would further recommend that the Superintendent of this department furnish his own police, and that they take charge of this department, and that all other police be required (unless called upon) to keep out, thus giving more room for persons that are willing to pay for their privileges; and, further, that the Board establish a permanent rule as to who are to have the privilege of the accommodations of this department without cost. As it is, every person having a scrap of paper from the Board claims to have the right of free access to everything within the enclosure.

All of which is respectfully submitted.

 SPACE IN EXPOSITION BUILDING.

 S. W. DUNGAN, SUPERINTENDENT.

Mr. President—In compliance with a time-honored custom of our State Board of Agriculture we submit the following brief report of our stewardship:

We were assigned the duties of allotting space to exhibitors on lower floor of Exposition building and that part of upper floor not occupied by the Woman's

Department; also, the supervision of exhibits occupying the east half of upper floor. It was with much diffidence that we entered upon our work, it being entirely new to us, having had charge of live stock departments since our connection with the Board, but with the help of our able assistant, O. B. Gilkey, of the city, whose natural adaptation to the work, combined with patience, good humor and mechanical skill rendered most valuable aid, we pulled through with a good degree of success.

Many changes were made in location of exhibits from former years, which was thought by many to be a material improvement. It certainly contributed toward relieving the monotonous appearance of our halls.

Every foot of available space was taken some three or four days before our fair commenced, and but for the courtesy and kindness of many exhibitors, who allowed those who came in at the eleventh hour to edge in on one corner of their space, they would have been left out; hence the importance of making early applications for space.

As to my department it was chock full, combining both the useful and beautiful, many of the displays being of the most gorgeous and elaborate character, eliciting the praise and admiration of the thousands who thronged our avenues during the fair week.

The special merits of these exhibits will be thoroughly noted by expert committeemen, selected by the Board to examine and write up for our forthcoming report, therefore we deem it improper, at this time, to attempt an allusion to the many excellent and meritorious displays in our department.

We desire to say, before closing, that our new form of exhibitor's tickets "worked like a charm," and is certainly a grand improvement over the old system of issuing tickets daily. Our exhibitors seemed delighted with the change, and the Board is to be congratulated upon the success of this new feature which saves much valuable time and annoyance, both to exhibitors and department Superintendents.

The Committee on Credentials made partial verbal report and asked for further time, which, on motion of Mr. Jones, was granted.

President Mitchell announced the following standing committees:

On Finance—Of the Board, Messrs. Seward, Jones and Graham; of the Delegates, Messrs. Reiter and Cumback.

Rules and Regulations—Of the Board, Messrs. Lockhart, LaTourette and Dungan; of the Delegates, Messrs. Robe, Glick and Matlock.

Fair Grounds—Of the Board, Messrs. Hargrove, Davidson, and Sieg; of the Delegates, Messrs. Steelman, Chamberlain, and Billmeyer.

Premium List—Of the Board, Messrs. Banks, Ratliff, and Stuart; of the Delegates, Messrs. Boggs, McWilliams and Shank.

Unfinished Business—Of the Board, Messrs. Sunman and Ratliff; of the Delegates, Messrs. Tilson and Reppcy.

Prof. C. H. Hall, of Franklin College, delivered an address on "Farmers and Higher Education," which will be found in this report.

On motion of Mr. Cumback, a rising vote of thanks was tendered to Prof. Hall for his very interesting address.

President Smart, of Purdue University, spoke briefly on "What can our Agricultural College do for the Farmers of the State?" as follows:

I did not come here with the intention of discussing the subject which has been assigned to me, but rather for the purpose of asking you to listen to a substitute, our Prof. Webster, who has kindly consented to take my place. Indeed, I think I may properly present him and his work as a fair answer to the question, "What Can Purdue University do for the Agricultural Interests of the State?"

You are aware of the fact that we have converted the larger part of our farm into an experimental station, and that we are doing a great deal of field and laboratory work, in order that we may discover something that may be of service to the farmers of the State. We are experimenting in regard to the use of fertilizers, in regard to the rotation of crops and the best methods of seeding. We are also performing a great variety of feeding experiments; and the best of all, as I think, we are trying to aid in preventing the enormous wastage which occurs to our grains and fruits through the ravages of destructive insects.

We expect to print bulletins embodying the results of our investigations, in large numbers. These will be distributed over the State, and will be placed in the hands of farmers and horticulturists; we hope that they will do much good. Two or three of these bulletins have already been prepared, some of which I have here for distribution. One of these will tell you the results obtained from our experimental wheat field, in which we experimented on thirty-nine varieties of seed wheat. Another was prepared by Prof. Webster, who is to speak to you this afternoon. It gives in great detail information concerning the Hessian fly, its habits, its modes of operation, and the means which may be taken to destroy it. A third, prepared by our Prof. Latta, gives you the results of a great variety of experiments in the use of fertilizers.

I think these bulletins will answer the question, "What can Purdue University do for the Agricultural Interests of the State?" if both Prof. Webster and myself should fail to do so. These bulletins will be sent to any address, on application to our Registrar.

I now take pleasure in introducing Prof. Webster to you, who will talk about the destructive insects and their work.*

* The address of Prof. Webster will be found elsewhere in this report.

On motion of Mr. Dungan, a rising vote of thanks was tendered to Prof. Webster for his interesting and valuable address.

The Committee on Credentials made final report, and the result, together with subsequent action of the convention as to who should be delegates, is summarized in the roll-call, printed at the commencement of these proceedings.

On motion of Mr. Gerber, the convention adjourned until 8:30 o'clock to-morrow morning.

SECOND DAY.

WEDNESDAY, January 7, 1885, 8:30 A. M.

Board met, President Mitchell in the chair. Proceedings of yesterday's meeting read and approved.

Mr. Cumback—It has been suggested to me by several members of this Board that it would not be best to postpone the election of new members until to-morrow. If it is postponed until to-morrow there will be a slim attendance, as a large number will return home either to-night or to-morrow. It does seem to me that it is important that the election should be held while there is a good attendance. As there is no business of special importance before the convention this morning, I move that the programme be changed so that the nomination of persons to fill the places of members whose terms expire with this meeting be made this forenoon, and the election for the same be had this afternoon at 4 o'clock.

Mr. Mitchell—These annual meetings are important. The object of arranging the programme so as to extend it over another day, was to afford more time to the discussion of such papers as may be presented. This forms the most valuable and interesting part of these meetings. Experience proves that as soon as the election of members is had the members disperse. This is discouraging to the speakers, and detracts, very naturally, from the good effect of our meetings. We ought to remain in full meeting the three days allotted in the programme.

Mr. Seward—You have pretty much made my speech. I hope the Delegate Board will not make the change contemplated by the motion. Judging from past experience, very few remain after the election. During the full meeting a great many questions come up for discussion from which much benefit is derived. It is true that it may keep some of the delegates longer than they want to stay, and they will go as soon as the business that brings them together has been done. The election is not more important than the papers that are read, and the discussions that follow. Let us remain the full time set for the Convention. I would like to hear from others on this subject.

Mr. Cockrum—I have been favorable to holding the election this afternoon, but after giving the subject further thought, believe it would not, probably, be best. It will make but little difference if it remains over one day longer, as some will go, and others will come. I have therefore changed my opinion, and think we should hold this election to-morrow morning.

Mr. Cumback—We should not shape this Convention to suit people to-morrow. We have some who come here and vote for their man, and not for the interests of the society at all. We should not shape our society to accommodate those people; they should come here and stand by the society until we get through.

Mr. Tilson—A number of delegates were not here yesterday, some of them can not be here until noon to-day, and many are now absent on committee duty. For this small number to change the time of the election I think unfair. It is best to follow the programme and have the election to-morrow. There are some who can not be here before noon to-day, possibly not until to-night, who are interested in the election. It is crowding matters very close to make the nominations this morning and the election at 4 o'clock this afternoon.

Mr. Nelson—I have been in the habit of attending these meetings for a long time. It has been my experience that as soon as the election is over, the delegates go home, leaving much important business undone, and very interesting papers have to

be read to empty benches. The election is generally understood to be to-morrow. Quite a number of delegates who live not far away, expect to be here to-morrow, and this is, I think, the only change we should make. We will have enough to entertain us without going into the election to-day. I would be willing to have the election to-morrow morning, but not to-day.

Mr. Cumbaek—It is desirable to have this election when most delegates are present. If the election is after noon to-morrow we will have to stay until the night trains, and the result will be that you will not have twenty delegates here. The custom of the country people is, to come here one day and go home the next, and if we wait until to-morrow we won't have them here. The elections of this Convention should reflect the agricultural interests of the whole State, and not be subjected to the charge of being elected by a few. We can change this programme and have the election this afternoon, and then go ahead with the programme to-morrow. I hope the motion will prevail.

Mr. Tilson—Mr. Cumbaek and myself are agreed on the question of having the greatest number of delegates present, but my opinion is that there will be more here to-morrow than to-day.

A Delegate—There are some six or eight delegates who have to go home this evening. Perhaps there are as many here to-day as there will be during the meeting, and I would be in favor of making the change.

Mr. Nelson—In looking over the programme for to-morrow morning I find that the persons designated for duty are residents of the city, with the exception of Mr. Davidson. I therefore move to amend by naming 9 o'clock to-morrow morning for the election. Not carried.

The motion of Mr. Cumbaek was then agreed to.

The President laid before the Convention a draft of an act, submitted by the State Veterinary Association, to prevent the spread of contagious and infectious diseases.

Mr. Nelson—This is a move in the right direction. Whether this particular bill is the right thing or not I don't know. I

am in favor of referring it to a committee for a short time. I therefore move that a committee of three be appointed by the chair to consider the bill and report thereon as early as practicable, say to-morrow morning.

The motion was carried, and Messrs. Nelson, Stuart and Dungan were appointed as the committee.

Mr. Mitchell—It seems to me that there is a better way to reach this object, and that would be to create a chair of Veterinary Science at Purdue University, and make the Professor thereof the State Veterinary Surgeon, with duties as provided in the proposed bill.

Dr. R. T. Brown, Superintendent of the Geological and Natural History Department, presented report of exhibits therein, which will be found in place with the reports of Department Superintendents.

Mr. Stuart, from the Committee on Premium List, reported as follows:

Your Committee on Premium List, having examined the list of the fair of 1884 and the various reports of the Superintendents of departments, present the following report, and respectfully suggest that the changes therein proposed shall be adopted.

First. Substitute the word "two" for the word "three" in rule 6, page 9, of Premium List, 1884.

Second. In the Horse Department make the premiums and items in Book V the same as in Book III, except the last item in Book III.

Third. In the Cattle Department dispense with the sweepstakes rings for bull and cow in dairy breeds, and add the premiums thereon to the dairy herd prize. Give the sum of \$150 to each of the dairy breeds in prizes of \$100 and \$50, the constitution of the herds to be by age as now.

Fourth. In Books XIII, XIV, XV, XVI change the first item so as to read "Bull three years old and over with three of his get."

Fifth. In the Hog Department in Book XXX dispense with the last herd premium, and dispense with the herd premium in Book XXXI, and have a herd prize arranged by age, the same as in first clause of Book XXX.

Signed,

W. A. BANKS,

JOHN RATLIFF,

E. W. SHANK,

J. M. BOGGS,

A. C. McWILLIAMS,

C. B. STUART.

DISCUSSION.

Mr. Cumbach—As we failed to get an appropriation last year to pay the interest on our bonded debt, I suggest a horizontal reduction of twenty per cent. of premiums offered, so that we may have a surplus in the treasury at the end of the year to apply on the debt. The fairs throughout the State make a mistake in paying large premiums. I am a new member and want to be careful. People come to the fair more for social enjoyment than anything else. I am not sufficiently familiar with the premium list to say just what would be best, but I think it would be right to make a reduction.

Mr. Votaw—Mr. Cumbach says twenty per cent. This seems a little like the tariff question. I think that it would not be wisdom for the State Board to make a general sweep on the premium list. It occurs to me that a liberal premium should be offered for cattle, sheep and other stock. It will be an inducement for them to bring out their stock. However, there is a certain class that come as an advertisement for manufactured articles, on which no premium should be allowed. I hope this matter will be taken under advisement by the Board, and the premiums on herds of cattle will be kept up.

Mr. Cumbach—It does not cost as much to bring cattle here as heavy agricultural machinery. The agricultural men are willing to bring their implements and four times as much. The same will apply to the cattle men and all other exhibitors. Since the premiums have been taken off some things, the exhibit has increased four fold. It is not the premiums after all, therefore I think we have made a mistake in our county fairs, and some in our State fairs, in paying out so much for premiums.

Mr. Votaw—We must, in my judgment, give premiums in order to bring out imported horses and cattle. It is different from agricultural machinery which is made in our own State. I must contend for premiums retained on horses and cattle. I think every gentleman who is interested in cattle and horses of the best quality, will bear me out in this.

Mr. Nelson—I have had some experience and have different views regarding these premiums, and I say, without fear of successful contradiction, that the high premium is just what has kept up our State fairs. Those men with machinery do not care much for premiums; diplomas for meritorious points serve their purpose quite as well, but it is different with stock. It not only costs much to bring it to the fair, but there is considerable risk of life or injury, while there is little risk in the transportation of machinery. There may be some of your premiums too large and need a proper discrimination, but where there is a reduction, it should be made where it does not seem to show. If you take twenty per cent. off horses and cattle you will not be troubled to find room for all that will come.

Mr. Mutz—This delegate meeting is for the purpose of instructing the State Board proper as to the wants and best interests of the industries of the State, and it is through the expressions of opinions and statements of facts from all parts of the State, that the Board is enabled to model the premium list so as to meet the apparent best interests. The recommendations of the delegates should receive more credit. Our Committee on Premium List has suggested some amendments and the Board proper should heed those suggestions, and as far as practicable adopt them.

On motion of Mr. Quick, the report of the committee was referred to the State Board proper.

Mr. Votaw moved that a committee of three be appointed to co-operate with Commissioner Carnahan in enhancing the value of the Indiana exhibit at the New Orleans Exposition.

Mr. Nelson—Some allusion was made yesterday to the World's Fair at New Orleans, but no opinion was expressed as to the Board taking any part with the Commissioner in making the Indiana exhibit creditable to the State. I do not think the subject was entirely exhausted, and as there is nothing before the house I wish to make some inquiry regarding it.

Mr. Seward—We, with Mr. Nelson, are all aware that the exhibition at New Orleans is going on. The General Govern-

ment appropriated \$5,000 to each of the States for the purpose of aiding them in making suitable exhibits of their various resources. Indiana is a prominent Agricultural State, and it is desirable that this Board should be thoroughly represented there. The appointment of a Commissioner for this State to the New Orleans exposition is in the hands of the Governor. He has made the appointment, but the appointee is in no way identified with the Agricultural and Mechanical interests of the State. I desire to say that this Board is not in any way responsible for the exhibit of the State at New Orleans. I do not see why this Board could not have been represented in that exhibition. Mr. Carnahan, the Commissioner appointed by the Governor, has done the best he could within the limited time since his appointment, and I do not wish to criticise him. If the appointment had been made from this Board, at an early day, an exhibit could have been made of which the people of the State would have been proud. But as it is, it is a farce. I am astonished at the situation, and not a little ashamed of it.

Mr. Mitchell—I feel that it is hardly necessary for me to express myself on this subject. We have on this Board as competent and efficient men as can be found in the State. I did think that the Governor would have appointed some one from this Board to represent the Agricultural and Mechanical industries of the State. Kansas is represented by Mr. Johnson, Ohio by Mr. Camberlain, and other States have representatives from their Agricultural Boards. Had the appointment been made in due season the best samples of grain could have been forwarded to New Orleans, and County Agricultural Societies would have responded to the call for contributions. We were ready to do everything that we could creditable to ourselves and to the Agricultural interest of the State, but we were powerless in this matter.

Mr. Votaw—I think it would be proper for this Delegate Board to appoint a Commissioner to co-operate with the Commissioner appointed by the Governor.

Mr. Cumback—If that can be done it would be very appropriate. Can this Commissioner, if appointed, get any of the funds held by the Governor to pay expenses?

Mr. Mitchell—I do not think any one here would be willing to accept this position. I am in favor of those who have it in hand, to run it the best they can, and for this Board to have nothing whatever to do with it at this late day.

Commissioner Carnahan having been invited to explain to the Delegate Board the nature and extent of the exhibit at New Orleans, addressed the Convention as follows :

GENERAL CARNAHAN'S REMARKS.

Mr. President, Ladies and Gentlemen :

I was asked, a few days ago, to give you a few minutes' talk regarding the Exposition at New Orleans, and the exhibit of your State there. To get an idea of what the State is doing there, it is well to state, first, that the State is divided into three departments—Women's Work, Education and State Exhibit proper. The Women's Work from this State, as Mrs. Noe, who has been down there, will tell you, is not with the State exhibit. The ladies thought they would prefer going into a competitive exhibit with the ladies of other States, so they have their display separated from the State department. The Educational Department is with the United States Educational Department. Both the Women's and Educational Departments are in the gallery overlooking the Government and State exhibit. I will give you a brief statement of the buildings prepared for the exhibit. There is the main building, as it is termed. The ground floor of this covers 33 acres. Running entirely around this main building is a gallery 40 feet wide. All of this is devoted to private exhibits. Every foot of available space in that immense building, the largest exposition building ever erected, is occupied by exhibitors both in gallery and ground floor. After the time expired for application for exhibit, the Director General said that over 800 American applications had to be refused for lack of space.

The United States exhibit includes displays from the different places of industry, and scientific and educational exhibit by the Government. A vast collection of useful articles and curiosities, collected by the United States from all parts of the world, are in this collection. There are relics gathered by Lieutenant Greely in his visit to the Polar regions. Exhibited in this building, which takes 200 feet on either side, are the State exhibits, made up of the agricultural products of the different States. Coming next north of this Government exhibit, on the east side of the building, is the State of Michigan, next Indiana, then, immediately north, is the State of Wisconsin, and west of us a line of the Eastern States. The Eastern States, for the most part, make an exhibit of manufactures. Connecticut, immediately west and across the aisle from Indiana, exhibits all sorts of manufactured articles, from wooden nutmegs and hams to steam engines. They exhibit no agricultural products. Ohio, with an appropriation of \$40,000, makes a most admirable display. They are separated from us by one State. Much of their display is fancy work, such as needle work, painting and scenery, put up by the artist.

Michigan and Wisconsin have spent as much in getting up tables and show-cases in which to display their products as Indiana has put in all her exhibit. Each of those States had large appropriations, in addition to that of the Government, for making their display. Nebraska, Kansas, and our Western States, have made large and magnificent displays. Minnesota makes the largest part of their display in flour. Nebraska has expended almost \$20,000 in getting her display ready, and it is magnificent. Kansas has paid out a large amount of money; they received a Government appropriation, and the Legislature also made an appropriation, and have received a great aid from railroad companies. Nearly all the States, I think, with one exception, that of Pennsylvania, made an appropriation for the purpose of making their State display.

On the 25th of September I was commissioned as United States Commissioner for Indiana to make our exhibit; it was a late start to get to work, but I went at it in earnest, determined to do the best I could. I traveled over the State myself, and sent other parties to aid in collecting an exhibit for the State. We have collected from the north, south, east, west and central parts of the State. I have collected grains both in the straw and threshed, corn in the ear, as well as shelled, and I think there is no grass that grows in Indiana, either cultivated or wild, that I have not displayed for Indiana at New Orleans. We have a place of forty feet by one hundred and seventy feet, and a good location. At the suggestion of your Secretary I prepared a chart showing how Indiana's exhibit is arranged, so that you might get a better conception of it. The walls of our building are covered with pictures of our State Houses, beginning with Corydon, next the State House that was torn down to give place for the new one, next one given me by the Commissioners for the new one. I have several pictures representing the Court House, Insane Hospital, Blind Asylum, Deaf and Dumb Asylum, Orphans' Home at Knightstown and the State Reform School buildings, and some pictures of hand-some residences of the State. Some people down there ask me if we have such residences as these. I tell them that some of us had got out of log-cabins, and could put up a decent house here and there. I have the principal newspapers of the State—received every morning, and kept on file. The walls are covered with pictures of the finest stock we have in the State, including cattle, hogs, sheep, etc. We have worked woods, taken from the timber and not painted, which shows the quality of the wood. I have some ninety specimens of wood, rough and unshewn. Next to the wood, we have samples of coal from our State; the largest sample weighs over a ton. Some States have brought in coal weighing six, seven or eight tons. All other States bringing their coal to the Exposition have it encased with strong pieces of timber to keep it from breaking. Indiana is the only one that dares take the stays away from the coal, and it stands up as nice as in the mine without slacking. Most of the other coal shown as soon as exposed to the climate slack and fall away. The headquarters, as provided, we were to pay a thousand dollars for; we concluded it would not pay. I went to work and had a large tent 10x28 feet, with gas pipes running all around. This formed my headquarters. I made a platform, raised it six inches, extending three feet outside, entirely around the tent. On that I have arranged samples of Indiana building stone. Since returning home from New Orleans I have received a letter informing me that Georgia was

contracting for Indiana stone for the building of a new State House at Atlanta. By exhibiting this stone at New Orleans it is bringing it into prominence, and will give employment to a large number of men in getting it out.

In the headquarters tent I have furniture of various kinds, all of which are from Indiana wood, with the exception of some camp chairs. The excellence of the various woods also shows what we are doing in fine household articles. The Indiana Encaustic Tile Company is represented, and makes a fine display, which attracts a great deal of attention. We have opposite this samples from the Terra Cotta Works, located here at Indianapolis. We have also crockery and drain tile on exhibition, a matter that is to give us prominence in this direction. I have also collected models of patents that have been issued to Indiana men, and are being manufactured in this State. I have 1,000 square feet of grains and grasses of the State. On one wing I have nothing but bearded wheat, on another smooth wheat, another oats, another corn. We have another wing entirely for grass, put up in handsome shape, which is attracting a great deal of attention; and another, known by the ladies as "Crazy Quilt," and if there is any kind of grass that grows in this State not on that wing, I don't know where to find it. The edges of each wing are trimmed from leaves of tobacco, and surmounting the entire wing are bundles of wheat and oats, bound together as tightly as possible. I have in one case 4x5 feet of plate-glass, containing seed-corn furnished by a seed company at Thorntown; their exhibit is eight varieties of corn.

We have now for Indiana what is conceded to be the finest display of wheat on exhibition, (not the largest, but finest). A California man, with their long bunches of wheat, came over and wanted to examine our specimens. He said they had more straw, but we had the best wheat. I have cotton and woolen goods manufactured at Evansville, and graded wheat furnished by the Indianapolis Board of Trade. In the center of this display I have a market bulletin board, on which I give daily reports from the Indianapolis market, the only bulletin board in the entire display. I have also specimens of worked wood and woven wire, made by the Sedgwick Brothers, of Richmond. The only woven wire in the world made by machinery is in Indiana, and is owned by Indiana brothers, farmer boys. Since they have put up this wire there, they have been receiving orders almost every day, and woven wire is said to be stronger than hand-made wire. Gentlemen, this is what is being done at New Orleans. Your manufacturing and agricultural interests, stock and general industries of the State are represented. I have done the best I could under the circumstances, and I think some of these gentlemen who have visited New Orleans will bear me out in the statement. Pennsylvania, an older State and greater in wealth than ours, and placed on the same footing as ours so far as legislative appropriation is concerned, does not come up to Indiana by far; and as to our own State, we are adding to it day by day. We have not got all of our exhibit in place because we could not get them from the railroad. When I left, they had 4,000 cars on the track which could not get in to be unloaded. I have just received a letter from my assistant, that our cars are just beginning to come in. I want you gentlemen, when you return home, to send to me, here at Indianapolis, samples of your premium wheat exhibited at your agricultural meeting last fall, also oats and rye, and don't be afraid of sending too much. I am exhibiting these in glass globes

holding a little over a gallon. We are being brought into competition with foreign nations, and let us say to them that, as far as Indiana is concerned, we can show along with the States of the nation, and the entire world.

Mr. Cumback—How much money has been expended in the display thus far?

Gen. Carnahan—There was placed at my hands at the outset \$5,000 with which to make our exhibit; each State in the Union received this amount from the General Government; that amount has all been expended. While I do not complain, I want to say you have got to pay for everything south of the Ohio river. I sent by express a fine picture, prepared by one of the schools here in the city, it would weigh perhaps, frame and all, seventy-five pounds, that cost me \$9.50 to get it down there. Freights from here to Nashville are reasonable, but after that they are high. Every department is hampered because they have not means; the managers are doing all they can, but the expenses have been enormous in every respect; a man who never shoved a plane in his life wants \$3 a day, and the same rate in everything else. While such is the case, I have done everything in my power to make the expense as light as possible.

Mr. Cumback presented the following :

WHEREAS, Other States of the Union have made large appropriations to enable their States to make a creditable exhibition at the World's Fair at New Orleans, therefore,

Resolved, By the Indiana State Board of Agriculture, that the Legislature of the State be requested to at once appropriate ten thousand dollars to be placed at the disposal of the Commissioner of Indiana and the representatives from the said Board, in order that Indiana may be enabled to make a proper exhibit of our resources.

Which was adopted.

The consideration of the motion of Mr. Votaw was resumed.

Mr. Smart—I know something about the cost of this exhibition. I spent \$4,700 for making an educational display at Philadelphia, and had not money enough. I can not see how he could do so much as he has done with the money he has had. I believe the display will disgrace us if we don't have more money.

Mr. Carnahan—I want to say to the gentleman that every foot of space allotted to Indiana is filled; what we want is material to replenish and keep the display fresh.

On motion of Mr. Cumback, President Mitchell, Mr. Votaw and Mrs. Noe were appointed the committee

President Mitchell called Mr. Davidson to the chair, when Mr. Lockhart, from the committee to which was referred the address of the President, presented the following, which was received and adopted:

Mr. President and Gentlemen of the State Delegate Board:

Your committee to which was referred the address of President Mitchell, has had the same under consideration, and beg leave to make the following report on the various suggestions made by him to this Delegate Board:

First. We fully indorse his suggestions as to the propriety of petitioning the Legislature to make an appropriation of a sufficient sum of money to pay off the entire indebtedness of the State Board of Agriculture, and thereby enable it the more fully to carry out the spirit of the law creating it.

Second. In relation to the appointment of a State Veterinary Surgeon, we believe it is the duty of the incoming Legislature to make provision for the appointment of such an officer, and would suggest that a chair for that purpose should be provided at Purdue University, the recognized head of the agricultural work of the great State of Indiana.

Third. We have carefully examined the question of selecting judges at our annual fairs, and are of the opinion that what is termed the new system of selecting three judges, two to act and in case of a disagreement the third to be called in to decide the award, is preferable to any other system now in use.

Fourth. The use of turnstiles at the fairs would be preferable to any other way of admitting persons to the grounds, providing that entrances to the main building can be so arranged as to permit their use.

Fifth. The advisability of holding of a fat-stock show at Indianapolis in the fall of 1885, would depend, we think, on the encouragement extended by her citizens in furnishing an amount of money sufficient to guarantee the Board against possible loss from any cause, as the present financial condition of the country would not justify the State Board in attempting to hold such a show on any other conditions.

Sixth. We heartily endorse the idea of the managers of the great fairs of the United States and Canada holding meetings for the purposes named in President Mitchell's address, and would recommend to this Delegate Board that they extend an invitation to the committee to arrange for the holding of their next annual meeting in December next at some place in the State of Indiana.

Seventh. We recommend that a sufficient sum of money be appropriated by the Legislature to Purdue University to enable its faculty to carry on that great institution of learning in such manner as to make it second to no other institution in the United States, organized for the same purpose.

Eighth. We most respectfully recommend to this Delegate Board that they make it their individual business to see that the annual reports published by the State Board of Agriculture each year, are placed in the hands of men in their respective counties where they will do the most good.

Ninth. We recommend that our State Legislature pass such laws as will prevent, as much as possible, the adulteration of food and medicines, and provide such penalties for the violation of the law as will serve to deter persons from engaging in such practices.

Tenth. We also endorse the idea of compelling all persons that are engaged in the manufacture of any kind of goods by the employment of prison labor, to put upon their goods such a brand as will enable them to distinguish it from that made by free labor.

Eleventh. We most heartily endorse the suggestion of granting to the Woman's Department the entire control of the whole second floor of the Exposition Building, believing that they can so manage the exhibits as to make it more interesting than it has ever been before.

Mr. Votaw—I suggest that two from the State Board and one from the Delegate Board be appointed to co-operate with Gen. Carnahan in making this display.

Mr. Cumback—I would have one from the State Board, one from the Delegate Board, and one for the Women's Department. It is nothing but right that they should have an equal chance at this money in order to carry on the display in their department.

Dr. Furnas—Dakota received \$40,000 to carry on her display, and Indiana has sent a Commissioner there with just enough to get defeated. I would like for Indiana to make an appropriation of \$15,000.

On motion of Mr. Chamberlain, the convention proceeded to nominate candidates for members of the Board proper from the 5th, 6th, 7th, 9th, 10th, 11th, 12th and 13th districts. The following named gentlemen were placed in nomination:

Fifth District—W. A. Greer, Dearborn county; T. W. W. Sunman, Ripley county.

Sixth District—Dick Jones, Bartholomew county; Will Cumback, Decatur county.

Seventh District—W. H. Keesling, Henry county; J. L. Carson, Shelby county; W. —. Jackson, Henry county; E. H. Peed, Henry county; George W. Wheeler, Hamilton county; Nelson Bradley, Hancock county.

Ninth District—H. LaTourette, Fountain county.

Tenth District—Jasper N. Davidson, Montgomery county.

Eleventh District—John M. Graham, Delaware county.

Twelfth District—Jno. M. Levering, Tippecanoe county; J. M. Boggs, Tippecanoe county.

Thirteenth District—W. A. Maze, Tipton county; John Ratliff, Grant county.

The Board adjourned until 1:30 p. m.

AFTERNOON SESSION.

WEDNESDAY, Jan. 7, 1885.

Board met pursuant to adjournment, President Mitchell in the chair.

J. G. Kingsbury, of the *Indiana Farmer*, read an interesting essay on "The Destruction of Crops by Insects," which will be found elsewhere.

Mr. Cumback moved that the paper be received with thanks of the Board, and with the request that it be published in the *Indiana Farmer*.

Col. J. A. Bridgeland delivered an interesting essay on French agriculture and breeding of Norman horses, which was listened to with great satisfaction, and accorded a hearty vote of thanks. It will be found elsewhere in this report in full.

Mr. Lockhart, from the Committee on Rules and Regulations, to which was referred the rules and regulations, reported as follows :

Your committee beg leave to report that we have had the same under consideration, and do not see any reason for making any changes in the existing Rules of the Board as printed in the premium list of the year 1884.

R. M. LOCKHART, *Chairman*.

Which was adopted.

Mr. Johnson submitted the following :

Resolved, That, in view of the great destruction of agricultural and horticultural products in our State by injurious insects, and recognizing the importance of a knowledge of their origin, habits, and the best means of eradicating them, the State ought to have a State Entomologist; therefore, we ask that the Legislature provide by law for the appointment of such an officer, and that adequate means be placed at the disposal of the proper authorities for the purpose of defraying the necessary expenses of such an officer.

Adopted.

F. G. Wiseloge read paper on "Fertilizers and their relation to the growing plant," for which a vote of thanks was tendered by the convention. This paper will be found elsewhere in this report.

Mr. Cumback moved that each Agricultural and Industrial Society represented by any one connected therewith in this convention, be entitled to one vote in the election now to take place for members of the State Board proper, which was agreed to, and the names of such representatives were ordered placed upon the roll.

The hour having arrived for the election of eight members to fill the places of those whose terms of office expires with this meeting of the Board—the convention proceeded to elect, and the following named gentlemen were chosen to serve for the term of two years next ensuing: • •

From the 5th District—W. A. Greer, of Dearborn Co.

From the 6th District—Dick. Jones, of Bartholomew Co.

From the 7th District—E. H. Peed, of Henry Co.

From the 9th District—H. LaTourette, of Fountain Co.

From the 10th District—Jasper N. Davidson, of Montgomery Co.

From the 11th District—Jno. M. Graham, of Delaware Co.

From the 12th District—J. M. Boggs, of Tippecanoe Co.

From the 13th District—John Ratliff, of Grant Co.

On motion of Mr. Dungan, the convention adjourned until 8.30 o'clock to-morrow morning.

THIRD DAY.

THURSDAY, Jan. 8, 1885, 8:30, A. M.

Board met, President Mitchell in the chair.

Minutes of yesterday's proceedings read and approved.

Mr. Jones—Do I understand from the reading of the minutes that the resolution passed, recommending the petitioning of the Legislature to appropriate \$10,000 for the New Orleans Exposition?

Several voices—Yes, sir.

Mr. Jones—Then, at the proper time I will make a motion to reconsider that vote.

Gen. Carnahan—I wish to say in a few words, to emphasize what I said yesterday, in regard to the members of the State Board of Agriculture here, representing not only this Board but various County Agricultural Societies, the importance of your doing something in this matter now. I do not come to you begging, but I appeal to the pride you have in your county and State. Don't go home and say it will do to look after this in three or four weeks, but get to work at once. If anything is worth doing at all, it is well to do it when it is needed. We don't collect for a demonstration on the 4th day of July, on the 5th or 6th, that is the point I make. I want those articles sent at once, as they have to be in New Orleans before the first day of February, or you are cut out. On my own personal application I had the time extended from the 16th of December to the 1st of February, in order to get our collection ready. Ship all you can to me at this place by freight. Express will cost three times as much as freight. I don't care how much you send. I want to advertise Indiana, so they will come or send here to buy your wheat, wood, stone, clay and manufactured articles, etc. I put all grains up so they can see them and handle them. The grain buyers are coming every morning to look at the

bulletin of our grain market. It is better to advertise it in this way than to put it in sacks. Every man and county shall have credit for the exhibit that is made. Gibson county has sent down a county exhibit, and it is put up as Gibson county exhibit, and there is no other county in the United States that can beat Gibson county.

Mr. Lockhart—Would it be worth while to send apples?

Gen. Carnahan—Yes, sir. The Horticultural Society is going to do all that is possible in that direction. Mr. Johnson informed me this morning they were only able to collect two barrels. I had made arrangements to make a fine display of apples from Indiana, but will close in with a part of that contract with the addition of the two barrels of Mr. Johnson.

Mr. Johnson—I am in favor of making an exhibition of apples at the Exposition, and our society resolved to do so with considerable opposition. The Secretary and myself were appointed to make the collection. We wrote our letters and sent them over the State, and got responses without any encouragement. We had no encouragement to exhibit at the State Fair, and another thing, we had no money, as the Legislature failed to give us an appropriation.

Mr. Custer—Did not our Treasurer report between three and four hundred dollars in the treasury a month ago?

Mr. Johnson—I do not remember the amount on hands; but we have done what we could, and send two barrels of apples.

Mr. Lockhart—I think I realize the situation of Mr. Carnahan. A few years ago there were but few apples in Indiana. I made an exhibit of 300 apples at the State Fair from Dekalb county. We have got apples now in Dekalb county as good as any in Michigan.

Mr. Hargrove, from the Committee on Fair Grounds, reported as follows:

The Committee on Fair Grounds would respectfully submit the following: After having examined the Exposition building we found the lower roof on either side of the building to be in very bad repair, and recommend that said portion be re-roofed, and, also, that the down spouts on said portion be enlarged, so as to freely carry off the water therefrom, and thus avoid damage to the walls, as is now the case.

We also find that the middle and the two western towers need re-roofing, being at present in bad condition, and doing continual damage to the building.

We further find that the roof of Agricultural Hall is in the same bad condition, and recommend that it be re-roofed. Also, that the roof of the section of horse stalls on the east side of the grounds needs repairs, and recommend that the General Superintendent be authorized to make said necessary repairs.

We further recommend the carrying into effect the recommendations of the Superintendent of the Horse Department to remove the old music stand. Also, the suggestions of the General Superintendent concerning the old boiler house.

We also recommend the adoption of the suggestions of the Superintendent of the amphitheater to remove the gate at the west end thereof.

Further than this, we find the buildings and grounds in good condition, and that the management and care of the same by the General Superintendent has been entirely satisfactory to your committee.

SAMUEL HARGROVE,
 JASPER N. DAVIDSON,
 JOHN Q. A. SIEG,
 HEZEKIAH STEELMAN,
 A. G. BILLMEYER,
 JAS. N. CHAMBERLAIN,

Committee.

The report was received and concurred in.

Mr. Nelson, from the special committee to which was referred the draft of an act prepared by the State Veterinary Association, for the prevention and suppression of pleuro-pneumonia and other contagious and infectious diseases, reported the following:

Your committee, to which was referred the bill proposed to be submitted to the Legislature, in relation to the suppression and prevention of pleuro-pneumonia and other infectious diseases common to domestic animals of the equine and bovine species, have had the same under consideration, and notwithstanding some imperfections in the bill, your committee has concluded to recommend it as it is, trusting to the sound judgment of the legislative committee, to whom it may be submitted, to rectify such errors as may appear on a more critical examination than we have been able to give at this time. We certainly regard it as a move in the right direction.

Mr. Robe offered the following:

Resolved, By the State and Delegate Board of Agriculture of Indiana, That we enter our protest against the order of the French Government of February, 1881, prohibiting the further landing of American salt pork in France, upon the false pretense of sanitary cause, and until a more generous spirit is manifested toward us, we demand, through our Congressmen, a proper retaliation. We ask the co-operation of all the agricultural associations of the United States in this demand.

Mr. Lockhart moved the adoption of the resolution.

Mr. Johnson moved to amend by erasing the words "we demand through our Congressmen a proper retaliation," and substituting therefor "we ask our Congressmen to adopt such measures as will tend to remove such restriction."

President Mitchell--We can retaliate, but not say retaliate. We can exclude their goods as they do ours. If they exclude our meats, let us prohibit their imports on the same ground that they meet us. However, if the resolution is just as you want it, it is before you.

Mr. Robc--It seems to me that there has been soft words enough said already, and we might say just what we mean. I am in favor of the resolution.

The amendment was adopted, and the resolution as amended was then adopted.

Mr. Ratliff offered the following :

WHEREAS, The Indiana State Board of Agriculture is laboring under financial embarrassment, owing to its bonded indebtedness; therefore,

Resolved, That a committee of five be appointed by the President to lay the matter before the General Assembly, by memorial and otherwise, to the end that relief may be afforded and the debt liquidated.

Mr. Ratliff--I think when we present these facts to the Legislature they will have some value. We have an assessment on nine hundred and seventy millions of dollars, and perhaps two-thirds of the personal property is that of the agricultural population of the State. These are not official figures, but it is near that. Forty thousand dollars will liquidate this debt, and if that amount can be raised we had better not let it stand. It is the duty of the Legislature, as it represents the farming interests, and perhaps four-fifths of the wealth of our State. I think if this is set properly before the Legislature we will get the money. This appropriation we are asking for now is to pay interest on the debt. We failed to get this a few years ago, and we have been paying the interest out of profits. This help asked for is to wipe out the debt so we can run it ourselves. If this debt was removed I see nothing in the way for a successful continuation.

Mr. Nelson—If this debt was removed I think we can do better. We used to do it before this debt was made, and with the annual appropriation of \$1,500 there will be no trouble at all.

The resolution was adopted, and President Mitchell named as the committee, his successor, President of the Board, and Messrs. Crim, Heron, Nelson and Davidson.

Mr. Enos B. Reed, editor of "The People," read a paper on "The Fish Interests of Indiana," which is published in this volume.

On motion of Hendry, the thanks of the Convention were tendered to Mr. Reed, and a request made that the paper be furnished for publication in the annual report.

Dr. Jno. N. Hurty, analytical chemist, read a paper on "Food and the Adulteration of some Articles of Diet," which will be found in this volume.

On motion of Mr. Davidson, the thanks of the convention were expressed to Dr. Hurty for his highly interesting paper.

Miss. Lulu A. Davidson, of Montgomery county, read a paper on "Farmers' Recreation and Amusements," which will be found elsewhere in this report.

A rising vote of thanks was heartily given to Miss Davidson for her essay, on motion of Mr. Seward.

Mr. Johnson moved to request a copy of the address for publication in the *Indiana Farmer*, deeming its subject matter of such value as to justify a widespread circulation.

Mr. Seward objected for selfish reasons, believing that such live matter was just the thing to prevent the appellation of "musty" to our agricultural reports, and he desired that it should make its first appearance there.

The motion of Mr. Johnson was not agreed to.

Mr. I. N. Cotton read an essay on Fish Culture, its profits, etc. This paper will be found elsewhere, and, together with the discussions that followed, will be found interesting to those in pursuit of knowledge on this subject.

Mr. Seward, from the Committee on Finance, made report:

Your Committee on Finance, to whom was referred the accounts of the Secretary and Treasurer, would report that we have examined the same, and have carefully compared the vouchers and receipts on file with the books, and find them all correct.

W. B. SEWARD,
JNO. M. GRAHAM,
DICK JONES,
GERARD REITER,
WILL CUMBACK,
Committee.

On motion of Mr. Dungan, the convention then adjourned.

MEETING OF THE STATE BOARD—(Old Board.)

2 O'CLOCK P. M.

Agreeably with call of the President the Board met, President Mitchell in the chair, and all the members present.

On motion, the reading of the minutes of the morning session of the Delegate Board was dispensed with.

On motion of Mr. Seward, the Board adjourned *sine die*.

The President called a meeting of the new Board instanter.

ORGANIZATION OF THE NEW BOARD.

New Board met. On call of the roll the following members responded to their names: Messrs. Mitchell, Hargrove, Sieg, Seward, Greer, Jones, Peed, Dungan, LaTourette, Davidson, Graham, Boggs, Ratliff, Custer, Banks and Lockhart, being a full Board.

On motion, Mr. Sieg was called to the chair.

Mr. Seward moved that the Board now proceed to the election of officers, which was agreed to.

On motion of Mr. Dungan, the election was held by ballot without nominations, and resulted as follows:

President	R. M. Lockhart, Waterloo, Dekalb county.
Vice-President	Dick Jones, Columbus, Bartholomew county.
Secretary	Alex. Heron, Indianapolis, Marion county.
Treasurer.	Sylvester Johnson, Irvington, Marion county.
General Superintendent .	Fielding Beeler, Indianapolis, Marion county.

On motion of Mr. Seward, it was agreed that the ballot for Executive Committeemen be in the same manner as for the above officers, and that the four persons receiving the highest vote be declared elected.

The following members were thus chosen Executive Committee: Messrs. Davidson, Mitchell, Dungan and Seward.

On motion of Mr. Jones, Mr. Mitchell was appointed to conduct the newly elected President to the chair.

President Lockhart addressed the Board in a few appropriate remarks, and thanked them for the honor conferred.

On motion of Mr. Ratliff, the committee appointed to memorialize the Legislature in relation to the bonded indebtedness of the Board, be authorized to also take charge of the matter of the appropriation of \$10,000 asked of the Legislature to aid in the State's exhibit at the World's industrial exhibition at New Orleans.

On motion of Mr. Seward the time for the next meeting of the Board was fixed for February 10, 1885.

On motion of Mr. Mitchell, the Secretary was authorized to pay the annual dues of \$10.00, to the International Association of Fairs and Expositions—headquarters at St. Louis, Mo.

On motion of Mr. Jones, all unfinished business was referred to the February meeting.

Mr. Seward moved that the salaries of officers for the ensuing year be the same as for 1884. Adopted.

The Board then adjourned.

INDIANA STATE FAIR.

PREMIUM AWARDS, 1884.

HORSES.

J. N. DAVIDSON, SUPERINTENDENT.

BOOK I—Heavy Draft

(Where State is not given Indiana is implied.)

FRENCH DRAFT.

Stallion, 4 years and over, Dillon Bros., Normal, Ill	\$40
Second, J. G. Graham, Richland, Rush county	20
Stallions, 3 years old and under 4, Dillon Bros., Normal, Ill	30
Second, Indianapolis Importing and Breeding Stock Company, Indianapolis	15
Stallion, 2 years old and under 3, Dillon Bros., Normal, Ill	20
Second, E. D. Morse, Kewana, Fulton county	10
Stallion, 1 year old and under 2, Dillon Bros., Normal, Ill	10
Second, Indianapolis Importing and Breeding Percheron Stock Company	5
Mare, 4 years old and over, Dillon Bros., Normal, Ill	25
Second, Indianapolis Importing and Breeding Percheron Stock Company	12
Mare, 3 years old and under 4, Dillon Bros., Normal, Ill	20
Second, Indianapolis Importing and Breeding Percheron Stock Company	10
Mare, 2 years old and under three, Dillon Bros., Normal, Ill	15
Second, J. R. Ludlow, Irvington, Marion county	7
Mare, 1 year old and under 2, Dillon Bros	10
Second, Indianapolis Importing and Breeding Percheron Stock Company	5

BOOK II—Clydesdale and English Draft.

Stallion, 4 years old and over, Henry L. Hernly, New Castle	\$40
Second, Clark Hosiel, Greensboro, Henry county	20
Stallion, 3 years old and under 4, Door Prairie Association, Door Prairie, Laporte county	30
Second, E. H. & Wm. Peed, New Castle	15
Stallion, 2 years old and under 3, Door Prairie Association, Door Prairie, Laporte county	20
Stallion, 1 year old and under 2, Door Prairie Association, Door Prairie, Laporte county	10
Mare, 4 years old and over, Door Prairie Association, Door Prairie, Laporte county	25
Second, J. B. Ayers, Danvers, McLain county, Ill	12
Mare, 3 years old and under 4, E. H. & Wm. Peed, New Castle	20
Second, Door Prairie Association, Door Prairie, Laporte county	10
Mare, 2 years old and under 3, Door Prairie Association, Door Prairie, La- porte county	15
Mare, 1 year old and under 2, David Fisher, Goodrich, Ontario, Canada . . .	10
Second, David Fisher, Goodrich, Ontario, Canada	5
Sucking filley—first premium, E. H. & Wm. Peed, New Castle	8
Second, Door Prairie Association, Door Prairie, Laporte county	4

BOOK III—Heavy Draft Grade Horses.

Stallions, 4 years old and over, Dillon Bros., Normal, Ill.	\$30
Second, David Fisher, Goodrich, Ontario county, Canada	15
Stallion, 3 years old and under 4, W. F. Christian & Son, Indianapolis	20
Second, David Fisher, Goodrich, Ontario county, Canada	10
Stallion, 2 years old and under 3, David Fisher, Goodrich, Ontario county, Canada	15
Second, David Fisher, Goodrich, Ontario county, Canada	7
Stallion, 1 year old and under 2, Abram Smith, Goodrich, Huron county, Canada	10
Second, Charles A. Berry, New Castle	5
Stallion, sucking colt, R. S. Miles, Raleigh, Rush county	8
Second, R. S. Miles, Raleigh, Rush county	4
Mare, 4 years old and over, R. S. Miles, Raleigh, Rush county	20
Second, J. B. Ayers, Danvers, McLean county, Ill	10
Mare, 3 years old and under 4, R. S. Miles, Raleigh, Rush county	15
Second, E. H. & Wm. Peed, New Castle	7
Mare, 2 years old and under 3, E. H. & Wm. Peed, New Castle	12
Second, J. W. S. Graves, Carmel, Hamilton county	6
Mare, 1 year old and under 2, David Fisher, Goodrich, Ontario county, Canada.	10
Second, E. H. & W. Peed, New Castle	5

Sucking filley, R. S. Miles, Raleigh, Rush county	\$8
Second, R. S. Miles, Raleigh, Rush county	4
Gelding, 4 years old and over, Francis Cary, Carmel, Hamilton county	12
Gelding, 3 years old and under 4, Albert Jeffries, Westfield, Hamilton county.	10
Second, Albert Jeffries, Westfield, Hamilton county	5
Heavy draft team, J. B. Ayers, Danvers, McLean county, Ill	20
Second, A. L. Johnson, Muncie, Delaware county	10

BOOK IV—General Purpose.

Stallion, 4 years old and over, Hyatt Bros., Knightstown	\$40
Second, Lindley Gilbert, Dublin	20
Stallion, 3 years old and under 4, Thomas Levi, Noblesville	30
Second, Joseph R. Williams, Martinsville	15
Stallion, 2 years old and under 3, Hyatt Bros., Knightstown	20
Second, Pleasant Almond, Plainfield	10
Stallion, 1 year old and under 2, J. T. Gray, Star P. O., Rush county	10
Second, Door Prairie Association, Door Prairie, Laporte county.	5
Stallion, sucking colt, Door Prairie Association, Door Prairie, Laporte county.	8
Second, S. S. Granger, Fisher Station, Hamilton county	4
Mare, 4 years old and over, Pleasant Almond, Plainfield	25
Second, S. S. Granger, Fisher Station, Hamilton county	12
Mare, 3 years old and under 4, Door Prairie Association, Door Prairie, La- pporte county.	20
Second, W. P. Swaim, Bellmore	10
Mare, 2 years old and under 3, Sandusky & Stearns, Fairmount, Ill	15
Second, Hyatt Bros., Knightstown	7
Mare, 1 year old and under 2, Jas. M. Prichard, Jolietville.	10
Second, Door Prairie Association, Door Prairie, Laporte county	5
Sucking filley, L. H. M. Brown, Indianapolis	8
Second, W. P. Swaim, Bellmore	4
Gelding, 4 years old and over, Levi & Munter, Indianapolis	25
Second, Lee Forts, Knightstown	12
Gelding, 3 years old and under 4, H. Jackson, Mooresville	10
Second, Allen Jackson, Plainfield	5
Gelding, 2 years old and under 3, J. T. Gray, Star P. O., Rush county.	8
Second, Hyatt Bros., Knightstown	4
Pair geldings or mare, John A. Bridgeland, City.	20
Second, W. D. Wiles, City.	10

BOOK V—Light Harness.

Stallion, 4 years old and over, James Hazleton, Logansport.	\$30
Second, S. S. Granger, Fisher Station	15
Stallion, 3 years old and under 4, S. S. Granger, Fisher Station.	25
Second, Geo. W. Scott, Haughsville, Marion county	12

Stallion, 2 years old and under 3, D. L. Thomas, Rushville	\$14
Second, Thomas Recves, Columbus.	7
Mare, 4 years old and over, Thomas Levi, Noblesville	15
Second, Hyatt Bros., Knightstown	7
Mare, 3 years old and under 4, D. W. Searight, Shelbyville.	14
Second, Pleasant Almond, Plainfield	7
Mare, 2 years old and under 3, D. L. Thomas, Rushville	7
Second, C. A. Berry, New Castle	3
Geldings, 4 years old and over, C. L. Clancy, Edinburg.	15
Second, Buford & Keeney, Danville	7
Gelding, 3 years old and under 4, G. C. Bailey, Andersonville.	14
Second, J. H. Steiner, Indianapolis.	7
Gelding, 2 years old and under 3, Geo. W. Scott, Haughsville	7
Second, D. L. Thomas, Rushville	3
Stallion, gelding or mare, any age, John W. Fort, Indianapolis	15
Second, J. H. Steiner, Indianapolis	7

BOOK VI—Sweepstakes on Horses.

Stallion of any age, draft, Dillon Bros., Normal, Ill	\$50
Stallions of any age, except heavy draft, Thomas Levi, Noblesville.	50
Stallion showing 3 best sucking colts of his get, R. S. Miles, Raleigh, Rush county	40
Mare of any age, draft, Door Prairie Association, Oakwood, Laporte county	30
Mare of any age, except heavy draft, Sandusky & Stearns, Fairmount, Ill	30
Brood mare with sucking colt at foot, Door Prairie Association, Oakwood, Laporte county.	40
Herd of 5, consisting of 1 stallion and 4 mares, heavy draft, to be owned by one exhibitor, Dillon Bros., Normal, Ill	100
Second, J. B. Ayers, Danvers, McLean county, Ill	50
Herd of 5, consisting of 1 stallion and 4 mares, except heavy draft, owned by one exhibitor, Hyatt Bros., Knightstown	100
Second, Samuel S. Granger, Fisher Station.	50

BOOK VII—Jacks.

Jack, 3 years old and over, J. T. Gray, Star postoffice, Rush county	\$20
Second, J. R. Hernley, New Castle	10
Mule, 4 years old and over J. M. Perry, Columbus.	12
Second, Perry Tully, Plainfield	6
Mule, 3 years old and under 4, Levi & Munter, Indianapolis	10
Second, Jas. M. Prichard, Jolietville.	5
Mule, 2 years old and under 3, J. M. Perry, Columbus	8
Mule, 1 year old and under 2, Thos. Levi, Noblesville	7
Mule colt, Wm. P. Swaim, Bellmore	6
Second, Wm. P. Swaim, Bellmore	3
Pair mules, 3 year old and over, J. M. Perry, Columbus	20
Second, Owen Lindley, Paoli, Ind	10

BOOK VIII--Sweepstakes on Jacks and Jennets.

J. R. Hernley, New Castle	\$20
Jack showing 3 best colts under 1 year of age, W. P. Swaim, Bellmore	20

BOOK IX--Speed List.

THREE-YEAR-OLD TROT—PURSE, \$150.

B. F. Buford, Danville	80
Second, T. C. Sheppard, Brookville	50
Third, David Searight, Shelbyville	20

2:37 PACE—PURSE, \$150.

E. D. Morse, Chicago, Ill	80
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2:37 TROT—PURSE, \$200.

Arnold Hanes, Paris, Ill	100
Second, John McGannon, Rockville	75
Third, Samuel Antrobus, Greensburg	25

THREE-MINUTE TROT—PURSE, \$200.

U. J. Hammond, Indianapolis	100
Second, Frank Armstrong, Indianapolis	75
Third, W. A. Jones, Terre Haute	25

RUNNING RACE—ONE MILE AND REPEAT—FOUR YEARS OLD AND OVER—PURSE, \$150.

Mrs. Jennie St. Clair, Indianapolis	80
Second, Greenville Wilson, Waldron	50
Third, Thomas Levi, Noblesville	20

FREE-FOR-ALL PACE—PURSE, \$150.

Ben. Davis, Indianapolis	75
Second, E. D. Morse	50
Third, Geo. Cutsinger	25

2:30 TROT—PURSE, \$250.

J. R. Brumfield, Terre Haute	125
Second, W. A. Jones, Terre Haute	75
Third, D. W. French, Crawfordsville	50

STALLION TROT—PURSE, \$120.

Samuel Antrobus, Greensburg	60
Second, John McGannon, Rockville	40
Third, none.	

FREE-FOR-ALL TROT—PURSE, \$135.

Abiah Haynes, Liston, Ohio	\$80
Second, W. J. Hammond, Indianapolis	35
Third, Ben. Davis, Indianapolis	20

CONSOLATION PURSE OF \$50 FOR ALL RUNNERS THAT HAVE NOT WON IN PREVIOUS RACES.

W. A. Cox, Brightwood	\$16 65
Second, Thomas Levi, Noblesville	16 65
Third, G. Wilson, Shelbyville	16 65

 CATTLE.

C. B. STUART, SUPERINTENDENT.

BOOK X—Short Horns.

Bull, 3 years old and over, C. C. Walker, New Madison, Darke county, Ohio	\$30
Second, Thos. Wilhoit, Middletown, Henry county	15
Bull, 2 years old and under 3, Ezra Swain, Noblesville	25
Second, Harvey Sandusky, Indianapolis	12
Bull, 1 year old and under 2, Thomas Wilhoit, Middletown	20
Second, Thomas Wilhoit, Middletown	10
Bull calf, Robert Miller, West Liberty, Iowa	10
Second, Thomas Wilhoit, Middletown	5
Cow, 3 years old and over, Robert Miller, West Liberty, Iowa	30
Second, Harvey Sandusky, Indianapolis	15
Cow, 2 years old and under 3, Thomas Wilhoit, Middletown	25
Second, Robert Miller, West Liberty, Iowa	12
Heifer, 1 year old and under 2, Thomas Wilhoit, Middletown	20
Second, Harvey Sandusky, Indianapolis	10
Heifer calf, Harvey Sandusky, Indianapolis	10
Second, Robert Miller, West Liberty, Iowa	5

BOOK XI—Herefords.

Bulls, 2 years old and under 3, Indianapolis Blooded Stock Co	\$25
Second, Indianapolis Blooded Stock Co	12
Bulls, 1 year old and under 2, Indianapolis Blooded Stock Co	20
Second, Indianapolis Blooded Stock Co	10

Bull calf, Indianapolis Blooded Stock Co	\$10
Second, Indianapolis Blooded Stock Co.	5
Cow, 3 years old and over, Indianapolis Blooded Stock Co	30
Second, Indianapolis Blooded Stock Co.	15
Cow, 2 years old and under 3, Indianapolis Blooded Stock Co	25
Second, Indianapolis Blooded Stock Co,	12
Heifer, 1 year old and under 2, Indianapolis Blooded Stock Co	20
Second, Indianapolis Blooded Stock Co.	10
Heifer calf, Indianapolis Blooded Stock Co	10
Second, Indianapolis Blooded Stock Co.	5

BOOK XII—All Polled Breeds.

Bull, 3 years old and over, Anderson & Findley, Lake Forest, Ill	\$30
Second, Indiana Blooded Stock Co., Indianapolis	15
Bull, 2 years old and under 3, Indiana Blooded Stock Co., Indianapolis	25
Second, Anderson & Findley, Lake Forest, Ill.	12
Bull, 1 year old and under 2, Indiana Blooded Stock Co., Indianapolis	20
Second, Anderson & Findley, Lake Forest, Ill.	10
Bull calf, Indiana Blooded Stock Co., Indianapolis	10
Second, Indiana Blooded Stock Co., Indianapolis	5
Cow, 3 years old and over, Indiana Blooded Stock Co., Indianapolis.	30
Second, Anderson & Findley, Lake Forest, Ill	15
Cow, 2 years old and under 3, Anderson & Findley, Lake Forest, Ill.	25
Second, Indiana Blooded Stock Co., Indianapolis	12
Heifer, 1 year old and under 2, Anderson & Findley, Lake Forest, Ill	20
Second, Anderson & Findley, Lake Forest, Ill.	10
Heifer calf, Anderson & Findley, Lake Forest, Ill	10
Second, Indiana Blooded Stock Co., Indianapolis	5

BOOK XIII—Jerseys.

Bull, 3 years old and over, Peter Raab, Indianapolis.	\$30
Second, W. A. Ketcham, Indianapolis	15
Bull, 2 years old and under 3, W. E. Higgins, Meltzer, Marion county	25
Second, O. W. Mathews, Irvington	12
Bull, 1 year old and under 2, W. A. Ketcham, Indianapolis	20
Second, Garretson Bros., Pendleton	10
Bull calf, W. A. Ketcham, Indianapolis	10
Cow, 3 years old and over, Garretson Bros., Pendleton	30
Second, Garretson Bros., Pendleton.	15
Cow, 2 years old and under 3, W. E. Higgins, Meltzer, Marion county	25
Second, W. A. Ketcham, Indianapolis	12
Heifer, 1 year old and under 2, W. J. Hasselman, Indianapolis	20
Second, Garretson Bros., Pendleton.	10
Heifer calf, W. E. Higgins, Meltzer, Marion county	10
Second, Peter Raab, Indianapolis	5

BOOK XIV—Devons.

Bull, 3 years old and over, Irving York, Casstown, Ohio	\$30
Second, Whitmore & Younger, Casstown, Ohio	15
Bull, 2 years old and under 3, W. E. Higgins, Meltzer	25
Second, Irving York, Brock, Ohio	12
Bull, 1 year old and under 2, J. J. Scarff & Son, New Carlisle, Ohio	20
Second, Whitmore & Younger, Casstown, Ohio	10
Bull calf, Whitmore & Younger, Casstown, Ohio	10
Second, Whitmore & Younger, Casstown, Ohio	5
Cow, 3 years old and over, Whitmore & Younger, Casstown, Ohio	30
Second, J. J. Scarff & Son, New Carlisle, Ohio	15
Cow, 2 years old and under 3, Whitmore & Younger Casstown, Ohio.	25
Second, Irvin York, Brock, Ohio.	12
Heifer, 1 year old and under 2, J. J. Scarff & Son, New Carlisle, Ohio	20
Second, Whitmore & Younger, Casstown, Ohio	10
Heifer calf, Whitmore & Younger, Casstown, Ohio.	10
Second, Irving York, Brock, Ohio	5

BOOK XV—Ayrshires.

Bull, 3 years old and over, Wm. Fairweather, Erie, Penn.	\$30
Bull, 2 years old and under 3, Wm. Fairweather, Erie, Penn	25
Bull, 1 year old and under 2, Wm. Fairweather, Erie, Penn.	20
Cow, 3 years old and over, Wm. Fairweather, Erie, Penn.	30
Second, Wm. Fairweather, Erie, Penn	15
Cow, 2 years old and under 3, Wm. Fairweather, Erie, Penn	25
Heifer, 1 year old and under 2, Wm. Fairweather, Erie, Penn.	20
Second, Wm. Fairweather, Erie, Penn	10
Heifer calf, Wm. Fairweather, Erie, Penn	10

BOOK XVI—Holsteins.

Bull, 3 years old and over, W. O. Jackson, South Bend.	\$30
Second, J. W. Stilwell & Co., Troy, Ohio	15
Bull, 2 years old and under 3, W. O. Jackson, South Bend	25
Bull, 1 year old and under 2, J. W. Stilwell, Troy, Ohio	20
Bull calf, J. W. Stilwell, Troy, Ohio	10
Second, W. O. Jackson, South Bend	5
Cow, 3 years old and over, J. W. Stilwell, Troy, Ohio	30
Second, J. W. Stilwell, Troy, Ohio	15
Cow, 2 years old and under 3, W. O. Jackson, South Bend	25
Second, J. W. Stilwell, Troy, Ohio	12
Heifer, 1 year old and under 2, J. W. Stilwell, Troy, Ohio	20
Second, J. W. Stilwell, Troy, Ohio	10
Heifer calf, J. W. Stilwell, Troy, Ohio	10
Second, W. O. Jackson, South Bend	5

BOOK XVII.

SWEEPSTAKES—BEEF BREEDS OF CATTLE.

Bull of any age or breed, Thomas Wilhoit, Middletown	\$40
Cow, any age or breed, Indiana Blooded Stock Company, Indianapolis	30

SWEEPSTAKES—MILK BREEDS OF CATTLE.

Bull, any age or breed, W. O. Jackson, South Bend	40
Cow, any age or breed, Garretson Bros., Pendleton	30

HERDS—BREEDS OF BEEF CATTLE.

Herd of 5 head, consisting of 1 bull 2 years old and over, 1 cow 3 years old and over, 1 heifer 2 years old and under 3, 1 heifer 1 year old and under 2, 1 heifer calf under 1 year old, Thomas Wilhoit, Middletown	300
Second, Thomas Wilhoit, Middletown	100

HERDS—BREEDS OF BEEF CATTLE.

Best young herd of beef cattle, to consist of 1 bull and 4 heifers, all under 2 years of age, Thomas Wilhoit, Middletown	100
Second, Indiana Blooded Stock Company, Indianapolis	50

BOOK XVIII.

MILK CATTLE—JERSEYS AND AYRSHIRES.

Herd, consisting of 1 bull 2 years old and over, 1 cow 3 years old and over, 1 heifer 1 year old and under 2, heifer calf 1 year old, W. E. Higgins, Meltzer	\$200
Second, Wm. Fairweather, Erie, Pa	75

HOLSTEINS AND DEVONS

Herd, consisting of 1 bull 2 years old and over, 1 cow 3 years old and over, 1 heifer 2 years old and under, 1 heifer 1 year old and under 2, heifer calf 1 year old, J. W. Stilwell & Co., Troy, Ohio	200
Second, W. O. Jackson, South Bend	75

SHEEP.

 T. W. W. SUNMAN, SUPERINTENDENT.

BOOK XIX—Fine Wool Sheep, to include American, Spanish and French Merinos.

Buck, 2 years old and over, E. Campbell, Pittsfield, Ohio.	\$14
Second, Cook & Morse, Raymond, Ohio	7
Buck, 1 year old and under 2, Taylor Bros., Waynesville, Ill	10
Second, Taylor Bros., Waynesville, Ill	5
Buck lamb, E. Campbell, Pittsfield, Ohio	8
Second, E. Campbell, Pittsfield, Ohio.	4
Ewe, 2 years old and over, Cook & Morse, Raymond, Union county, O.	12
Second, Taylor Bros., Waynesville, Ill	6
Ewe, 1 year old and under 2, C. M. Fellows, Manchester, Mich	8
Second, C. M. Fellows, Manchester, Mich.	4
Ewe lamb, Cook & Morse, Raymond, Union county, Ohio	6
Second, Taylor Bros., Waynesville, Ill	3
Five lambs, Cook & Morse, Raymond, Union county, Ohio	10
Second, Taylor Bros., Waynesville, Ill	5

BOOK XX—Long Wool Sheep, Cotswolds, Leicester or Lincolns.

Buck, 2 years old and over, W. D. Privett, Greensburg.	\$14
Second, T. Morgan, Camargo, Ill.	7
Buck, 1 year old and under 2, W. T. Woodford & Son, Paris, Ky	10
Second, W. D. Privett, Greensburg	5
Buck lamb, W. T. Woodford & Son, Paris, Bourbon county, Ky	8
Second, W. D. Privett, Greensburg.	4
Ewe, 2 years old and over, W. T. Woodford & Son, Paris, Ky.	12
Second, W. D. Privett, Greensburg.	6
Ewe, 1 year old and under 2, W. T. Woodford & Son, Paris, Ky	8
Second, W. T. Woodford & Son, Paris, Bourbon county, Ky	4
Ewe lamb, J. A. Heavenridge, Liberty	6
Second, W. T. Woodford & Son, Paris, Bourbon county, Ky	3
Five lambs, J. A. Heavenridge, Liberty.	10
Second, W. T. Woodford & Son, Paris, Ky	5

BOOK XXI—Southdowns.

Buck, 2 years old and over, J. G. Byers & Son, Simpsonville, Ky	\$14
Second, Frank Wilson, Jackson, Jackson county, Mich	7
Buck, 1 year old and under 2, J. G. Byers & Son, Simpsonville, Ky	10
Second, J. G. Byers & Son, Simpsonville, Ky	5
Buck lamb, Uriah Privett, Greensburg, Decatur county	8
Second, Uriah Privett, Greensburg, Decatur county	4
Ewe, 2 years old and over, J. G. Byers & Son, Simpsonville, Ky.	12
Second, Uriah Privett, Greensburg	6
Ewe, 1 year old and under 2, J. G. Byers & Son, Simpsonville, Ky	8
Second, J. G. Byers & Son, Simpsonville, Ky	4
Ewe lamb, Uriah Privett, Greensburg	6
Second, J. G. Byers & Son, Simpsonville, Ky	3
Five lambs, Uriah Privett, Greensburg, Decatur county	10
Second, J. G. Byers & Son, Simpsonville, Ky	5

BOOK XXII—Oxfordshires, Shropshires and Hampshires.

Buck, 2 years old and over, E. S. Butler, Ridgeway, Ohio	\$14
Second, F. C. Galdsbrough, Easton, Talbot county, Md.	7
Buck, 1 year old and under 3, F. C. Galdsbrough, Easton, Talbot county, Md.	10
Second, Thompson & Privett, Greensburg	5
Buck lamb, Thompson & Privett, Greensburg	8
Second, Thompson & Privett, Greensburg	4
Ewe, 2 years old and over, Thompson & Privett, Greensburg	12
Second, Allen & Son, Archie, Vermillion county, Ill	6
Ewe, 1 year old and under 2, T. F. Galdsbrough, Easton, Talbot county, Md	8
Second, Thompson & Privett, Greensburg	4
Ewe lamb, Thompson & Privett, Greensburg	6
Second, Allen & Son, Archie, Vermillion county, Ill.	3
Five lambs, Thompson & Privett, Greensburg	10
Second, Allen & Son, Archie, Vermillion county, Ill.	5

BOOK XXIII—Sweepstakes on Fine Wool Sheep.

Buck, Cook & Morse, Raymond, Union county, Ohio.	\$20
Ewe, any age, E. Campbell, Pittsfield, Ohio	20
Flock, consisting of 1 buck and 2 ewes, 2 years old and under 3; 2 ewes, 1 year old and under 2, and 2 ewes under 1 year old, Cook & Morse, Raymond, Ohio	30
Second, E. Campbell, Pittsfield, Ohio	15

BOOK XXIV—Sweepstakes—Long Wool.

Buck, W. T. Woodford & Son, Paris, Bourbon county, Ky	\$20
Ewe, of any age, W. T. Woodford & Son, Paris, Bourbon county, Ky	20
Flock, consisting of 1 buck and 2 ewes, 2 years old and under 3; 2 ewes, 1 year old and under 2, and 2 ewes under 1 year old, W. T. Woodford & Son, Paris, Bourbon county, Ky	30
Second, W. D. Privett, Greensburg.	15

BOOK XXV—Sweepstakes—Middle Wool.

Buck, E. S. Butler, Ridgeway, Ohio	\$20
Ewe, any age, Thompson & Privett, Greensburg	20
Flock, consisting of 1 buck and 2 ewes, 2 years old and under 3; 2 ewes, 1 year old and under 2, and 2 ewes under 1 year old, Thompson & Privett, Greensburg.	30
Second, Allen & Son, Archie, Vermillion county, Ill.	15

HOGS.

W. A. BANKS, SUPERINTENDENT.

BOOK XXVI—Berkshires.

Boar, 2 years old and over, D. W. Todd, Urbana, Ohio.	\$14
Second, Heck & McColley, Waldron	7
Boar, 1 year old and under 2, Alex. M. Tilford, Bel Air, Md	12
Second, W. A. Maze, Sharpsville.	6
Boar, under 12 and over 6 months old, I. N. Barker, Thorntown	10
Second, James Riley, Thorntown.	5
Boar, under 6 months old, Heck & McColley, Waldron.	6
Second, I. N. Barker, Thorntown.	3
Sow, 2 years old and over, Heck & McColley, Waldron.	14
Second, D. W. Todd, Urbana, Ohio	7
Sow, 1 year old and under 2, Alex. Tilford, Bel Air, Md	12
Second, John Taylor, Waynesville, Ill	6
Sow, under 12 and over 6 months old, Alex. M. Tilford, Bel Air, Md	10
Second, John Taylor, Waynesville, Ill	5
Sow, under 6 months old, W. A. Maze, Sharpsville.	6
Second, I. N. Barker, Thorntown.	3

Five shoats, under 6 months old, I. N. Barker, Thorntown	\$12
Second, Andrew Martin, Muncie	6
Sow and not less than 5 suckling pigs	12
Second, Heck & McColley, Waldron	6
Pair pigs, under 5 months old, Heck & McColley, Waldron	10
Second, James Riley, Thorntown.	5

BOOK XXVII—Poland China.

Boar, 2 years old and over, Davis & Frazier, Mooreland	\$14
Second, T. M. Reveal, Clermont	7
Boar, 1 year old and under 2, Mugg & Hargrove, Centre	12
Second, Reveal, Brown & Hinshaw, Rural, Randolph county	6
Boar, under 12 and over 6 months old, T. M. Reveal, Clermont	10
Second, Mintz Bros., Mt. Comfort, Hancock county	5
Boar, under 6 months old, Reveal & Clark, Clermont	6
Second, Mugg & Segraves, Centre, Howard county	3
Sow, two years old and over, W. C. Williams & Co., Knightstown	14
Second, Mugg & Segraves, Centre, Howard county	7
Sow, 1 year old and under 2, G. M. Helms, McCordsville	12
Second, W. C. Williams & Co., Knightstown	6
Sow, under 12 and over 6 months old, Hughes, Cope & Hunter, Brownsburg	10
Second, Mintz Bros., Mt. Comfort, Hancock county	5
Sow, under 6 months old, W. C. Williams & Co., Knightstown	6
Second, Mugg & Segraves, Centre, Howard county	3
Five shoats, under 6 months old, Reveal & Clark, Clermont	12
Second, Mugg & Segraves, Centre, Howard county	6
Sow and not less than 5 sucking pigs, John Taylor, Waynesville, Ill.	12
Second, Webb & Whitesides, Franklin	6
Pair pigs, under 6 months old, Reveal & Clark, Clermont.	10
Second, Mugg & Segraves, Centre, Howard county	5

BOOK XXVIII—Other Large Breeds.

Boar, 2 years old and over, S. H. Todd, Wakeman, Ohio	14
Second, H. McCord, McCordsville	7
Boar, 1 year old and under 2, S. H. Todd, Wakeman, Ohio	12
Second, R. S. Russell, Zionsville, Boone county	6
Boar, under 12 and over 6 months old, S. H. Todd, Wakeman, Ohio	10
Second, R. S. Russell, Zionsville, Boone county	5
Boar, under 6 months old, S. H. Todd, Wakeman, Ohio	6
Second, S. H. Todd, Wakeman, Ohio.	3
Sow, 2 years old and over, H. McCord, McCordsville	14
Second, S. H. Todd, Wakeman, Ohio.	7
Sow, 1 year old and under two, Geo. F. Davis & Co., Dyer, Lake county	12
Second, S. H. Todd, Wakeman, Ohio	6

Sow, under 12 and over 6 months old, S. H. Todd, Wakeman, Ohio	\$10
Second, R. S. Russell, Zionsville	5
Sow, under 6 months old, S. H. Todd, Wakeman, Ohio.	6
Second, S. H. Todd, Wakeman, Ohio.	3
Five shoats, under 6 months old, S. H. Todd, Wakeman, Ohio	12
Second, S. H. Todd, Wakeman, Ohio	6
Sow and not less than 5 sucking pigs, Geo. F. Davis & Co., Dyer	12
Second, R. S. Russell, Zionsville	6

BOOK XXIX—Suffolk, Essex, their crosses, and other small breeds, regardless of color.

Boar, 2 years old and over, Lou Hinshaw, Greensboro, Henry county	\$14
Second, Frank Wilson, Jackson, Jackson county, Mich.	7
Boar, 1 year old and under 2, A. C. Green & Co., Winchester	12
Second, Frank Wilson, Jackson, Jackson county, Mich.	6
Boar, under 12 and over 6 months, A. C. Green & Co., Winchester.	10
Second, Frank Wilson, Jackson, Jackson county, Mich.	5
Boar, under 6 months old, Frank Wilson, Jackson, Jackson county, Mich.	6
Second, Lou Hinshaw, Winchester.	3
Sow, 2 years old and over, Frank Wilson, Jackson, Jackson county, Mich.	14
Second, Frank Wilson, Jackson, Jackson county, Mich.	7
Sow, 1 year old and under 2, Frank Wilson, Jackson, Jackson county, Mich.	12
Second, A. C. Green, Winchester.	6
Sow, under 12 and over 6 months old, Frank Wilson, Jackson, Mich.	10
Second, Frank Wilson, Jackson, Mich.	5
Sow, under 6 months old, Frank Wilson, Jackson, Mich.	6
Second, John Taylor, Waynesville, Ill.	3
Five shoats, under 6 months old, Lou Hinshaw, Greensboro	12
Second, A. C. Green & Co., Winchester	6
Sow and not less than 5 sucking pigs, Frank Wilson, Jackson, Mich.	12
Second, John Taylor, Waynesville, Ill.	6

BOOK XXX—Sweepstakes on Hogs. (Poland Chinas, Chester Whites, Jersey Reds, and all Other Large Breeds.)

Boar, any age, T. M. Reveal, Clermont, Marion county.	\$20
Sow, any age, W. C. Williams & Co., Knightstown.	20

Herd of 1 Boar and 5 Sows of any one Breed, Regardless of Age, Size or Color, All Owned by One Exhibitor.

Mugg & Segraves, Centre, Howard county.	40
Second, W. C. Williams & Co., Knightstown	20

BOOK XXXI—Sweepstakes. (Berkshires, Essex, Suffolks and Other Small Breeds.)

Boar, any age, W. A. Mayes, Sharpville	\$20
Sow, any age, Alex. M. Tilford, Bel Air, Md.	20

POULTRY DEPARTMENT.

J. M. GRAHAM, SUPERINTENDENT.

BOOK XXXII.

Pair light Brahma fowls, I. N. Barker, Thorntown	\$5
Second, Geo. Kinsley, Shelbyville	2
Pair light Brahma chicks, G. A. Danley, Indianapolis	5
Second, Geo. Kinsley, Shelbyville	2
Pair dark Brahma fowls, W. E. Wurst, Elyria, Ohio	5
Pair dark Brahma chicks, W. E. Wurst, Elyria, Ohio	5
Second, W. E. Wurst, Elyria, Ohio	2
Pair buff Cochin fowls, W. H. Jones, Liberty, Union county	5
Second, W. H. Jones, Liberty, Union county	2
Pair buff Cochin chicks, W. H. Jones, Liberty, Union county	5
Second, I. N. Barker, Thorntown, Boone county	2
Pair partridge Cochin fowls, Z. S. Krider, Logansport	5
Second, S. E. Wurst, Elyria, Ohio	2
Pair partridge Cochin chicks, Z. S. Krider, Logansport	5
Second, Edward K. Morris, Indianapolis	2
Pair white Cochin fowls, S. E. Wurst, Elyria, Ohio	5
Pair white Cochin chicks, Frank Hubbard, Knightstown	5
Second, Frank Hubbard, Knightstown	2
Pair Langshan fowls, T. W. Pottage, Indianapolis	3
Second, T. W. Pottage, Indianapolis	1
Pair Langshan chicks, S. E. Wurst, Elyria, Ohio	3
Pair Plymouth Rock fowls, Sid Conger, Shelbyville	5
Second, Sid Conger, Shelbyville	2
Pair Plymouth Rock chicks, Sid Conger, Shelbyville	5
Second, Sid Conger, Shelbyville	2
Pair Leghorn fowls, W. H. Jones, Liberty	3
Second, S. E. Wurst, Elyria, Ohio	1
Pair Leghorn chicks, Estun & Tobin, Indianapolis	3
Second, Estun & Tobin, Indianapolis	1
Pair brown Leghorn fowls, T. W. Pottage, Indianapolis	3
Second, S. E. Wurst, Elyria, Ohio	1
Pair brown Leghorn chicks, Jerry Carter, White Lick	3
Second, T. W. Pottage, Indianapolis	1
Pair black Leghorn chicks, S. E. Wurst, Elyria, Ohio	3

Pair W. F. black Spanish fowls, G. A. Stanton, Greenwood	\$3
Second, G. A. Stanton, Greenwood	1
Pair W. F. black Spanish chicks, G. M. Wells, Greenwood	3
Second, G. A. Stanton, Greenwood	1
Pair W. C. black Polish fowls, I. N. Barker, Thorntown	3
Second, I. N. Barker, Thorntown.	1
Pair W. C. black Polish chicks, S. E. Wurst, Elyria, Ohio	3
Pair bearded W. C. white Polish fowls, S. E. Wurst, Elyria, Ohio	3
Pair golden Polish fowls or chicks, S. E. Wurst, Elyria, Ohio	3
Second, W. H. Jones, Liberty	1
Pair silver Polish fowls or chicks, S. E. Wurst, Elyria, Ohio	3
Pair Hondan fowls, S. E. Wurst, Elyria, Ohio	3
Pair Hondan chicks, S. E. Wurst, Elyria, Ohio	3
Second, S. E. Wurst, Elyria, Ohio	1
Pair golden Hamburg fowls, G. M. Wells, Greenwood	3
Second, S. E. Wurst, Elyria, Ohio	1
Pair silver Hamburg fowls, Geo. Kinsley, Shelbyville	3
Pair silver Hamburg chicks, Geo. Kinsley, Shelbyville	3
Second, W. H. Jones, Liberty	1
Pair black Hamburg fowls, G. A. Stanton, Greenwood	3
Second, S. E. Wurst, Elyria, Ohio	1
Pair black Hamburg chicks, G. A. Stanton, Greenwood	3
Second, G. A. Stanton, Greenwood	1
Pair colored Dorking fowls, S. E. Wurst, Elyria, O	3
Second, G. M. Wells, Greenwood	1
Pair colored Dorking chicks, G. M. Wells, Greenwood	3
Second, G. M. Wells, Greenwood	1
Pair black-breasted red Game fowls, S. E. Wurst, Elyria, O	3
Pair black-breasted red Game chicks, S. E. Wurst, Elyria, O	3
Pair yellow duck-wing Game fowls, S. E. Wurst, Elyria, O	3
Pair yellow duck-wing Game chicks, S. E. Wurst, Elyria, O	3
Pair Wyandotte chicks, A. T. Layton, Zionsville	5
Second, Isaac N. Lane, Zionsville	2
Pair Silver duck-wing Game fowls, S. E. Wurst, Elyria, O	3
Pair b. b. red Game Bantam fowls, S. E. Wurst, Elyria, O	3
Pair b. b. red Game Bantam chicks, S. E. Wurst, Elyria, O	3
Second, S. E. Wurst, Elyria, O	1
Pair yellow duck-wing Game Bantam fowls, S. E. Wurst, Elyria, O	3
Second, S. E. Wurst, Elyria, O	1
Pair yellow duck-wing Game Bantam chicks, S. E. Wurst, Elyria, O	3
Pair golden Seabright Bantam fowls, I. N. Barker, Thorntown	3
Second, S. E. Wurst, Elyria, O	1
Pair golden Seabright Bantam chicks, S. E. Wurst, Elyria, O	3
Second, I. N. Barker, Thorntown.	1
Pair silver Seabright Bantam fowls, S. E. Wurst, Elyria, O	3
Second, W. H. Jones, Liberty	1

Pair rose-comb Bantam fowls or chicks, S. E. Wurst, Elyria, O	\$3
Second, S. E. Wurst, Elyria, O	1
Pair bronze turkeys (old birds), T. M. Reveal, Clermont	5
Second, H. C. G. Bals, Indianapolis	2
Pair bronze turkeys, hatch of 1884, H. C. G. Bals, Indianapolis	5
Second, E. Dixon, Carmel	2
Pair white Holland turkeys (old birds), Edward K. Morris, Indianapolis	5
Second, G. A. Stanton, Greenwood	2
Pair white Holland turkeys (hatch of 1884), W. A. Ennis, Clermont	3
Second, G. M. Wells, Greenwood	2
Pair Embden geese, W. A. Ennis, Clermont	5
Second, W. A. Ennis, Clermont	2
Pair Toulouse geese, S. E. Wurst, Elyria, O	5
Second, H. C. G. Bals, Indianapolis	2
Pair Chinese geese, S. E. Wurst, Elyria, O	5
Second, Lou Henshaw, Greensborough, Henry county	2
Pair wild geese, W. A. Ennis, Clermont	3
Second, W. A. Ennis, Clermont	1
Pair Pekin ducks, Geo. Kinsley, Shelbyville	3
Second, Edward K. Morris, Indianapolis	1
Pair Rouen ducks, H. C. G. Bals, Indianapolis	3
Second, S. E. Wurst, Elyria, Ohio	1
Pair Aylesbury ducks, S. E. Wurst, Elyria, O	3
Second, S. E. Wurst, Elyria, O	1
Pair Cayuga ducks, S. E. Wurst, Elyria, O	3
Second, Lou Henshaw, Greensborough, Henry county	1
Heaviest live turkey, T. M. Reveal	5
Heaviest cock or cockerel, J. S. Kreider, Logansport	3
Heaviest hen or pullet, G. A. Danley, Indianapolis	2
Brood chicks under 1 week old, pure breed, G. A. Danley, Indianapolis	3
Pair Wyandotte chicks, A. T. Layton, Zionsville	5
Second, Isaac N. Lane, Zionsville	2
Special premium offered by Indiana Farmer Company for best pen of chick- ens, Geo. Kinsley, Shelbyville, silver cup	5

AGRICULTURAL DEPARTMENT.

H. LATOURETTE, SUPERINTENDENT.

BOOK XXXIII—Vegetables.

Three cauliflowers, John Marvel, Royalton	\$2
Second, H. T. Adams, Onward, Cass county	1
Six broccoli, H. T. Adams, Onward, Cass county	2
Second, John Marvel, Royalton	1
Six vegetable eggs, Daniel Elwanger & Son, Haughsville	2
Second, H. T. Adams, Onward, Cass county	1
Six cucumbers, John Hutchinson, Worthington	2
Second, Chas. Schoeneman, Indianapolis	1
Peck white beans, W. H. Hartman, Indianapolis	2
Second, W. A. Ennis, Clermont	1
Two quarts lima beans, John Marvel, Royalton	2
Second, Daniel Elwanger & Son, Haughsville	1
Half gallon garden peas (dry), J. H. Thomas, Lawrence	2
Second, John Marvel, Royalton	1
Half gallon field peas (dry), Frank Wilson, Jackson, Mich	2
Second, Daniel Elwanger & Son, Haughsville	1
Half peck peppers for pickling, H. T. Adams, Onward	2
Second, George S. Dunn, Lawrence.	1
Peck tomatoes, Chas. Schoeneman, Indianapolis	2
Second, J. Hutchinson, Worthington	1
Collection tomatoes, John Marvel, Royalton.	2
Second, Daniel Elwanger & Son, Haughsville	1
Half dozen ears green sweet corn, J. A. Merryman, Lawrence	2
Second, Daniel Elwanger & Son, Haughsville	1
Half peck dry sweet corn, Daniel Elwanger & Son, Haughsville	2
Second, J. A. Merryman, Lawrence.	1
Three squashes, any kind, John Marvel, Royalton	2
Second, Daniel Elwanger & Son, Haughsville	1
Three pumpkins, J. A. Merryman, Lawrence	2
Second, W. H. Hartman, Indianapolis	1
Three drum-head cabbages, John Marvel, Royalton	2
Second, H. T. Adams, Onward, Cass county	1
Three flat Dutch cabbages, John Marvel, Royalton	2
Second, H. T. Adams, Onward, Cass county	1

Three head cabbages, any kind, John Marvel, Royalton	\$2
Second, J. A. Merryman, Lawrence.	1
Dozen stalks celery, J. A. Merryman, Lawrence	2
Second, John Marvel, Royalton	1
Collection vegetables by one amateur exhibitor, H. T. Adams, Onward, Cass county	10
Collection of vegetables by one professional exhibitor, Daniel Elwanger & Son, Haughsville.	10
Second, J. A. Merryman, Lawrence	5

BOOK XXXIV—Root Crops.

Half bushel turnips, H. T. Adams, Onward.	\$2
Second, Chas. Schoeneman, Indianapolis	1
Dozen parsnips, John Marvel, Royalton	2
Second, Samuel H. Lane, Whitestown, Boone county.	1
Dozen radishes, John Marvel, Royalton	2
Second, J. A. Merryman, Lawrence	1
Dozen carrots, Chas. Schoeneman, Indianapolis	2
Second, Daniel Elwanger & Son, Haughsville.	1
Dozen roots salsify, John Marvel, Royalton.	2
Second, Daniel Elwanger & Son, Haughsville	1
Dozen horse-radish, Chas. Schoeneman, Indianapolis.	2
Second, Daniel Elwanger & Son, Haughsville.	1
Half-dozen red beets, John Marvel, Royalton	2
Second, Daniel Elwanger & Son, Haughsville	1
Half dozen turnip beets, Frank Williamson, Zionsville.	2
Second, Chas. Schoeneman, Indianapolis	1
Half dozen sugar beets, John Marvel, Royalton	2
Second, Daniel Elwanger & Son, Haughsville	1
Half peck red onions, H. T. Adams, Onward	2
Second, Daniel Elwanger & Son, Haughsville	1
Half peck yellow onions, Poke Walker, Harrison, Ohio.	2
Second, H. M. Newhouse, Lawrence	1
Half peck white onions, Frank Williamson, Zionsville.	2
Second, W. H. Hartman, Indianapolis	1
Dozen turnip radishes, John Marvel, Royalton	2
Second, Dan'l Elwanger & Son, Haughsville.	1
Dozen long radishes, John Marvel, Royalton	2
Second, Daniel Elwanger & Son, Haughsville	1
Display of onions in variety, quality, H. T. Adams, Onward	2
Second, Daniel Elwanger & Son, Haughsville	1

BOOK XXXV—Potatoes.

Peck White Star, John Marvel, Royalton	\$2
Second, W. A. Ennis, Clermont	1
Peck Dunmon's Seedling, John Marvel, Royalton	2
Second, W. A. Ennis, Clermont	1
Peck Early Rose, S. H. Hays, Elizabethtown	2
Second, W. H. Hartman, Indianapolis	1
Peck Snowflake, H. T. Adams, Onward	2
Second, S. H. Hays, Elizabethtown	1
Peck Early Ohio, W. H. Hartman, Indianapolis	2
Second, S. H. Hays, Elizabethtown	1
Peck Shaker Russets, H. T. Adams, Onward	2
Second, S. H. Hays, Elizabethtown	1
Peck early Vermont, W. H. Hartman, Indianapolis	2
Second, S. H. Hays, Elizabethtown	1
Half bushel sweet potatoes, Charles Shoeneman, Indianapolis	2
Second, Daniel Elwanger & Son, Haughsville	1
Peck early potatoes, any kind, S. H. Hays, Elizabethtown	2
Second, John Marvel, Royalton	1
Peck late potatoes, any kind, H. T. Adams, Onward	2
Second, W. A. Ennis, Clermont	1
Peck Beauty of Hebron, Charles Schoeneman, Indianapolis	2
Second, W. H. Hartman, Indianapolis	1
Peck Blue Victor, W. H. Hartman, Indianapolis	2
Second, Santford Ennis, Clermont	1
Peck Burbank seedling, Theo. Watson, Indianapolis	2
Second, John Marvel, Royalton	1
Collection Irish potatoes, not less than 5 varieties, W. A. Ennis, Clermont	5
Second, W. H. Hartman, Indianapolis	2

BOOK XXXVI—Grains and Seeds.

Half bushel early Dentfield corn, in ear, John Marvel, Royalton	\$5
Second, J. A. Heavenridge, Liberty, Union county	2
Half bushel yellow corn, in ear, J. W. Apple, Oaklanden	5
Second, James Riley, Thorntown	2
Half bushel white corn, in ear, J. A. Heavenridge	5
Second, Geo. Eubank & Bro., Broad Ripple	2
Half bushel corn, any color, James Riley, Thorntown	5
Second, George A. Dunn, Lawrence	2
Half bushel hominy corn, J. Hutchison, Worthington	2
Second, Otha Hays, Elizabethtown	1
Half bushel pop-corn, John Marvel, Royalton	2
Second, W. A. Ennis, Clermont	1

Display and greatest variety of corn, all kinds, not less than one-half gallon of each variety, John Marvel, Royalton	\$10
Display and greatest variety of wheat, all kinds, not less than one-half gallon of each variety, James Riley, Thorntown, Boone county	10
Half bushel white wheat, Frank Wilson, Jackson, Mich	5
Second, W. A. Ennis, Clermont, Marion county	2
Half bushel, red wheat, Frank Wilson, Jackson, Mich	5
Second, Poke Walker, Harrison, O	2
Half bushel Spring wheat, Oliver H. Ennis, Clermont	5
Second, Santford Ennis, Clermont, Marion county	2
Half bushel rye, Poke Walker, Harrison, O	2
Half bushel oats, J. A. Heavenridge, Liberty, Union county	2
Half bushel buckwheat, Frank Wilson, Jackson, Mich	2
Half bushel barley, James Riley, Thorntown, Boone Co	2
Half bushel flax seed, W. A. Ennis, Clermont, Marion county	2
Half bushel millet seed, John Marvel, Royalton	2
Half bushel timothy seed, Frank Wilson, Jackson, Mich	2
Half bushel orchard grass seed, W. A. Ennis, Clermont	2
Half bushel Hungarian grass seed, W. A. Ennis, Clermont	2
Half bushel Kentucky blue grass seed, John Marvel, Royalton	2
Half bushel English blue grass seed, W. A. Ennis, Clermont	2
Half bushel red-top grass seed, W. A. Ennis, Clermont	2
Half bushel red clover seed, Wm. Sigerson, Winamac, Pulaski county	2
Half bushel English clover seed, Wm. Sigerson & Son, Winamac, Pulaski county	2
Sample 10 pounds broom corn, A. S. Huls, Traders' Point	2
Collection of grains and vegetables by any county or local society, Lawrence District Fair Association	25
Second, Pulaski County Society	12

BOOK XXXVII—Butter, Cheese and Honey.

Five packages creamery butter, not less than 25 pounds each, A. Jordan, Indianapolis	\$15
Second, George F. Davis & Co., Dyer, Lake county	8
Three packages dairy butter, not less than 15 pounds each, A. Jordan, Indianapolis	10
Second, C. M. Coats & Co., Indianapolis	5
Five factory cheese, not less than 30 pounds each, A. Jordan, Indianapolis	15
Second, C. M. Coats & Co., Indianapolis	8
Three dairy cheese, not less than 20 pounds each, A. Jordan, Indianapolis	10
Second, C. M. Coats & Co., Indianapolis	5
Comb honey in the most marketable shape, not less than 20 pounds, Samuel H. Lane, Whitestown, Boone county	4
Second, Dougherty & McKee, Indianapolis	2

Extracted honey in the most marketable shape, not less than 20 pounds, Samuel H. Lané, Whitestown, Boone county	\$4
Second, Dougherty & McKee, Indianapolis	2
Display of honey, the product of one apiary of the present year, Samuel H. Lane, Whitestown, Boone county	4
Second, Alfred Cox, Whitelick, Boone county	2
Display of wax, not less than 10 pounds, Dougherty & McKee, Indianapolis .	2
Second, Samuel H. Lane, Whitestown, Boone county.	1
Display of apiarian supplies, Dougherty & McKee, Indianapolis	4
Apparatus for the manufacture of comb foundation, to include all necessary articles for its manufacture, Dougherty & McKee, Indianapolis	4
Comb foundation for use in the brood chamber, Dougherty & McKee, Indian- apolis.	2
Comb foundation for surplus honey, Dougherty & McKee, Indianapolis	2
Honey extractor, Alfred Cox, Whitelick, Boone county	2
Second, Dougherty & McKee, Indianapolis	1
Honey vinegar, not less than 1 gallon, Samuel H. Lane, Whitestown, Boone county	2
Second, Alfred Cox, Whitelick, Boone county	1
Section for surplus honey, Dougherty & McKee, Indianapolis	2
Display retail package for extracted honey, Dougherty & McKee, Indianapolis	2
Honey cake or cakes, Mrs. Frances A. Cox, Whitelick	2
Best 2 gallons sorghum syrup, Peter Raab, Indianapolis	4
Second, Allen Furnas, Danville	2

BOOK XXXVIII—Oured Meats, Groceries, Etc.

Display of groceries, the Great Atlantic and Pacific Tea Company, Indianap- olis	Diploma
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HORTICULTURAL DEPARTMENT.

 L. B. CUSTER, SUPERINTENDENT.

BOOK XXXIX—Amateur List.

APPLES.

Twenty varieties of apples, G. W. Graves, Bunker Hill	\$15
Twelve varieties of apples, G. W. Graves, Bunker Hill	10
Six varieties of apples, G. W. Graves, Bunker Hill	5
Plate Maiden's Blush, G. W. Graves, Bunker Hill	1
Plate Smith's Cider, L. C. Trotter, Corydon	1
Plate Ben Davis, L. C. Trotter, Corydon, Harrison county	1
Plate Rome Beauty, L. C. Trotter, Corydon	1
Plate Winesap, G. W. Graves, Bunker Hill	1
Plate Rambo, G. W. Graves, Bunker Hill	1
Plate Yellow Belleflower, S. A. Hays, Elizabethtown	1
Plate Fallawater-Tulpehockin, G. W. Graves, Bunker Hill	1
Plate Fall Pippin, W. B. Flick, Lawrence	1
Plate Clayton, W. B. Flick, Lawrence	1
Plate White Pippin, S. H. Hays, Elizabethtown	1
Plate Baldwin, T. A. Peffer, South Bend	1
Plate Northern Spy, T. A. Peffer, South Bend	1
Plate Vandever Pippin, S. H. Hays, Elizabethtown	1
Plate King of Tompkins Co., S. H. Hays, Elizabethtown	1

PEARS.

Ten varieties of pears, T. A. Peffer, South Bend	10
Five varieties of pears, W. B. Flick, Lawrence	5

GRAPES.

Five varieties of grapes, T. A. Peffer, South Bend	5
Three varieties of grapes, T. A. Peffer, South Bend	3
Five clusters of grapes, any kind, T. A. Peffer, South Bend	2

QUINCES.

Show of quinces, not less than 12 specimens, T. A. Peffer, South Bend	3
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DISPLAY OF FRUITS.

Display of fruits of all kinds, T. A. Peffer, South Bend	\$25
Display of fruit by any county or local society, Lawrence Fair Association, Lawrence	25
Second, St. Joseph Co. Association, South Bend	20
Three watermelons, W. A. Ennis, Clermont	5
Second, W. O. Rucker, Jackson, Tipton county	2
Three nutmeg melons, W. O. Rucker, Jackson, Tipton county.	3
Second, D. Elwanger & Son, Haughsville	2
Largest striped Gipsy melon, W. A. Ennis, Clermont.	2
Largest Icing melon, W. A. Ennis, Clermont	2
Collection of melons, all kinds, W. A. Ennis, Clermont.	10

BOOK XL—Professional List.

APPLES.

Twenty varieties of apples, M. Fickle, Galveston	Diploma and \$15
Twelve varieties of apples, M. Fickle, Galveston.	Diploma and 10
Six varieties of apples, M. Fickle, Galveston	Diploma and 5

PEARS.

Four varieties of autumn pear, M. Fickle, Galveston.	Diploma and \$5
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GRAPES.

One variety of grapes, 10 clusters, T. S. Hubbard, Fredonia, N. Y.	Diploma and \$2
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QUINCES.

Collection of quinces, not less than 12 specimens, M. Fickle, Galveston.	
	Diploma and \$3

DISPLAY OF FRUITS.

Display of fruits of all kinds, M. Fickle, Galveston	\$25
Collection of nursery stock arranged for exhibition adjoining Floral Hall, Albertson & Hobbs, Bridgeport	Diploma and \$20

BOOK XLI—Professional List.

General collection of plants, Berterman Bros., Indianapolis	\$20
Second, Chas. Rieman & Co., Indianapolis	10
Collection of foliage plants, Berterman Bros., Indianapolis	6
Second, Chas. Rieman & Co., Indianapolis	3
Collection lycopods and ferns, Chas. Rieman & Co., Indianapolis	6
Second, Berterman Bros., Indianapolis	3

Display and variety of climbers, Berterman Bros., Indianapolis	\$5
Second, Chas. Rieman & Co., Indianapolis	2
Collection begonias, Berterman Bros., Indianapolis	6
Second, Chas. Rieman & Co., Indianapolis	3
Collection cacti, aloes, agaves, Berterman Bros., Indianapolis	8
Second, Chas. Rieman & Co., Indianapolis	4
Collection geraniums, Berterman Bros., Indianapolis	6
Second, Chas. Rieman & Co., Indianapolis	3
Three rustic stands, filled, Berterman Bros., Indianapolis.	6
Three hanging baskets filled, Chas. Rieman & Co., Indianapolis	4
Second, Berterman Bros., Indianapolis	2
Collection of palms, Berterman Bros., Indianapolis	10
Second, Chas. Rieman & Co., Indianapolis	5
Collection alocasias and caladiums, Chas. Rieman & Co., Indianapolis.	10
Second, Berterman Bros., Indianapolis	5
Collection cannas, Berterman Bros., Indianapolis	6
Second, Chas. Rieman & Co., Indianapolis	3
Arranged wardian case, Chas. Rieman & Co., Indianapolis	4
Second, Berterman Bros., Indianapolis	2
Floral display, by any one individual or firm, Chas. Rieman & Co., Indianapolis	200
Second, Berterman Bros., Indianapolis	100
Collection loose, cut flowers, Berterman Bros., Indianapolis	10
Display and arrangement cut roses, Berterman Bros., Indianapolis	5
Five funeral designs, Chas. Rieman & Co., Indianapolis	20
Second, Berterman Bros., Indianapolis	10
Collection basket designs, not less than five pieces, Chas. Rieman & Co., Indianapolis	20
Second, Berterman Bros., Indianapolis	10
Collection bouquets, not less than 5, Berterman Bros., Indianapolis	10
Second, Chas. Rieman & Co., Indianapolis	5
Newest design in cut flowers, Chas. Rieman & Co., Indianapolis	25
Second, Berterman Bros., Indianapolis	15
Newest funeral design, Berterman Bros., Indianapolis	25
Second, Chas. Rieman & Co., Indianapolis	15

BOOK XLII—Amateur List.

Collection plants, Mrs. Mary B. Danley, Indianapolis.	\$15
Second, Mrs. Frank Williamson, Zionsville.	7
Collection begonias, not less than ten varieties, Mrs. Frank Williamson, Zionsville	8
Second, Miss M. C. Stewart, Indianapolis	4
Agave, Mrs. Frank Williamson, Zionsville	2
Second, Mrs. Mary B. Danley, Indianapolis.	1

Rustic stand, filled, Mrs. Mary B. Danley, Indianapolis	\$4
Second, Ely M. Bronson, Indianapolis	2
Night blooming cereus, Mrs. Mary B. Danley, Indianapolis	2
Alocacia, Mrs. Frank Williamson, Zionsville	2
Second, Mrs. Mary B. Danley, Indianapolis.	1
Canna, Mrs. Frank Williamson, Zionsville	2
Second, Mrs. Mary B. Danley, Indianapolis.	1
Hanging basket, filled, Ely M. Bronson, Indianapolis	2
Second, Mrs. Mary B. Danley, Indianapolis	1
Collection cut flowers, Mrs. Mary B. Danley, Indianapolis	8
Second, Frank Moulton, Indianapolis	4
Collection cut geraniums, Mrs. Mary B. Danley, Indianapolis.	4
Second, Mrs. M. J. Flick, Lawrence, Marion county	2
Collection cut roses, Mrs. Mary B. Danley, Indianapolis	8
Second, Frank Moulton, Indianapolis	4
Collection cut verbenas, Frank Moulton, Indianapolis	4
Second, Mrs. Mary B. Danley, Indianapolis.	2
Special premium offered by Berterman Bros., florists, 37 and 43 Massachusetts avenue, for best show of plants and cut flowers by an amateur, Mrs. Mary B. Danley, Indianapolis, received in plants, seeds and bulbs. .	10

GEOLOGY AND NATURAL HISTORY.

DR. R. T. BROWN, SUPERINTENDENT. FLETCHER M. NOE, ASS'T SUPERINTENDENT.

BOOK XLIII.

General collection of fossils, Dr. A. J. Plinney, Muncie	\$8
Second, Fletcher M. Noe, Indianapolis	4
General collection of minerals, Fletcher M. Noe, Indianapolis	10
Second, G. K. Greene, New Albany.	5
Collection Mound Builders' (Stone Age) implements, Fletcher M. Noe, In- dianapolis.	10
Second, Willie Green, New Albany.	5
Collection of stuffed and mounted birds, animals and reptiles, illustrating the natural history of the State, Fletcher M. Noe, Indianapolis.	20
Second, Ed. Bonge, Cumberland	15
Collection skinned birds and animals, Fletcher M. Noe, Indianapolis	Diploma-5

Collection diurnal lepidoptera, Fletcher M. Noe, Indianapolis	\$5
Second, F. A. Biedenmeister, Indianapolis	2
Collection nocturnal lepidoptera, F. A. Biedenmeister, Indianapolis	5
Second, Fletcher M. Noe, Indianapolis	2
Collection insects, Fletcher M. Noe, Indianapolis	3
Second, Mary Fairfield, Indianapolis	2
Collection botanical specimens, Nettie M. Duzan, Indianapolis	Diploma and 6
Collection American woods, not less than 25 varieties, Mary F. Fairfield, Indianapolis	10
Second, Mrs. C. Robbins, Indianapolis	5
Collection coins and medals, Fletcher M. Noe, Indianapolis	5
Second, R. D. Robinson, Indianapolis	2
Collection of curiosities, to consist of relics of the late war and of historical interest, Fletcher M. Noe, Indianapolis	5

WOMAN'S DEPARTMENT.

MRS. A. M. NOE, SUPERINTENDENT.

BOOK XLIV—Old Ladies' Department.

All-wool coverlet, Mrs. Dr. Abbett, Indianapolis	\$2
Cotton coverlet, Mrs. Margaret Kennedy, Shelbyville	2
Worsted quilt, Mrs. C. Morrison, Indianapolis	2
Second, Mrs. Ann Shopp, New Castle	1
Calico quilt, Mrs. A. M. Kern, Indianapolis	2
Second, Mrs. Nancy Jackson, Knightstown	1
Rug, Mrs. Woodard, Anderson	2
Second, Mrs. I. T. Brown, Shelbyville	1
Counterpane, knit, Mrs. Nancy Jackson, Knightstown	2
Second, Mrs. J. A. Lemon, Astoria, Ill	1
Pair silk mittens, hand knit, Mrs. H. Gisey, Columbus	2
Pair silk stockings or socks, hand knit, Mrs. C. Morrison, Indianapolis	2
Pair woolen stockings or socks, hand knit, Mrs. H. Gisey, Columbus	1
Pair cotton stockings or socks, hand knit, Mrs. H. Gisey, Columbus	1
Pair linen stockings, hand knit, Mrs. Margaret Kennedy, Shelbyville	1
Hemstitching, Mrs. Wm. Matthews, Arlington	2
Second, Mrs. Margaret Kennedy, Shelbyville	1

Pair worsted mittens, fancy knitting, Mrs. L. K. Trickett, Edinburg	\$2
Second, Mrs. Johnson, Indianapolis	1
Table cover, crazy patch, Mrs. L. K. Trickett, Edinburg	2
Second, Mrs. E. J. Kemper, Muncie	1
Lace display, hand made, Mrs. H. Gisey, Columbus	3
Second, Mrs. E. M. Rittenhouse, Indianapolis	2
Embroidery, display, Mrs. E. J. Kemper, Muncie	2
Second, Mrs. S. Lee, Indianapolis	1
Embroidery, silk specimen, Mrs. Cornelia Ellis, Indianapolis	2
Second, Mrs. E. J. Kemper, Muncie	1
Embroidery, worsted specimen, Mrs. E. J. Kemper, Muncie	2
Second, Mrs. H. Gisey, Columbus	1
Fancy articles, display, Mrs. Tillie Shera, Indianapolis	2
Second, Mrs. I. T. Brown, Shelbyville	1
Collection of household relics, Mrs. James Blake, Sr., Indianapolis	3
Second, Mrs. S. K. Hoshour, Indianapolis	2

BOOK XLV—Knitting and Crochet Work.

Infant's knit or crochet shirt, Mrs. E. B. Kirk, Shelbyville	\$1
Infant's knit or crochet socks, Miss Jennie Swift, Connersville	1
Pair silk mittens, hand knit, Mrs. P. D. Stagg, Greensburg	2
Pair silk stockings, hand knit, Mrs. P. D. Stagg, Greensburg	2
Knit or crochet shawl, Mrs. Ella Wills, Lebanon	2
Knit or crochet hood, Mrs. E. B. Kirk, Shelbyville	1
Thread crochet baby cap, Miss Mollie Howe, Princeton	1
Knit or crochet fascinator, Miss Jennie Swift, Connersville	1
Crochet child's sacque, Mrs. E. B. Kirk, Shelbyville	1
Crochet cotton tidy, Miss Helen Johnson, South Bend	1
Afghan, Mrs. Emma Shellaberger, Indianapolis	3
Second, Mrs. S. A. Edwards, Cicero	2
Afghan, infant's, Mrs. P. D. Stagg, Greensburg	2
Second, Mrs. S. Groves, Anderson	1
Display fancy knitting, Clara Dexss, Haughsville	1
Display crochet buttons, Mrs. M. F. Owens, Indianapolis	2
Counterpane, crochet, Mrs. M. Posz, Shelbyville	1

BOOK XLVI—Lace Work.

Point lace, display, Miss R. C. Alexander, Paris, Ill	\$5
Second, Mrs. Dr. Day, Shelbyville	3
Point lace, specimeu, Hattie Hopkins, Columbus	3
Second, Miss Mollie Gall, Indianapolis	2
Darning on net, specimen, Miss Annie DeCamp, Shelbyville	2
Second, Miss Ida James, Indianapolis	1

Applique lace, specimen, Miss R. C. Alexander, Paris, Ill	\$2
Second, Mrs. M. Posz, Shelbyville	1
Crochet lace, display, Mrs. Lena Recker, Indianapolis	2
Knit lace, display, Mrs. Hattie Hopkins, Columbus	2
Tatting, display, Mrs. P. D. Stagg, Greensburg	2
Netted guipure lace, display, Miss Mollie Howe, Princeton	2
Macreme lace, display, Susie Martin, Indianapolis	2
Second, Mrs. E. B. Kirk, Shelbyville	1
Featheredge, specimen, Mrs. Ella Wills, Lebanon	2

BOOK XLVII—Embroidery.

Embroidery, with linen floss, Mrs. M. Posz, Shelbyville	\$2
Embroidery, cotton display, Mrs. A. A. Condit, Muncie	2
Embroidery, silk, child's dress, Mrs. C. B. Muchmore, Shelbyville	2
Embroidery, cotton, child's dress, Mrs. J. H. Taylor, Indianapolis	2
Embroidery, napkin set, Mrs. J. Cambern, Rushville	2
Embroidery, bed set, Mrs. Dr. Stewart, Anderson	2
Embroidery, handkerchief, Mrs. P. D. Stagg, Greensburg	1
Embroidery, silk, specimen, Mrs. Stewart, Anderson	2
Second, Mrs. J. Cambern, Rushville	1
Embroidery, silk skirt, Miss Eudora Trickett, Edinburg	2
Embroidery, silk, infant's shawl, Mrs. Lizzie Cannon, Indianapolis	2
Second, Miss Jennie Swift, Connersville	1
Embroidery, skirt, worsted, Mrs. S. Grove, Anderson	2
Embroidery, table cover, Mrs. James Swart, Indianapolis	3
Second, Miss Jennie Swift, Connersville	2
Embroidery, ottoman cover, Miss R. C. Alexander, Paris, Ill	2
Second, Mrs. Ella Wills, Lebanon	1
Embroidery, chair cover, Mrs. Ella Wills, Lebanon	2
Embroidery, sofa cushion, Mrs. M. Posz, Shelbyville	2
Second, Mrs. T. E. Griffith, Indianapolis	1
Embroidery, toilet cushion, Mrs. M. Posz, Shelbyville	2
Second, Mrs. T. E. Griffith, Indianapolis	1
Embroidery, slippers, made up, Miss Jennie Swift, Connersville	2
Embroidery, infant's cloak, Mrs. A. Clark, Indianapolis	2
Embroidery, applique, white spec., Mrs. C. B. Muchmore, Shelbyville	1
Embroidery applique, colored specimen, Mrs. P. D. Stagg, Shelbyville	2
Second, Miss Mollie Landers, Indianapolis	1
Embroidery outline, display, Mrs. E. B. Kirk, Shelbyville	2
Embroidery, Kensington, specimen, Mrs. J. B. Parker, Indianapolis	3
Second, Miss Mary Rariden, Indianapolis	2
Embroidery, tapestry, display, Mrs. Van Riper, Evansville	3
Second, Mrs. C. B. Muchmore, Shelbyville	2
Embroidery, tapestry, specimen, Mrs. M. Posz, Shelbyville	2

Embroidery, art in colors, display, Miss Anna M. Snively, Indianapolis	Diploma
Embroidery, art in colors, specimen, Miss Anna Snively, Indianapolis	\$3
Second, Mrs. A. G. Selman, Indianapolis	2
Embroidery, chenille, Miss Kate Sims, Columbus	3
Second, Mrs. M. E. Greenstreet, Indianapolis	2
Embroidery, arasene, specimen, Miss Fredona Allen, Indianapolis	3
Second, Miss Eudora Trickett, Edinburg	2
Embroidery, ribbon, specimen, Mrs. T. E. Griffith, Indianapolis	3
Second, Mrs. Henry Cilley, Indianapolis	2
Embroidery, rickrack work, display, Mrs. C. B. Muchmore, Shelbyville	1
Embroidery, fire screen, Mrs. A. B. Gates, Indianapolis	3
Second, Mrs. A. M. Robertson, Indianapolis	2

BOOK XLVIII—Sewing—Machine and Hand.

Machine work, 3 articles, Mrs. W. J. Crisler, Greensburg	\$2
Machine work, shirt, Mrs. Ella Wills, Lebanon	1
Dress, worsted or silk, Mrs. M. J. Fitch, Indianapolis Diploma and	5
Second, Mrs. S. Grove, Anderson	3
Ladies' business suit, Mrs. M. J. Fitch, Indianapolis Diploma and	5
Gents' cloth coat, Mrs. Emma Ross, Indianapolis	5
Pair pants, Mrs. E. M. Homer, Knightstown	2
Vest, Mrs. Emma Ross, Indianapolis	1
Boy's suit, Mrs. E. M. Homer, Knightstown	2
Quilt, white, hand sewing, Mrs. Ella Wills, Lebanon	2
Quilt, velvet, Mrs. T. E. Griffith, Indianapolis	2
Quilt, silk, needlework, Miss Vogle, Shelbyville	3
Second, Mrs. O. B. Gilkey, Indianapolis	2
Buttonholes, display on different materials, Mrs. Ella Wills, Lebanon	2
Second, Mrs. W. J. Crisler, Greensburg	1
Hemstitching, specimen, Mrs. W. J. Crisler, Greensburg	2
Drawn work, Mrs. S. Groves, Anderson	2
Infant's wardrobe, most sensible and neat, Mrs. J. E. Cobb, Indianapolis	5
Pillow shams, Mrs. Lizzie Stout, Indianapolis	2

MISCELLANEOUS.

BOOK XLIX.

Wax flowers, Mrs. L. P. Smock, Anderson	\$2
Second, Mrs. C. Morrison, Indianapolis	1
Wax fruit, Susie E. Martin, Indianapolis	2
Wax work, ornamental, Mrs. Ella Newman, Indianapolis	2
Second, Susie E. Martin, Indianapolis	1
Handkerchief box, Miss Kate Sims, Columbus	2
Second, Miss Jennie Swift, Connersville	1
Glove box, Mrs. Allen Sanimons, Indianapolis	1
Sea moss collection, Mrs. P. E. Tyner, Greenfield	2
Skeleton leaves and ferns, Mrs. A. Lloyd, Indianapolis	2
Fish scale ornaments, Mrs. E. M. Homer, Knightstown	1
Feather work on cloth, Mrs. A. A. Condit, Muncie	1
Toilet cushion, not embroidered, Miss Jennie Swift, Connersville	2
Second, Mrs. F. H. Robinson, Crawfordsville	1
Sofa cushion, not embroidered, Mrs. Ida Brandenberger, Indianapolis	2
Second, Mrs. E. B. Kirk, Shelbyville	1
Lamp mats, fancy, Mrs. Lizzie Maples, New Castle	1
Toilet mats, Mrs. T. E. Griffith, Indianapolis	1
Picture tapestry work, Janet M. Monroe, Indianapolis	2
Chair stripes, Mrs. Jennie Parr, Crawfordsville	2
Lamberquin, window or mantel, Miss Susie Todd, Indianapolis	2
Tidy, not crochet, Mrs. F. H. Robinson, Crawfordsville	2
Second, Mrs. T. L. Griffin, Connersville	1
Mineral collection, named, Alice E. Fairfield, Indianapolis	5
Butterflies, collection, named, Mary F. Fairfield, Indianapolis	3
Stuffed birds, collection, named, Miss Lavinia Winscott, Cumberland, Marion county	8
Second, Mrs. Jessie M. Brayton, Indianapolis	3
Upholstery work, chair, Mrs. A. M. Nee, Indianapolis	3
Laundried shirt, collar and cuffs, by a woman not in employ of a laundry, Mrs. W. A. Ford, Indianapolis	1
Exhibit in silk culture, Miss Neata Wilson, Russellville	3
Second, Mrs. C. Robbins, Indianapolis	2
Kindergarten work, Mrs. E. A. Blaker, Indianapolis	Diploma
Ten yards rag carpet, Miss Mary Custer, Indianapolis	2
Rug, Mrs. Rose Ramsey, Indianapolis	2
Second, Mrs. M. R. Robertson, Indianapolis	1
Fur rugs, Mrs. A. M. Nee, Indianapolis	3
Crazy patchwork, Mrs. T. L. Downard, Indianapolis	1

BOOK L—Dry Goods, Millinery, Etc.

Display hair goods and work, Miss M. Phelan, Indianapolis	Diploma
Wig, made by exhibitor, Miss M. Phelan, Indianapolis	Diploma

BOOK LI—Decorative Art Work.

Carved wood work, display, Mrs. Wm. Matthews, Arlington	\$3
Alto relievo work in clay, display, Miss Sue Ketcham, Indianapolis	3
Etching on cloth, display, Miss Mary Rariden, Indianapolis	1
Modeling in clay, display, Mrs. A. E. Ferry, Indianapolis	5
Second, Miss Sue Ketcham, Indianapolis	3
Pottery painting limoges, display, Miss Mollie Landers, Indianapolis	3
Second, Miss Sue Ketcham, Indianapolis	2
Pottery painting limoges, specimen, Mrs. A. E. Ferry, Indianapolis	2
Pottery painting, bisque, display, Miss Sue Ketcham, Indianapolis	3
Pottery painting, bisque, specimen, Mrs. A. E. Ferry, Indianapolis	2
Painting on china, display, Miss Mollie Landers, Indianapolis	5
Second, Mrs. A. E. Ferry, Indianapolis	3
Painting on china, specimen, Miss Sue Ketcham, Indianapolis	2
Etching on china, display, Miss Sue Ketcham, Indianapolis	3
Painting on tiles, water, display, Miss Sue Ketcham, Indianapolis	5
Second, Mrs. C. J. Colgan, Indianapolis	3
Painting on wood, display, Miss Mary Robinson, Indianapolis	5
Second, Miss Sophia Dithmer, Indianapolis	3
Painting on wood, specimen, Miss Mary Robinson, Indianapolis	2
Painting on silk or satin, display, Miss Mary Rariden, Indianapolis	5
Second, Miss Lizzie Waldo, Indianapolis	3
Painting on silk or satin, specimen, Miss Libbie Murray, Indianapolis	2
Painting on velvet, colored, display, Mrs. A. R. Thompson, Indianapolis	3
Painting on velvet, colored, specimen, Miss Mary R. Heron, Indianapolis	2
Painting on velvet, white, display, Mrs. A. R. Thompson, Indianapolis	3
Painting on velvet, Kensington, display, Miss Sue Ketcham, Indianapolis	2
Painted fan, Miss Bertha E. Clauson, Indianapolis	2
Painted toilet set, Miss Mary R. Heron, Indianapolis	2
Second, Mrs. A. R. Thompson, Indianapolis	1
Painted fancy cards, display, Mrs. Chas. Railsback, Indianapolis	3
Second, Miss Mary Robinson, Indianapolis	2
Painted fire screen, Miss Mary Robinson, Indianapolis	3
Second, Mrs. A. E. Ferry, Indianapolis	2
Original design for decoration, in oil, Miss Mary Robinson, Indianapolis	3
Second, Miss Retta Matthews, Arlington	2
Original design for decoration, in water colors, Miss Retta Matthews, Arlington	3
Second, Mrs. C. B. Ingraham, Indianapolis	2

Pencil drawings, original display, Miss Mary Robinson, Indianapolis	\$3
Second, Miss Mary Rariden, Indianapolis	2
Painting in pair panels, water colors, Mrs. S. A. Leet, Indianapolis	3
Painting in pair panels, oil, Miss Mary Robinson, Indianapolis	3
Second, Miss Martha Gerstner, Indianapolis.	2

BOOK LII—Art Work. Amateur.

Crayon drawings, display, Miss A. M. Wiles, Indianapolis	\$3
Pastelle painting, display, Miss Edith Fountain, Indianapolis	3
Second, Mrs. Mary R. Heron, Indianapolis	2
Painted plaque, display, Miss B. M. Jameson, Indianapolis.	3
Second, Miss Mary R. Heron, Indianapolis	2
Flower painting, in oil, display, Miss Cora B. Campbell, Danville	3
Second, Miss Mollie Landers, Indianapolis	2
Flower painting, water colors, display, Miss Lizzie Waldo, Indianapolis	3
Fruit painting in oil, Miss Cora B. Campbell, Danville.	3
Second, Miss Mary R. Heron, Indianapolis	2
Landscapes in oil, display, Miss Mollie Landers, Indianapolis	7
Second, Mrs. H. S. Tucker, Indianapolis	3
Landscape in oil, specimen, Miss Mary R. Heron, Indianapolis	3
Portraits in oil, specimen, Mrs. H. S. Tucker, Indianapolis	5
Second, Miss Mary Redmond, Indianapolis	3
Sketch from nature in oil, Miss Cora B. Campbell, Danville	3
Second, Miss Cora B. Campbell, Danville	2

BOOK LIII—Art Work, Professional.

Portraits in oil, display, Mrs. C. B. Ingraham, Indianapolis.	\$10
Portraits in oil, specimen, Mrs. A. E. Ferry, Indianapolis	5
Landscapes in oil, display, Miss Sue Ketcham, Indianapolis	8
Landscapes in oil, specimen, Miss Sue Ketcham	3
Fruit painting in oil, specimen, Miss Sue Ketcham, Indianapolis	3
Flower painting in oil, display, Miss Sue Ketcham, Indianapolis	5
Second, Miss Retta Matthews, Arlington	3
Flower painting in oil, specimen, Miss Retta Matthews, Arlington	2
Flower painting, water colors, Miss Sue Ketcham, Indianapolis	5
Second, Mrs. S. A. Leet, Indianapolis.	3
Flower painting, water colors, specimen, Miss Matthews, Arlington	2
Study from life, in oil, Miss R. Matthews, Arlington	5
Second, Mrs. A. E. Ferry, Indianapolis.	3
Study from life, water colors, Mrs. A. E. Ferry, Indianapolis	5
Second, Miss Mollie Landers, Indianapolis	3
Pastelle painting, specimen, Mrs. J. L. Fletcher, Indianapolis	3
Second, Mrs. A. R. Thompson, Indianapolis	2

Plaques, display, Miss R. Matthews, Arlington	\$3
Second, Mrs. A. E. Ferry, Indianapolis	2
Plaque alabaster, Mrs. S. A. Leet, Indianapolis	2
Crayon drawing, specimen, Miss Matthews, Arlington	3
Second, Mrs. A. E. Ferry, Indianapolis	2
Drawings from the antique specimen, Miss Retta Matthews, Arlington	2

BOOK LIV—Table *Lucuries.*

Butter, 5 pounds, Mrs. M. B. Danley, Indianapolis	\$3
Second, Mrs. Harriet Stanton, Greenwood	2
Honey in comb, 5 pounds, in most marketable shape, Mrs. Lizzie Stout, Indianapolis	3
Second, Mrs. W. A. Ford, Indianapolis	2
Honey extracted, 5 pounds, in most marketable shape, Mrs. Samuel H. Lane, Whitestown	3
Second, Mrs. Lizzie Stout, Indianapolis	2
Bread, loaf, wheat, yeast, Miss May Johnson, Indianapolis	2
Second, Mrs. E. Brandenburger, Indianapolis	1
Bread, wheat, salt rising, Mrs. Dr. Swain, Indianapolis	2
Second, Mrs. M. B. Danley, Indianapolis	1
Graham bread, yeast, Mrs. M. B. Danley, Indianapolis	2
Second, Mrs. Dr. Swain, Indianapolis	1
Graham bread, salt rising, Mrs. Dr. Swain, Indianapolis	2
Second, Mrs. M. B. Danley, Indianapolis	1
Fig cake, Mrs. Wm. Middlesworth, Indianapolis	2
Layer cake, jelly, Mrs. H. B. Waybright, Greensburg	1
Layer cake, cocoanut, Mrs. S. Grove, Anderson	1
Pound cake, Mrs. S. Grove, Anderson	2
Second, Mrs. Darling, North Indianapolis	1
Fruit cake, Mrs. S. Grove, Anderson	3
Second, Mrs. A. Pickle, Oaklondon	2
Chocolate cake, Miss Mary L. Fox, Indianapolis	3
Second, Mrs. H. L. Thompson, Indianapolis	2
Crunlers, Mrs. A. M. Noe, Indianapolis	1
Jellies, collection, Mrs. E. Speer, Greensburg	3
Second, Mrs. M. J. Flick, Lawrence	2
Preserves, collection, not less than 1 pint each, Mrs. E. Speer, Greensburg	5
Second, Mrs. A. G. Selman, Indianapolis	3
Fruit butters, collection, not less than 1 pint each, Mrs. E. Speer, Greensburg	3
Second, Mrs. M. J. Flick, Lawrence	2
Pickles, mixed, Mrs. A. Sammons, Indianapolis	1
Pickles, cucumber, Mrs. A. M. Noe, Indianapolis	1
Canned fruit, collection, not less than 1 pint each, Mrs. S. Hall, Indianapolis	5
Second, Mrs. E. Speer, Greensburg	3

Maple molasses, half gallon, Mrs. M. L. Marvel, Royalton	\$1
Maple sugar, five pounds, Mrs. W. A. Ford, Indianapolis	1
Tomato catsup, not less than 1 pint, Mrs. Dr. Minich, Indianapolis	1

BOOK LV—Agricultural, etc.

Largest display and variety of grain, Mrs. M. B. Danley, Indianapolis	\$5
Largest display and variety of vegetables, Mrs. M. J. Flick, Lawrence	8
Second, Mrs. M. B. Danley, Indianapolis	4
Largest display and variety of fruit, Mrs. M. J. Flick, Lawrence	8
Second, Mrs. M. B. Danley, Indianapolis	4

BOOK LVI—Childrens' Department.

Loaf wheat bread, yeast, L. Weaver, Indianapolis	\$2
Second, G. Coburn, Indianapolis	1
Pound cake, Ollie Irwin, Indianapolis	2
Second, Gertie Darling, North Indianapolis	1
Fancy cake, Cora Bugbee, Indianapolis	2
Second, M. Fry, Indianapolis	1
Jellies, collection, Edith T. Beck, Indianapolis	2
Pickles, mixed, Mertie Walters, Indianapolis	1
Patchwork, plain, Nellie Price, Indianapolis	1
Patchwork, fancy, Pearl Muchmore, Shelbyville	1
Handsewing, garment, Anna Posz, Shelbyville	1
Darning on old garment, Mary Kirk, Shelbyville	1
Buttonholes, display, different materials, Mertie Walters, Indianapolis	2
Second, M. Ford, Indianapolis	1
Embroidery, cotton, Nellie Howe, Princeton	2
Second, Anna Posz, Shelbyville	1
Embroidery, darning on net, Lillie Homer, Knightstown	1
Embroidery, worsted specimen, Mary Kirk, Shelbyville	2
Second, Anna Posz, Shelbyville	1
Embroidery, silk specimen, Anna Posz, Shelbyville	2
Second, Pearl Muchmore, Shelbyville	1
Crochet work, display, Pearl Muchmore, Shelbyville	2
Second, Nellie Contant, Crawfordsville	1
Pair knit stockings, Louie Hughel, Anderson	1
Pair knit mittens, Louie Hughel, Anderson	1
Knit-lace display, Pearl Muchmore, Shelbyville	1
Doll's wardrobe, Pearl Muchmore, Shelbyville	1
Tidy, G. Coburn, Indianapolis	2
Second, Lillie Sammons, Indianapolis	1
Pin-cushion, Henry Brandt, Indianapolis	1
Toilet set, Pearl Muchmore, Shelbyville	2
Second, Anna Posz, Shelbyville	1

Painting, on silk or satin, display, Mary Kirk, Shelbyville	\$2
Painting, on wood, display, Mary Ingraham, Indianapolis	2
Second, Maud Pierson, Indianapolis	1
Painted plaques, display, Maud Pierson, Indianapolis	2
Second, Lillie Weaver, Indianapolis	1
Pencil drawing, original, Ida B. Martin, Indianapolis	2
Second, Mary Ingraham, Indianapolis	1
Pencil drawing, copy, L. Waldo, Indianapolis	1
Fret sawing, display, Eddie Homer, Knightstown	2
Fret sawing, specimen, Eddie Homer, Knightstown	1
Carved wood-work, display, Eddie Homer, Knightstown	2
Second, Henry Dithmer, Indianapolis	1
Woods, collection, named, Walter S. Rollins, Indianapolis	2
Shells, collection, named, Harry F. Thompson, Indianapolis	1
Minerals, collection, named, Harry F. Thompson, Indianapolis	2
Butterflies, collection, named, Joseph Goldstein, Indianapolis	3
Second, Asa Bloomer, Indianapolis	2
Insects, collection, named, Garvin L. Payne, Indianapolis	1
Moths, collection, named, Joseph Goldstein, Indianapolis	2
Collection of Stamps, Clarence E. Coffin, Indianapolis	1
Collection of curiosities, Walter S. Robbins, Indianapolis	1
Collection of old coins, Harry F. Thompson, Indianapolis	2

REPORT OF COMMITTEE

ON SPECIAL MERITS OF ARTICLES ENTERED IN BOOK A,

AND

Exhibited at the Indiana State Fair for 1884,

ON WHICH NO PREMIUMS WERE OFFERED.

Detached Portable Engine, by G. H. Zschech & Vinton Iron Works, Indianapolis, Ind. This is an 8½x10 engine, running at high speed; is very simple and compact in construction, and of excellent workmanship. It has a novel form of bed in which the material is unusually well distributed to give strength and steadiness to the engine without itself being very heavy. The boiler is of the usual locomotive style, and of first-class material and workmanship. The engine is so connected to the skids as to occupy very little space on the ground, and be conveniently handled. It was successfully driving one of their pony saw mills.

Portable Engine, by Springfield Engine and Thresher Co., Springfield, Ohio. This Company exhibit a ten-horse power engine, which they claim has some points of excellence over others, the more prominent being that it is lighter, and consequently easier to get about over the country. They also claim that it works steam with superior economy, requiring less to do a given amount of work, and thereby saves fuel. The engine is supplied with the usual pump, worked from the cross-head, and also with an independent steam pump of simple construction, which is reliable in its action, and furnishes ample means of keeping up a supply of water, whether the engine is running or not. All joints are scraped and ground, so that no packing is needed, and all parts are made interchangeable, so that any part that may be needed to replace a broken or worn out piece may be had from the shop that will fit and work properly without sending the engine or any part of it there. The material and workmanship are good, and it is well mounted on truck with wood wheels.

Semi-portable Engine, by Deering & Co., Indianapolis. This is a four-horse power engine on skids, which occupies very little space, and has a return flue boiler of the usual form. It has the usual connections and fittings of larger engines, and is a desirable engine where only a small power is required.

Shipman Engine, by Thos. Reber, Agent, Louisville, Ky. This is a new and novel engine, occupying very little space, and uses coal oil, which is sprayed by a jet of steam from the boiler, as fuel. It has a tubular boiler in which the supply of water is automatically regulated by means of a copper ball floating in the water, which regulates the supply from the pump. It is supplied with a safety valve, but over-pressure in the boiler and waste of fuel are guarded against by an arrangement that closes the jet and stops the atomizer when steam pressure is up to 120 pounds. In the engine two single acting cylinders are used, and steam is admitted to them alternately by means of a rocking valve. The motion is kept regular by a governor on main shaft. All the working parts are encased, protecting them from dust, and avoiding any danger to careless persons. It is self-oiling and requires very little attention in running. It is claimed that it is absolutely free from danger, either from fire or explosion, and if these claims are well founded, as they seem to be, it is peculiarly adapted to use in numberless places where only a light power may be needed.

Portable Engine, by Stillwater Manufacturing and Car Co., J. B. Parker, Agent, Indianapolis. This engine differs from others in general use mainly in the construction of the boiler, which has a fire-box and a large, direct flue, 20 to 22 inches in diameter, through the lower part of the cylindrical part of the boiler, and the upper part is filled with 2½-inch return flues. It is claimed that this arrangement gives better steaming capacity to the boiler, making it easier to raise and maintain a head of steam, and adapts it to the use of all kinds of fuel, either coal, wood or straw. It is supported on a good truck, the rear axle extending around under the fire-box. The engine is a good one in all respects, and is furnished with an independent steam pump, which may be worked by hand when necessary.

Traction Engine, Peerless, by Geiser Manufacturing Company, Waynesborough, Pa.; A. C. Hamilton, Agent, Indianapolis. This engine is stylish and attractive in appearance, and has some peculiarities worthy of special notice. The boiler is of the usual locomotive style, with open bottom fire-box; but a notable feature in it is that it has an attachment to the crown-sheet that retains a quantity of water that can not run off of it in going down grades. This is regarded as a very important addition, as any exposure of fire surface not covered with water is at least very injurious, if not immediately dangerous. The engine is gotten up in the best style of workmanship, with all parts made interchangeable. Among noticeable points are that the cylinder, with one head, and the steam chest, are cast in one piece, leaving only two joints to make. There is also a new device for reversing, using only one eccentric. The driving wheels are very large, giving a large surface in contact with the ground; and, as it is intended to be used also for plowing, two additions to the wheels are provided which are readily attached or detached that make, when attached, a very wide faced wheel, adapted to pulling heavy loads on

soft ground. Spur gearing is used in the compensating gear instead of bevel, as is usual. A gang of plows intended to be operated by this engine was detained on the road, and were not received in time to be exhibited.

Portable Engine, by Nichols, Shepard & Co., Battle Creek, Mich.; W. S. McMillen, Manager, Indianapolis. This engine has a locomotive boiler, with water front and bottom to fire-box, and extra heavy flue sheets, and all made of the best quality of iron, with first-class workmanship. Copper thimbles are used at the flue ends in the fire-box, which, with the extra thickness of sheet, it is claimed, reduces their liability to leak to a minimum, and, consequently, avoids the deterioration that takes place so rapidly from corrosion on leaky surfaces. The engine is well constructed of the best material, and is placed on the side of the boiler, on a good bed, in a convenient position for handling and caring for. It has a good pump, worked from the cross-head, and is provided with all necessary fittings of the best quality.

Kriebel Engine, by Rice, Whitacre & Co., Chicago, Ill. This is a new style of vertical engine, very simple in construction, and has few parts to look after and keep in order. The cylinder is supported on trunnions, on which it vibrates. The piston-rod is connected directly to the crank, without the intervention of cross-head or connecting rod, and has no eccentric or rod. The admission and exhaust of steam is effected by the vibration of the cylinder by means of a valve which is connected to lower end of cylinder, which has a curved convex face, which is a segment of a circle concentric with the trunnions, and has openings, or ports, through it that communicate with either end of the cylinder. A sort of steam-chest has a concave face, and makes a joint with the valve, and is held up to its place against it by springs, and has a pipe, or opening, through it for admission of steam, while an annular opening around the steam pipe allows the passage of exhaust steam. In operation, the rotation of the crank vibrates the valve on the end of the cylinder until, at the proper time, a port is over the steam pipe, or opening, and steam is admitted to one end of the cylinder, at the same time bringing the port of the other end over the exhaust opening, which movement is alternated between the two sides of the piston-head as the crank rotates.

Traction Engine, by the Birdsall Company, Auburn, N. Y., C. E. Merrifield, Agent, Indianapolis. This engine differs from others in many respects. The first to arrest attention is the driving wheels, which are large, and made almost entirely of wrought iron, being very strong and light; and a distinctive feature, not found in any other, is that there are openings through the tire, or face, which, it is claimed, enables it to hold better in slippery mud, wet grass or weeds, without extra attachment. The entire weight of the boiler is supported on springs, which break the force of shocks received in going over rough places. The engine is well gotten up, and is placed at the extreme forward end of the boiler, and has two steam pipes, one taking steam from the forward end, the other from the dome, enabling it to get dry steam from one or the other, with water fresh in the boiler, going either up or down hills. By a simple arrangement of a single eccentric a reliable reverse movement is secured, avoiding the wear and complications of the link. The whole rig is well designed, is of good material and workmanship, and as light as is consistent with the rough, hard service required of it.

Traction Engine, by Nichols, Shepard & Co., W. S. McMillen, Agent, Indianapolis. This engine is handsome in its design and finish, and has many points of merit in its arrangement. The boiler is supported on six spiral springs, two on either side and two under the fire-box, and is made of only two sheets of iron, double riveted. The crown sheet is about four inches lower at the back end, over the fire door, than over the flues, and has a fusible plug at the highest point. This slope of the crown sheet gives so great a depth of the water at the back end that it will not be likely to become bare of water in going down any reasonable grade. The flue sheet is half inch thick, and copper thimbles are used at flue ends. It has water front and bottom, and both pump and injector are furnished for supplying water. The engine is a first-class one in all respects, and uses the Hoag reverse pinion movement. It is furnished with all necessary fixtures, conveniently placed for use. The stack has an improved bonnet that guards very effectually against danger from fire.

Portable Engine, by Springfield Engine and Thresher Company, Springfield, Ohio. This is a good engine in all its appointments. It is mounted on a frame, and is not supported by the boiler, as is usual. The driving wheels are entirely of wrought iron, except the hub, and are so connected to the axle that one or both may be fastened to it, and all turn together, as in a locomotive, or either or both may be detached, and used as a portable. The forward wheels are pushed by the frame from the rear and not by the boiler. Steel springs are used in the compensating gear, which allows them to yield a little when the wheel strikes an obstruction or has unusual strain from any cause, lessening the danger of breaking the gearing. The link motion is used for reversing the engine, which has all its parts conveniently arranged for handling or being cared for in running.

Traction Engine, by M. & J. Rumely, Laporte, Ind. In this engine great care is taken to secure the best material and workmanship. The boiler is made of a superior quality of iron, with a very large dome from which steam is taken through a dry pipe, which secures dry steam under all ordinary circumstances. It has water front and bottom, and large flues, through which a better draft is secured than through smaller ones. The engine is placed well back to give weight over the driving wheels. Uses the link for reversing, with an extra long phosphor-bronze block, thus securing the best possible wearing properties in this kind of reversing rig. Uses the usual cross-head pump for supplying water. The driving wheels are large, and are driven by a straight train of gearing, with the usual compensating gear on counter shaft. The front wheels have an elevated ring or ridge around the center to prevent lateral slipping. A good spark arrester guards against fire. It is conveniently handled by the engineer, whether at regular work or running on the road. As geared it will travel about four miles an hour.

Traction Engine, by Eagle Machine Works, Indianapolis. This company have one of their traction engines on exhibition, which is a well-made, light, and yet substantial machine, well adapted to the work it is intended to do. The boiler is well made of the best quality of iron, with water front and bottom, and is hand-riveted. The engine is mounted high on the boiler, getting the band-wheel well up out of

the way of the front wheels. It has a novel arrangement for reversing, which is effected by means of a spiral feather in the main shaft over which the eccentric slips and is revolved by it sufficiently for the purpose. It is easily operated. Water is supplied by the usual arrangement of pump under the cylinder. The wheels are all iron, the driving wheels having an internal spur wheel attached to lugs from their rims, by which they are driven. Has compensating gear.

Traction Engine, by Northwestern Manufacturing and Car Co., Stillwater, Minn., J. B. Parker, Agent, Indianapolis. This engine is of the same style as their portable in all respects, except in having traction attachments. The boiler has a fire-box with water bottom and cast iron front, which may be removed to facilitate repairs in the fire-box, when needed. It is claimed that the large direct flue and smaller return flues gives this boiler the best steaming capacity with any fuel, and enables it to burn straw advantageously, which others can not do at all. The engine is well constructed, and is different in some of its arrangements from others, the most noticeable being the friction clutch, or pulley, by means of which the engine may be instantly connected or disconnected from the traction wheels, enabling the engine to get under headway after being stopped in a difficult place, and thus enable it to move its load, which it might not be able to do otherwise. One of these friction pulleys carries a sprocket chain which drives a counter shaft carrying the compensating gear, and pinions that engage in spur wheels that are fast on traction wheels. There is also a novel arrangement of the eccentric for reversing, that is claimed to effect all that can be accomplished with the link in a very simple manner, and is not affected by wear as is the link.

Traction Engine, by Frick & Co., Waynesboro, Pa. This engine is so well gotten up in all respects as to arrest the attention of the most casual observer. The boiler is well made of good material, with water front and bottom, and has a large heating surface for the work it is intended to do. The main frame of the engine consists of two wrought iron sills, which extend from the front axle back of rear end far enough to support engineer's platform and water-tank. They are not rigidly connected to the boiler, though the rear end is supported from them by a wrought band passing around under the fire-box. The engine frame is also supported at the back end by these sills on vertical plates, which are riveted to them, while the forward end rests on the boiler, but is not rigidly connected to it. By the arrangement of these sills and engine frame, all strains from unequal expansion and contraction of boiler and other parts are avoided. Uses the link reverse on engine, and has an elastic compensating gear in its propelling gearing that serves a valuable purpose in breaking the force of shocks from sudden starting, striking obstructions or other cause.

Traction Engine, by Gaar, Scott & Co., Richmond, Ind. This establishment exhibits one of their traction engines, in which the design, material and workmanship are excellent. The boiler has the water front and bottom, and is well made of the best iron. The truck wheels are all iron, the drivers having an internal gear wheel, by which they are driven, attached to their rims, relieving the spokes of any strain. A spiral groove or corrugation in the roller on which the guiding chains

wind causes them to always wind alike, saving time in taking up slack in guiding, and holding it steadily in its course. The engine is compact and convenient, and is claimed to work with the greatest economy, and to develop unusual power in the field or on the road, being ample to go with its train through plowed fields or rough roads wherever desired. It is also claimed that it will go down any ordinary hill with safety to the crown sheet if water is carried flush. For reversing, the regular locomotive link motion is used.

Traction Engine, by Robinson & Co., Richmond, Ind. This firm exhibits their traction engine, which has many points of merit. Among these may be noticed that it is very readily put out of gear, so as to be moved as a portable by horses when necessary. The boiler is supported on springs over the rear axle, which break the force of shocks that are so destructive to heavy machines passing over rough places. The regular locomotive link is used for reversing, and the two eccentrics are cast together, so that when one is right the other must be. The arm of the rock-shaft is one and a half inches above the center of the shaft when the valve is on half stroke, by which arrangement it is claimed there is much less wear of parts, as the engine is always run in one direction in doing regular work. The general arrangement makes it very convenient to handle, and the material and workmanship are superior.

Model of Locomotive Engine, by D. A. Reynolds, Waveland, Ind. This is a model made of wood by the exhibitor, who is a young farmer, and not a trained mechanic, which is a very fair representation of a locomotive engine and tender. The work was done with a very limited supply of tools, and gives evidence of good natural abilities as a mechanic, and shows the direction or bent of his mind. The work is highly creditable to him.

G. A. Zschech & Co., and Vinton Iron Works, Indianapolis. Exhibit three saw mills, which they designate as their C, D and E mills respectively. The C and D mills differ only in size and capacity. Their frames, or husks, are made of either wood or iron, as desired. The mandrels are of steel, with their collars forged on them, which are recessed into their boxes to exclude dust and save oil. The boxes are pivoted, and align themselves without unnecessary friction. The mandrel extends outside the main frame far enough to carry the driving pulley, and take a bearing in a rigid frame that supports the out end of it, so that the tension of the belt adds no friction to the journal at the saw. This long mandrel also gives more room to the off-bearer. The upper saw mandrel has bearings close on either side of its pulley, and an automatic tightener gives any desired tension to its belt, and instantly takes up any slack made by a hard pull. The friction pulley, for feeding or backing, accommodates itself to the face of the pulley it is working against. A patented guide enables the sawyer to adjust the lead of the saw with entire safety.

These mills are furnished with the Zschech head-blocks which set accurately by sixteenths up to $2\frac{1}{2}$ inches. No panels are used in these head-blocks to wear and make them set uneven, and they are conveniently thrown out of gear for backing knees or sawing tapers.

The "E" mill is made either single or double, and is intended for light power and a small force of hands, for which purpose it is well adapted. It is furnished with a rack and pinion head-block that opens 36 inches, and sets accurately by sixteenths. Three men can run this mill successfully.

They also have an edging table, in which the guide-rail is supported on a cast-iron frame, made in a form to secure the greatest strength with the lightest weight. It is readily taken apart, for transportation, and set up again, and is furnished with counter-shaft for getting up speed, and a gauge for ripping to width.

They also have a billet saw that is convenient and safe to operate. The sliding table can not get off the guides.

They also exhibit a swing saw, which is well and strongly made, and furnished with means of being securely hung. The boxes for mandrel in lower end are very secure.

Eagle Machine Works, Indianapolis. Exhibit one of their Pony "C" saw mills, which is well designed and well made, of good material. This mill is well adapted to do neighborhood sawing with a light power, such as is generally used for threshing. It may have a top saw added, and used as a double mill. The mandrel runs in self-adjusting boxes, and is very long, with driving pulley outside of frame, giving four and a half feet room for off bearer between belt and saw. The head-blocks set any thickness by screw feed, worked by a lever, and are conveniently operated for sawing tapers. The sawyer can, from one position, control the engine and feed, and also set the log.

They also exhibit a set of Meiner head-blocks. These head-blocks have been long and favorably known to sawyers as being accurate and convenient in setting, simple and durable in construction, and filling all the requirements of a first-class head-block in a very satisfactory manner.

Band Saw Mill, by Sinker, Davis & Co., Indianapolis. This is a large and improved mill, capable of sawing the largest logs into lumber at the rate of from 15,000 to 25,000 feet per day, owing to the timber and power used. In this mill the objections or obstacles heretofore found in using the band saw for manufacturing lumber rapidly seem to have been overcome, as was demonstrated on the ground during the fair, where it attracted marked attention from visitors generally, and from saw mill men especially. The great saving of time and timber, which is wasted in chopping for the upper saw mandrel of the circular mill, in large logs, and the great saving in all timber by using so thin a saw must soon bring this kind of saw into general use, as good timber is rapidly becoming scarce and more valuable. It is claimed that this mill will cut six 1-inch boards from a flitch 6 5-16 thick. In operation on the fair grounds it cut straight lines and very smooth lumber.

Potts' Hydraulic Brick and Tile Machine, by Vinton Iron Works, Indianapolis. This is a new style of brick and tile machine, and differs from others in many important particulars, the principal one being in the manner of getting motion and pressure to the plunger. This is accomplished by hydraulic pressure, produced by a set of three plunger pumps forcing water into a cylinder, where it operates on

a piston head just as steam does in the steam engine. After it has made a stroke or plunge one way, a valve allows the water to exhaust, or rather leaves it free to return to the tank whence it came, and admits it on the other side for the return stroke. The plunger that forces out the clay is connected to and is in line with the piston, so that the pressure is directly in the line of motion, there being no lateral wear or pressure. A quick return of the plunger, after it has made a plunge, is produced by adding a piece around the piston that is equivalent to increasing its size to three-fourths the area of the cylinder, consequently only one-fourth as much water is required to fill that end of the cylinder, and the return stroke is therefore made in one-fourth the time required for the plunge. The tank is conveniently located at the side of the pug mill, and by a cock or valve in the pipe connecting it with the pumps, the speed of the mill can be regulated to any speed, from one plunge in three minutes to four or five in one minute. The stroke of the plunge is readily adjusted to anything under twenty inches. In the pug mill the shaft carrying the tempering blades is hung in a long bearing only at the top end, and goes no further down than the bottom of the pug mill, which is left entirely open for the free passage of the clay into the pressure box. The pug mill runs much faster than the plunger, and their relative speeds may be so regulated that any clay will be properly tempered before it gets into the pressure box. Another important attachment is a safety valve connected with water pipe that will raise before a breaking strain is reached from any cause.

They also exhibit the Potts' Geared Brick and Tile Mill. In this the pug mill is the same as the hydraulic. In working the plunger, power is transmitted by gearing to a shaft carrying a large eccentric, with a wide face, that has twenty inches throw; and a rod from the eccentric strap is connected to and drives the plunger. On this eccentric shaft is a pair of 52-inch vertical spur wheels, one on either side of eccentric, and a pin that has a little play passes through both wheels, near their rims and the eccentric, and serves as an evener to equalize the strain between the two wheels. The band wheel shaft connects to shaft carrying the gearing that drives the eccentric shaft by a clutch coupling, and may be thrown out of gear and the pug mill run alone to temper a mill full to begin on, or to stop it if obstructions get in. All the gearing and bearings about this mill are up out of the dirt, in a convenient position for oiling, none of it being under the clay.

They also have a Tile Table on exhibition. This is an endless belt, made in sections the length of a tile, with adjustable sides that may be moved out or in, to suit any sized tile, and are held in place by thumb screws. This belt runs over triangular pulleys, the axle of the one next the mill being supported by springs that bring the holder up to the tile at once, so as not to mar them. At the delivery end the triangle sets the tile on end for removing. A very convenient way is provided for raising or lowering the table to the proper height to receive any sized tile.

Disintegrator for Tile Mills, by Clayton and Albert Potts, Indianapolis. This is a new machine for preparing clay to be tempered in a brick and tile machine, and consists of a cast cylinder made in two-inch sections with steel cleats cast in their

faces that break up the clay perfectly and also any stones that may be in it against an apron that vibrates to and from the cylinder. The vibrating apron is worked by a friction pulley. There is no gearing and no noise.

Improved Tiffany Tile Machine, by N. Brewer & Co., Tecumseh, Mich. This is an "auger" mill with a vertical pug mill, which is claimed to have some important points of excellence; a prominent one being that it tempers the clay in a superior manner. The clay in passing through the pug mill is cut up and worked by the knives in the usual way, when it is received by the auger that forces it out through the dies, which, it is claimed, gives it a double working. This is important, as good work can not be made of poorly tempered clay. Another claim is, that in this kind of mill no budge or bracket is needed, for attaching a core piece to, for forming the inside of the tiles, which necessarily splits the stream of clay, and where clays do not unite or "weld" readily defective work is often done. This machine produced beautiful work, is well and strongly made, and seems capable of standing any reasonable strain.

Quaker Brick Machine, by Fletcher & Thomas, Indianapolis. This machine was on exhibition, but not having seen it at work, and being unable, after repeated calls to get any information about it, can say nothing about it, except that it seems to be a mud and sand machine, and in this respect differs from all others on exhibition. They also had their new *Spiral Pug Mill* in connection with brick machine, but could get no information about it, except the certificates of a number of persons who recommend it as doing its work perfectly, dispensing with soak pits, and two or three hands that are required with the usual arrangements.

The Force Feed Brick and Tile Machine, by the Wallace Manufacturing Company Frankfort, Ind. In this machine a double screw feed is used, one over the other. The upper one is cleared of its clay by an automatic scraper connected to a piston which is operated by a crank, and forces the clay into the lower screw, making a positive forced feed. The core piece, for forming the inside of the tile, is on the end of the lower screw and revolves with it.

They also exhibit their *Tile Table*, which is an endless belt, with rollers lengthways on either side of each section, with a belt around each pair that allows the tiles to revolve without twisting them out of shape.

Also their *Clay Crusher and Stone Separator*. This consists of a pair of chilled iron rollers running together, that have spiral grooves, or ribs, pitched either way from the center, like right and left hand screws, that works any stones that may be in the clay along the roller until it is discharged over the end, while the clay is crushed in passing through between the rollers.

Brick and Tile Machine, by J. W. Penfield, Willoughby, Ohio. This is one of their No. 7 machines, which is a very strong, well-made machine, well calculated to stand the strains incident to this business. A four-inch steel shaft, that has four bearings, carries the knives in the pug mill, the cam that moves the plunger, and the wheel that drives them. The cam is used to drive the plunger, as it may be made to give a regular and uniform motion to it, and operates against steel fric-

tion rollers in both forward and back movement. The cores for tile are self-centering, or doweled, and are placed well back, to give the split in the stream good room for thoroughly uniting. An improved table or carriage, in which the lags are covered with wadding, overlaid with flannel, is claimed to be the best yet produced.

Centennial Brick and Tile Machine, by Frey, Scheckler & Hoover, Bucyrus, Ohio. This is an "auger" machine which, it is claimed, is much improved and has advantages over others. One of these is that the hopper for receiving the clay is only 37 inches high and very convenient for shoveling into. Two augers are used. A large propeller on the mill shaft forces the clay forward to near the dies, where it is received by a smaller one running in the opposite direction, and at higher speed, that has its shaft running through the larger one. It is also claimed that it will make larger tiles with the same clay than other mills. It is also capable of running two or three streams of small tiles at the same time. The machine is well constructed and accessible for repairs, the knives, being connected independently of each other, may all be taken off through the hopper and door, and the propellers are also readily changed. The perfection in tempering the clay is a very prominent characteristic of this mill.

Eureka Brick and Tile Machine, by Chandler & Taylor, Indianapolis, Ind. This is their latest improved machine, and is made for either horse or steam power. The gearing for driving by steam is very heavy, and placed underneath. The shaft that carries the tempering knives, and feed and pressure wing, is of four-inch steel. On the top of the pug mill case is a substantial hopper-shaped casting, to which the bridge-tree, that supports the upper end of the shaft, is fastened. The peculiar manner of lubricating the dies enables them to make very smooth and perfect work. The mill is strong, well made, and well proportioned in all its parts, and, with proper care, will not disappoint the reasonable expectations of those using it.

One-horse Power, by Eagle Machine Co., Lancaster, Ohio. This is a light and compact lever or sweep power, well adapted to use on the farm, or elsewhere, where the power of a single horse is sufficient for the work. It is light and easily moved.

Exhaust Fans, Pressure Blowers and Ventilators, by Anyett & Smith Manufacturing Co., Detroit, Mich. These fans and blowers are essentially different from the old style of fans that have been in use for a long time, and are believed to be a great improvement on them, both in the work done by them, and in saving a large percentage of the power usually required to do a given amount of work. The most notable difference between this and other fans is in this having a double discharge, so that the blades, or wings, discharge their load of condensed air twice in a revolution, instead of carrying it a full revolution against the pressure before it. They are made either double or single for exhausting dust, shavings, or similar material, from all kinds of wood-working machines, and for elevating cotton for ginning, which it is claimed to do in a superior manner, delivering it so loose and free from wads that a gin does much more and better work. The pressure blower, for cupolas and forges, has a polished steel disk in the center to which the wings, or buckets, are securely riveted on each side. This disk also prevents the currents of air that

come in from either side, to supply the blast, from interfering with each other, and allows each side to do its own work. They have the double discharge, though the form is a little different from the exhaust fan.

The ventilator is intended to be used wherever it may be desirable to produce a current of air for any purpose, such as ventilating mines, hospitals, etc. It will force a current of air against a pressure of one-fourth pound to the square inch. It may be placed in any position, and piped to any place: is simple in construction, and requires very little power to run it.

Clover Huller, by Birdsall Manuf'g Co., South Bend, Ind. This is an improved machine, known as their "New Monitor Junior" clover huller. It has a new tailings elevator, by means of which tailings are sent directly to the hulling cylinder without allowing them to be mixed again with the straw and chaff, as they would be if returned to the threshing cylinder as is generally done, and thus having to do over again what has once been done. This improvement greatly increases the capacity of the machine. The machine has also a re-cleaning attachment that may be readily attached or detached from the machine, that cleans the seed perfectly, ready for market. It is provided with an undershot fan and an end-shake shoe, having sieves of perforated zinc. The cleaned seed is delivered in one sack and the tailings in another. The cylinder is undershot, with an adjustable concave in three sections, and suitable blanks are provided to put in place of such sections with teeth, as may not be needed in threshing dry clover. The hulling is done with a cylinder and concave that are covered with tempered steel rasps, that are claimed to do this difficult work in the best possible manner.

Respectfully submitted,

JOHN M. SEWARD, *Committee.*

REPORT OF COMMITTEE

ON

Special Merits of Articles Entered in Book B,

AND

EXHIBITED AT THE INDIANA STATE FAIR FOR 1884,

On Which No Premiums Were Offered

Wood Pumps, by Comstock & Coonse, Indianapolis. This firm have on exhibition a good display of their wood force and other pumps, which are made of carefully selected material and in the best style of workmanship. They have porcelain cylinders, and are non-freezing. By attaching a hose with a small nozzle they may be used for many purposes. They also have chain pumps of the most approved kinds, furnished with various styles of rubber buttons.

Fountain Spray Pump, by J. S. Hildebrand, Agent, Indianapolis. This is a chain pump that has a small discharge below the platform from which water falls a short distance on to a sort of a shelf or table, from which it returns to the bottom of the well or cistern in the form of spray, carrying with it the purifying influence of the atmosphere.

Remington Force Pumps, by Remington Agricultural Company, Iion N. Y., Thornton & Darnell, Agents, Indianapolis. These are superior pumps, adapted to all purposes for which pumps are used. They can never freeze, never need priming, and work in the deepest wells. The pump consists of two brass cylinders, with the necessary valves, placed in the bottom of the well or cistern, and connected by rods with a lever or crank at top, by which it is conveniently worked. By attaching suitable hose and nozzle they can be made available in putting out fires, sprinkling grounds, washing carriages or windows, etc.

Force Pumps, by F. E. Myers & Bro., Ashland, Ohio. This is a double-acting force pump, simple in construction and very efficient in operation. It is adapted to any depth of well, and never need freeze. The valves are easily kept tight, so as to hold and force water against very great pressure, and will force it through hose sixty feet from the nozzle. These pumps are also made in a form that adapts them to use in drilled wells of any depth. Pumps of this character do not seem to be as generally appreciated as they should be; they cost but little more than the common lift or suction pump and would often furnish adequate means of extinguishing fires that destroy valuable property before a fire department can get to work, and would be especially useful in country places, where help can not often be had in time to be of much service in an emergency of this kind.

R. R. Rouse, Indianapolis, makes a large display of various machines, tools and fixtures in his line:

Erriesons' Caloric Pumping Engine. This is designed mainly for the purpose of pumping or elevating water from wells, cisterns or reservoirs, to upper floors or tanks for domestic use. No steam is used, and it can be safely managed by any one, as it is not liable to derangement. Gas is better adapted for use as fuel in it, though any other kind may be used.

Steam Pumps. He has a variety of these of the best makes and all capacities, well adapted to the uses for which they are required.

Driven Well Supplies and Tools. There is a good display in this line that represents the latest improvements. The long experience and genius of the exhibitor has enabled him to overcome all the difficulties heretofore met in driving wells, and to make improvements in everything pertaining to them, until he is now in advance of all his competitors in this business.

He also has adjustable stocks and dies on exhibition. These are not so clumsy as many others, has no guides to carry about and look after, as the bushing can be adjusted to any variation in the sizes of pipes. They work easy, and the cuttings can not work in and clog or bind the dies.

Also, a new adjustable pipe wrench, which is an improvement on this much improved tool. It is made of steel in the best manner, and will hold pipes, rods, or anything of this kind in a very satisfactory manner.

Also, a great variety of specimens of light drop-forgings, neatly arranged on a large card, that were handsomely executed.

Hand Hoisting Machine, by B. F. Jones, Indianapolis. This is a remarkably compact and well designed arrangement of gearing, by which heavy weights may be raised by hand power, and is especially adapted to handling heavy stone in quarries, bridge building or other similar use. The machine possesses great merit but is not easily described.

Ideal Caligraph, by H. T. Conde, Indianapolis. This is claimed to be an improved type-writing machine which is fast coming into general use, as it furnishes a means of very rapid writing that is as legible as any print, and copies as well as pen work.

Remington Type Writer, by C. C. Kœrner, Indianapolis. This machine has been before the public for several years, and, as now improved, is claimed to be a superior instrument for the purpose intended. They are compact, simple and durable in construction, and accurate and noiseless in operation. Various styles of type are furnished as desired. The work copies well, and the art of using it is readily acquired by any one.

Tector's Combined Scourer, Polisher, and Brush, by C. H. Walcott, Manufacturer, Indianapolis. It is evident that any dirt or impurity left on the wheat before its reduction to flour, must injure it: and that it can not afterwards be removed. This machine, it is claimed, does the work of cleaning the wheat in a very perfect manner, removing all chaff, dust, and fiber by rubbing one grain against another, which is done in the scouring chamber. It then passes to the brush machine, which is claimed to be the most perfect yet devised, and from which any impurities liberated are carried away by a separate air current, leaving the grain with a clean crease, and free from fibers at the end.

Also exhibited the *Oyborn Wheat Separator*, which is a very compact, well-gotten-up machine, for use on the farm in cleaning seeds and grain of all kinds. It does very perfect work, and occupies very little space.

Also, a case of *Dufour & Co.'s Anchor Brand Bolting Cloths and Grit Gauze*, imported from Switzerland, comprising the finest and best qualities made.

Also, a line of *Steel Pulleys*. This is a comparatively new material for pulleys, and possesses advantages not found in other material used for this purpose, the prominent ones being their great strength and lightness. It is also claimed that the belt adhesion is 15 per cent. better than on cast iron. These qualities must make this a favorite pulley, if it is furnished at reasonable cost.

Hand Traversing Machine, by Valentine Poland, Indianapolis. This is a little traversing planing machine that is conveniently worked by hand, and may be put to many uses in almost any wood-working establishment. It may be used for a great variety of work, and executes whatever it does in the very best manner, though it is necessarily slow as compared with power machines.

Respectfully submitted.

JOHN M. SEWARD,

Committee.

REPORT OF COMMITTEE

ON

Special Merits of Articles Entered in Book D,

ON WHICH NO PREMIUMS WERE OFFERED.

Razor Blade Scissors, by Joseph N. Goddard, Agent Indianapolis. This is a new style of scissors, made in all sizes and styles to suit the different purposes for which they are used, and seem to be the only attempt at improvement of this indispensable implement. In this the lower edge is similar to the old style, but has a piece connected to its side that forms a slot into which the upper blade passes in cutting. The upper blade is a thin piece of steel with a sharp, keen edge connected to what may be called a frame by a tenon, and held in its place by a set screw. These cutting parts are readily detached for sharpening, or replaced by new ones at little expense when needed. They cut remarkably easy, and will go through several folds of cloth as easily as the common scissors will a single one, as the operation is a "cutting" one and not what is understood as a "shearing" process. They are well made, the cutting parts of the best steel well tempered.

Richmond Star Lawn Mower, by the Dille & McGuire Manufacturing Company, Richmond, Ind. This is a well designed machine for the purpose intended, and is well made. Among the points of excellence claimed for it are, that it will work well over rough ground or down terraces; that the driving wheel runs on the cut grass, not breaking down that that is standing, and that it never slips while cutting. Also, that the knives have higher speed and are self-sharpening, and that the machine runs lighter and has no side draft.

Lamps and Attachments, by F. P. Smith & Co., Indianapolis. This firm had a good display of lamps and fixtures on exhibition, but called several times without finding any one to give any particular information about them.

Safety Gate for Railroad Crossings, by Benj. Atkinson, Indianapolis. This gate is lowered by means of a crank, operating a pulley, on which a wire cable winds and holds it down until it is released, when it raises itself. An important feature of it is, that it is so constructed that there is very little danger of its being prevented from working by freezing or sleet.

Slate and Wood Mantels, Grates, and Fire Places, by Will Terrell, Indianapolis. This display consisted of a fine assortment of these goods in great variety of styles, from which persons in want of any of them might expect to find something to suit, whether taste or economy were the dominant influence in making a selection.

Horse Shoes, by Will Wikoff, Danville, Ill. This is a splendid display of hand-made shoes, handsomely arranged on a card, in a great variety of forms, that adapt them to curing or relieving as far as it can be done by shoeing, all the defects of the horse's foot, whether natural, or from disease or accident. There is also all kinds of shoes needed on horses for different kinds of service from the heavy draft horse to the speed ring. These shoes furnish indisputable evidence of the skill of the workman making them.

Horse Shoes, by Maloney Bros., Indianapolis, Ind. This firm exhibits a handsome card of hand-made horse shoes, comprising a great variety of forms intended to cure or relieve the defects or bad habits of the horse's foot. And, also, all kinds used on horses in the various kinds of service required of them. The workmanship displayed in making these shoes is of superior character.

Elevation Flood Gate, by M. E. Scherer, Arcadia, Ind. This is a flood gate so constructed that it may be raised straight up, like a window sash, out of the way of drift of any kind. A hollow, or box post, is placed on either side of the stream, that have slots through their inside faces, and wires, that form the gate, pass from one post to the other through these slots, and are fastened to blocks inside. These blocks move up and down on rollers, and sustain the tension of the wires. A wire or other rope is attached to these blocks and passes over pulleys to a windlass, with a crank and ratchet, on outside of one post, and the gate is raised and lowered by means of this windlass, the water having nothing to do with it.

Post Auger, by J. R. Hwaster, Winchester, Ind. This is a cheaply constructed auger that bores post holes rapidly, and with little expenditure of power. It consists of a pair of steel blades, with outlines something like corn cultivator plows, which are bent in a sort of screw twist that takes them into the ground without much pressure. These are fastened to a forked handle with their points near together to enable them to lift out the dirt.

Doors, Sash and Blinds, by Cutler & Savidge Lumber Company, H. T. Bennett, Agent, Indianapolis. This is a good display of work in their line, and comprises all styles in general use, well made of the best material.

Dressed Lumber, by Shaffer & McGinnis, Indianapolis. This firm exhibited a lot of their siding and flooring, which was dressed in the best style, and were excellent samples of first-class building material.

Doors, Sash, Blinds and Lumber, by M. S. Huey & Son, Indianapolis. This firm had a very fine display of work and material in their line on exhibition. They make a specialty of all kinds of fine woods, native and foreign, which they manufacture into doors, mantels, etc., of any style or finish. Their samples of figured woods were very fine.

Encaustic Tiles, Mantel Facings and Decorative Tiles, by U. S. Encaustic Tile Company, W. Terrell, Agent, Indianapolis. This is a very large and fine display of the wares manufactured by the Encaustic Tile Company, which must be seen to be appreciated, as it is not easy to describe them. Specimens were laid to represent some of the uses for which they are so well adapted, as hearths, floors, etc. These tiles are made of various shapes, sizes and colors, and may be laid in an endless variety of ornamental designs, and their great hardness makes them practically indestructible by wear.

They also had a good display of wood and marbled slate mantels, and some fine specimens of figured woods.

Harden Hand Grenade, by Fire Extinguisher Company, Chicago, Ill., A. M. Alexander, State Agent, Indianapolis. This is a glass globe, or vessel, filled with chemicals in fluid form, that when thrown into a fire generates a gas that instantly extinguishes fire that is enveloped in it, as combustion cannot take place in it for want of oxygen to sustain it. The material does not injure flesh or fabric of any kind, does not deteriorate with age or freeze at any temperature above twenty degrees below zero. The grenades are always ready and reliable, are of convenient size and form, and may be used by any one. Some tests on the fair grounds demonstrated their efficiency and reliability in extinguishing fires in a very satisfactory manner.

Respectfully submitted,

JOHN M. SEWARD,
Committee.

REPORT OF THE COMMITTEE

TO WHICH WERE REFERRED

BOOKS C, E, AND J.

ALL OF THESE BOOKS EMBRACED ARTICLES IN THE

SPECIAL MERIT DEPARTMENT.

I.

CULTIVATING IMPLEMENTS.

Fockler Bros., East Dubuque, Ill. Exhibited the Clipper Press Drill. This being a press instrument, it is claimed that all the wheat is drilled the same depth. The pressure lever is in reach of the driver. It has a cutter for sowing in sod ground, and this also prevents trash from bothering. It is claimed that an average of $7\frac{1}{2}$ bushels more per acre can be produced by using this drill than by using any other in the market.

The Avery Planter Company, Peoria, Ill. Exhibited a force planter. The depth is regulated by a lever. This lever not only enables the operator to plant at any desired depth but will lock the planter out of the ground. It has reversible runners, and shoves all trash out of the way.

Also, the Pitman movement check rower. It works without springs or cogs, and is therefore a positive movement.

Also, the Avery tongue cultivator. The operator guides the plow by means of a pivoted wheel. It has rod fenders which let the pulverized earth through to the corn.

Also, the tongueless plow, which never falls down, and turns very short by means of a castor and a wheel and a balance arch.

Also, a planter with a drill attachment. The drill is very simple.

The Newark Machine Company, Newark, O.; Branch Office, Indianapolis, Ind. Exhibited the Newark drill. The levers are in reach of the driver; it has a swinging foot rest and an adjustable seat to suit any sized man. It has a spring hoe which flies back to its place whenever it strikes an obstruction.

Also the Monarch fan. This fan is the only self-bagger in the world. It can make four separations at one operation. The shoe is supplied with screens in the bottom that have an independent motion to that of the shoe. The screens are adjustable up or down to suit the condition of the grain. The shoe also has a pivoted tail-board which closes tight against the upper sieve, which prevents the blast from carrying out light seeds. This fan can be placed on the ground, as everything falls into sacks and boxes.

The Superior Drill Company, Springfield, O. Exhibited a fertilizer drill with force feed on the fertilizer. No cogs are used to change the quantity of grain or fertilizer, and the change is made by a very simple device. The hoes are lifted from the front, and there are no chains, and consequently no tangling.

Also, the shoe pressure drill. It has a roller, which presses the ground down, and the shoe will run through trash.

Also, the front-lift common plain drill. The hoe pressure can be regulated so the drills will run any desired depth.

The Seed Drill Regulator Co., Lemont, Center county, Penn. Exhibited the Seed Drill Regulator. It is attached to any drill and regulates the depth of the grain. It is claimed to produce from 25 to 75 per cent. more plants than any other drill. It rolls the ground and leaves the ridges intact. It is also claimed that the plants will have from two to three times the root surface, and correspondingly larger tops and consequently will not freeze out. Also, that one-third of seed can be saved, and that the draft of the drill is lightened one-third. Also, that by this appliance the plant gets more benefit of the fertilizer than by any other drill, and that the plant is forced up quicker, and wheat can be sown two weeks later than it ordinarily is sown, thus escaping the fly. It is also claimed that there will be no weakly plants.

The Weir Plow Co., Monmouth, Ill. Represented by their Indianapolis branch house. Exhibited a timothy sod breaking plow. This is a superior sod plow, light draft, easy handled, and strongly built. Also, the Scotch Clipper Sulky Breaking Plow. This is a life-size show plow, silver-plated, rosewood tongue, and double tree. This plow cost \$700. Also, a general purpose 3-horse walking plow, with a wood beam.

Also, the same, except with a steel beam. Also, a stalk and stubble plow, with wood beam. This plow is made of the best of steel.

Also, a combination steel and chilled 2-horse plow, strongly built, heavy malleable standard and wood beam. The shears are interchangeable, with either steel or cast. This plow is intended especially for the Ohio and Indiana trade. Also, an iron beam, double shovel, and wood beam, iron shank, and an entire wood beam. These are first-class double-shovels, for Indiana and Ohio trade. Also, an iron harrow, strongly built, with $\frac{3}{8}$ -inch square steel teeth.

Also, a Scotch harrow, with 40 $\frac{5}{8}$ square steel teeth, wood frame hinged in the middle, and is claimed to be the best harrow for the money in the market. Also, a three-sectioned harrow with 45 teeth, also $\frac{5}{8}$ inch.

Also, a patent reversible tooth harrow, which is made in two or three sections, and by reversing the hitch the teeth are changed from a straight to a slanting position. Also, a patent three-horse equalizer; light, durable, and a perfect equalizer.

Also, an adjustable arch iron beam tongueless cultivator, which always stands up at the ends when turning. Wood beams furnished if desired. Sixteen thousand of these cultivators were sold in the year 1884. Also, a stiff arch, two-horse walking cultivator, with double-acting spring, and easily handled.

Also, a combined walking and riding cultivator, built with steel rail, steel arch, and iron beam, and is a model combination cultivator. It is easily handled as a rider or a walker. Also, an adjustable arch two-horse cultivator, which can be adjusted to suit any width of row. It is excellent for potatoes.

Also, fifteen or twenty varieties of walking steel plows, both wood and steel beam, made of choice material, which this company always use.

P. P. Mast & Co., Springfield, O. Exhibited a spring-pressure shoe drill, with roller pressure. The roller attachment works independent; the roller always follows in the wake of the shoe on account of a castor arrangement. A castor wheel in front takes the weight off the tongue.

Also, a glass feed fertilizer, free from corroding and sticking. All the deposits are in view of the operator.

Also, a spring-pressure drill. The pressure being on the back end of the hoe it is not required to be more than one-half as great as it would be otherwise. There is a gauge on the hoes to regulate the depth, and all grain is sown an even depth.

Also, a spring-shovel walking cultivator. It has a front spring to regulate the pressure on the beam. This anti-friction spring either puts the pressure on or off the beam. It has an adjustable coupling for regulating the space.

Also, a combined riding and walking cultivator, with spring shovels and plain beam. Also, a spring-tooth harrow or cultivator, running any desired depth.

Also, the Buckeye three and five-hoe wheat drill for sowing in corn. It has a roller castor and pin-hoe drill, and spring-hoe attachment for stumpy ground.

Also, a little two-horse engine for the purpose of exhibiting the goods.

Holl & Mustard, Glen Hall, Ind., exhibited a flexible cultivator. It has a direct hitch and independent action of beams. The hitch has no connection with the tongue, and a short, quick turn can be made without interfering with the action of the plows. The hitch also prevents the horse pulling the wheel to the ground. It is void of tongue draft and side draft, and is simply constructed.

Deere & Mansur, Moline, Ill., exhibited the Deere wire check rower, with drill attachment, and with stalk cutter.

Also, a one-horse drill, with fertilizer attachment, gotten up in beautiful style.

Deere & Co., Moline, Ill., exhibited the Gilpin sulkey plow and a full line of John Deere walking breaking plows. Also, the New Matchless riding cultivator

and the Queen tongueless cultivator. Also, the Sylvan cultivator, or tongue-tongueless, having all the good features of a tongue and a tongueless combined. The tongue is on a swivel and wheels. Also, a direct hitch cultivator, which is entirely new.

The Klinefelter & Dillman Company, Joliet, Ill., exhibited the Crown check-row corn planter. The check rower shaft runs under the box, taking hold of the seed plates direct, also moving the spoon of the planter by direct action. This implement dispenses with the use of a coil spring.

Also, the Joliet wire check rower, which attaches to all planters. It is the only cam machine.

The Vandiver Corn Planter Co., Quincy, Ill., exhibited the Barlow corn planter, which claims to be the most accurate drop in the world. The driver can see the corn for five hills in advance of the one being dropped at all times.

The Keystone Manufacturing Company, Sterling, Ill., exhibited the Galt rotary planter. It is light and durable. It has a patent lock operated by a lever, which also regulates the depth of the runner. Also, the Corban disc harrow, adapted to sod. This harrow will cut obliquely. Also, a pony corn sheller. Also, the pet corn sheller.

The Shawnee Agricultural Company, Xenia, Ohio, exhibited a hay tedder, which agitates the grass for drying, often enabling the farmer to put up hay the same day it is cut. Also, the Advance horse hay rake. It has a lock lever, and can be operated by a boy.

Hart, Hitchcock & Co., Peoria, Ill., exhibited the Union drill. The wheel is six inches higher than any other drill; the tire is one-half inch broader than ordinary drills, and it has a spring steel drag bar. This is the first drill which went into the market with a seat. All its parts are accommodated to the seat. It has only one cog wheel, which runs the grass seeder. The seed cup sits directly on the axle, and there is no draft on the horses' necks. Also, a fertilizer attachment, with positive force feed, and a break-pin in every feeder to avoid breaking the machine by choking. It can be attached to any drill manufactured by this company.

Jas. Selby & Co., Peoria, Ill., exhibited the Union corn planter. It has an adjustable rotary plate, and uses only one plate. The slide runs on rollers, and is anti-friction. The dropper and driver are both carried on one axle. The depth is regulated by a foot lever, leaving both hands free. It is one of the oldest planters in existence, having been in use since 1863.

The South Bend Chilled Plow Company, South Bend, Ind., exhibited fourteen break plows, and a full line of single and double shovels. These plows are cheaply repaired, as the points are in two pieces. They are complete center draft, and have a full line of attachments connected by a jointer, which also holds the knife for sod. Also, a rolling cutter, the only one adjustable without using a wedge. This was a neat and brilliant exhibit.

Bucher, Gibbs & Co., Canton, Ohio, exhibited the Imperial breaking plow in sixteen specimens. It is manufactured in two sizes. It is of combined iron and steel. All the parts are interchangeable with each other. It has a soft center steel mould, and the surface is very hard. The breaking parts are made of malleable iron. Also, a sulky attachment for any plow. The weight of the driver lifts the plow out of the ground, and the plow is tilted by the driver.

Rude Bros. Manufacturing Co., Liberty, Ind., exhibited the Improved Indiana Eight-hoe Pressure Hoe Castor-wheel Drill. It has a simple device for raising the hoes and regulating the pressure, both of which are operated by one lever. The seat does not injure the frame. On account of the castor-wheel in front, there is no draft on the horses' necks. Uniform depth of the hoes is secured, and there is no side lishing. Also, the same drill, plain. Also, a fertilizer drill, the disc of which causes a positive feed, and the feed is in view. The feed is easily regulated by a little lever, in reach of the driver, thus enabling him to distribute the fertilizer as he chooses, on poor or rich ground. Also, the tongue and tongueless iron cultivator. The wheels are all wrought, the boxing is adjustable. It has a solid steel arch and a simple sled for transferring. Also, a one-horse fertilizing drill, the only one made in the United States. It has two castor-wheels to regulate its depth; it is chain gear, and has no cog.

Also, a sraetcher for running ahead of the fine hoe drill, or for cultivating small corn. It has a device for widening or narrowing to suit the width of the row, and it has break-back hoes.

The Hoosier Drill Co., Richmond, Ind., exhibited the Hoosier Fertilizer Grain Drill. It is a positive force feed for grain, grass, and fertilizer. It sows all kinds of grain, and fertilizes in any desired quantity, without any change of gear. Also, a hoe pressure drill. Also, a runner pressure drill, in which wheels follow after the runner and press the dirt over the wheat and leaves an open furrow the same as a hoe drill. Also, a double corn drill, which drills two rows of corn at a time. The drills work independently of each other. Also, positive feed three and five hoe drills. Also, a plain and fertilizer one-horse corn drill. Also, the Hoosier lock-lever hay rake. It has a truss rod under the axle, a traveling fulcrum in the arch to shorten the throw of the lever, and is so adjusted that the weight of the driver dumps the rake.

The Brown Manufacturing Co., Zanesville, Ohio, exhibited the Brown Cultivator. It is a spring lift, and is furnished with straight shovels, bull tongues and bar shears.

R. Lean, Mansfield, Ohio, exhibited a steel harrow. The material in the frame is genuine steel. It is channeled, securing elasticity, lightness and strength. The teeth are extra quality of steel and diamond-shaped, and have a regular taper from the top, and they clean very easy. The teeth are tempered, and will run a long time without sharpening. The sections are independent, and consequently are easily adjusted to the ground, and are easily handled.

The U Spring Cart Co., Rushville, Ind., exhibited the Farmers' Friend Harrow. It is the only Scotch harrow with handles, and is the only harrow which is so arranged that either of the four corners of the teeth can be made to cut, hence it is self sharpening. It is easily cleaned, and the handles form a sled to transfer the harrow from one place to another.

The Challenge Corn Planter Co., Grand Haven, Mich., exhibited a new improved drop. Also, a new check rower.

E. Over, Indianapolis, Ind., exhibited Sawyer's two-wheeled road machine. The double-tree is attached to the side of this machine, and the side draft is overcome. It has a hinge scraper bar, composed of two pieces. The scraper being in two sections, it can easily be discharged at different angles, and can be formed into a "V" shape, and carry the dirt wherever desired, and it will also straddle a rut.

Also, the Howland road grader. This is a low-priced grader, being attached to a common two-horse wagon. It is reversible by changing two rods, and the scraper can be thrown at any angle. Also, a road plow, grader, and ditcher, manufactured of the best material. The same power will plow and move dirt as in other instruments is required to move it. This is superior as a surface grader. It cuts to the depth of three feet, and any width from five to fourteen feet. It will make one hundred rods of ditch per day, with four or six horses. The dirt is thrown back from the edge of the ditch in such a manner that it can be crossed with any vehicle. It is valuable for cutting hedge-rows, or making levees from three to four feet high, and for repairing old post fences.

Also, a reversible pulverizer and stalk cutter.

Also, a Preston binder truck, which is strong and durable.

The David Bradley Manufacturing Company, Chicago, Ill., through their branch office at Indianapolis, exhibited the celebrated Garden City Clipper plows. They are all direct center and light draft. All their steel plows are made of patent soft steel, which costs nearly double as much as common steel. They also use a patent process for chilling iron, which makes it very hard; and also a patent process for tempering steel, which causes it to admit of the finest polish.

Also, the swing-beam sulky plow, which is light draft and adapted to all soils, and is either steel or chilled. Their Western gang plow is made of the same material. Also, a very large variety of corn cultivators, and all the combinations for cultivators.

Also, three varieties of sulky hay rakes, both hand and horse dump. In these rakes the best oil-tempered steel is used, and all good points are adopted. Also, seven styles of harrows. Also, a full line of one-horse and shovel plows. Also, the Bradley mower, which claims simplicity and durability. For smooth fields it has a six-foot cut, is for two horses, and is said to run as light as the average four-foot cut mower. Also, a disc harrow.

Also, a press drill in two kinds, the Clipper and the Havannah. In one of these the spring pressure is on the wheels and runners, and in the other it is on the runners. Also, a variety of one-horse wheat drills, two kinds of five hoes and two kinds of three hoes.

Also, three sizes of hand cider mills, a full line of fodder cutting boxes and corn shellers; hand or power on either of the above three classes.

Also, the Campbell corn drill, with a fertilizer attachment.

Also the Peoria Advance Corn Planters, with check sower attachment and drill attachment, and a new patent disc attachment for covering corn.

Also a variety of buggies, carriages, spring wagons, delivery wagons and farm wagons. This was the largest exhibit on the ground, and simplicity of construction and excellent material characterized the articles.

E. Over, Indianapolis, exhibited the Iron Flexible Harrow. It is adjustable to any width, being composed of two sections. It is a good corn harrow, and folds up for transferring.

Also a Double "A" triple hinge harrow. Either wing of this harrow raises, so as to pass any obstruction. Also a reversible tooth harrow, which is changed from a vertical to a slanting tooth harrow by hitching at either end.

Also a fine hoe one-horse wheat drill. The seed boxes are over the teeth, and the grain drops straight. The weight of the grain is distributed over the whole frame. A patent expander lets the pinion remain washed at all times.

The Empire Drill Co., Shortsville, N. Y., exhibited the Empire Drill. It is a positive force feed, and is carried on a taper axle, and has a sheet-iron conductor.

Gere, Truman, Platt & Co., Oswego, N. Y., exhibited a spring hoe grain drill. The machine is thrown out of gear before the hoes leave the ground. It has the Davis patent hoe shifter, and is positive force feed. Also a fertilizer drill. Also the Acme corn sheller, which will shell every grain off of the smallest or largest ear of corn, and it has a fan cleaner. Also a broadcast seeder, harrow and cultivator combined. Also the Whipple spring tooth harrow and cultivator combined. Also the Whipple spring tooth harrow. Also the Whipple one-horse spring tooth cultivator. Also the Whipple two-horse cultivator. The draft of the horse draws this cultivator to the ground at all times. Also the Whipple riding cultivator. The beam is claimed to be one foot longer than any other, and the teeth are always in line. The teeth are set in share-shape, and cut all the ground.

Hunt & Pray, Indianapolis, Ind., exhibited road plows and a cart. The plows are all of iron, except the shares and mouldboards, which are steel.

The Long & Alstatter Company, Hamilton, O., exhibited the Hamilton cultivator. It has an adjustable arch, either for plows or cultivators, and is a combined riding or walking, tongue or tongueless cultivator.

Also, the Hamilton spring-tooth rake.

The Joliet Check Rower Company, Joliet, Ill., exhibited the Champion check rower. It has a cam movement, and is claimed to be more durable and a quicker drop than any other. It is well made. Also, a general attachment for all check rowers, which has a direct positive movement for the shake bar.

Meal & Bradley, Indianapolis, exhibited the Lida stalk cutter, which has adjustable steel blades. Also, the Weir break plow, which is all steel, and has a double shin. Also, the Star grain drill. It is thrown in gear by a lever, has break back pins, malleable iron clutch tooth, and reversible steel points.

Also, the same with the teeth all in a line, and a device for regulating the depth and for transferring, and two rudder wheels behind.

Also, an eight-hoe drill. It is an under hitch, which relieves the draft from the horses' necks. It has reversible hoes, and pressure on the hoes. It has a reversible seat. Everything is handled from the seat. It is force feed, and there is no change of gear wheels.

Also, a fine tooth cultivator. It has semi-circle cog wheels for adjusting the width, reversible steel points, and break back pins, and a rudder wheel in front for regulating the depth.

Also, the Mishwaha plow, which is light draft, and intended for two or three horses. Any boy can handle it. It turns square corners without leaving the furrow. It is either steel or chilled, right or left handed.

Also, a full line of hand plows and cultivators. Also, the Ball sulky plow and hand plow. It is an all-steel share, revolves on a pivot, does away with a joint in the tongue, and is a universal worker.

Also, a combined cast land side and cast point plow. Also, the Richmond Champion Planter. It has an adjustable seat, which throws the weight of the driver on the runners. It is either rigid or limber tongue, and has the shortest stroke of any planter. Also, the Richmond Check Rower. One set of pinions fit all machines; it has a patent jack, and it transfers the wire in four ways. The wire has a malleable link, and can be opened at any joint.

Also, the Richmond Champion Grain Drill. It has spring hoes, and no break pins, and no chains on the hoes. The seat throws the entire weight off of the horses' necks. The operator can raise any or all the hoes without leaving his seat. The fertilizer attachment applies to either old or new drills. Also, the one-horse champion drill. The hoes can be raised from the ground by a lever, and it has spring hoes. When the hoes are thrown out of the ground, it is out of gear. It spreads easily by a crank.

Also, a one-horse corn drill, with spring hoes and a fertilizer attachment.

Also, the Thomas hay rake. The weight is direct on the axle, and off the horse's neck. This makes it dump easier than any other rake. The teeth are held close to the ground by a coiled spring. It has a cleaver attachment on the roller which has no equal. Also, the same rake, only a self-dump. Also, Dick's feed cutter. The knives are all attached on a fly wheel, which gives it double power. It is either with or without slitters for stalks.

Also, hay tools. The Nellis harpoon. It has steel tines, steel bar, a strong spring, and a malleable head. Also, a double harpoon, which works without any spring. It works with a simple latch. Also, the Nye hay elevator. This instrument is made of malleable iron, is strong and durable. It is simple, and is without springs. Also, knot pulleys. If the rope breaks, it can be tied and used. Also, a reversible hay elevator and carrier, which will run over the latch both ways, un-

loading in either mow without change of carrier. If the rope is twisted it is certain to catch the fork pulley. The rope can be reversed in the carrier without getting up to it. This instrument is of malleable iron material.

Also, the Climax plows. This is a good variety of general purpose plows, with a very thin cutter. Also, Brown's Excelsior corn planter. It has an admirable way of regulating the depth by a combination of the seat with the tongue. The power is applied on the outside of the dial plate. It has no gearage, and has a positive lever motion.

Also, the same planter with a drill attachment. Its distance varies from twelve to twenty inches. It is very simple, having only one set of gears. Also, the same with a check rower, which has a latch in the slot of the fork to prevent a miss; no gear, and all lever motion. It is very positive and durable. Also, Brown's Favorite spring cultivator. The spring will raise the gang to the proper position, and hold it there without hooking up. It has an adjustable handle coupling. Also, a steel-beam cultivator. The beam is made of "I" beam steel. It is extra strong, and is lighter than an ordinary iron beam. Also, the Universal harvest truck, manufactured by the Ashley Wire Company, Joliet, Ill. This claims to be the most complete in use. One man can load alone, and it has the lightest wheel made. Also, the Acme hay ricker and hay raker. The rake is drawn by two horses. The rake is carried by trucks, and rakes a swath twelve and one-half feet wide. The load is brought up against the ricker head and the horses are then taken away and one horse is hitched to the ricker, and the hay is thrown by his power on to the rick. It is claimed that with five men and four horses thirty tons of hay can be ricked in a day. This machine does away with hard labor in hay harvesting.

Also, the Rushford wagon, manufactured by the Winnona Wagon Company, Winnona, Minnesota. By the shape of the skein of this wagon the draft is thrown near the shoulder, and thus the draft is lightened. It is claimed also that the general iron work is superior, and the painting is excellent.

Also, a hay tedder. It is very simple, and it is claimed to be the only one made with a fork. The gear is simple, and the power is direct from the wheel, and it has double braces on the forks.

The Beedle & Kelley Co., Troy, Ohio, exhibited the Troy Planter. A lever regulates the depth of the machine, and by a simple device the tongue is either flexible or rigid. It has a drill attachment, a visible disc, and it easily plants across the end of the field. Also, the Champion Planter, in which the plates revolve outside of the box. A knocker drops into every hole, and insures the corn to leave the plate. It is center coupling. Also, a check sower attachment, which has a positive stroke and positive lock. Also, the Troy Champion Rake. The teeth are raised vertically so as to leave the trash on the ground. The shaft is hinged to the axle, and is a foot dump. It is with or without a lock. Also, the same rake with different style of teeth. The teeth have a three-inch bearing on the axle, and fasten with a cap.

Thomas Meikle & Co., Louisville, Ky., through Solomon Beard of Indianapolis, exhibited a tongueless cultivator. Each horse pulls his half, and very short turns can

be made. It is light and light draft. Double shovel plows can be made out of either side. Also, a tongue cultivator with extension arch. Its width is regulated by a lever. Also, the Mayflower Cultivator, which is expanding, and is intended for gardens and strawberries. Also, the Thomas Meikle Potato Digger. It plows the row out and does not cut or bruise the potatoes. It will run any necessary depth, and it succeeds well. Also, a two-horse general purpose plow. Also, a two-horse stirring plow. Also, a one-horse garden plow, and a double shovel.

The Moline Plow Co., Moline, Ill., exhibited by Wm. J. Wheeler, Eastern Agent, Indianapolis, Ind., exhibited the Flying Dutchman Three-wheeled Sulky Plow. It is so constructed as to completely suspend the plow, which is located between the wheels and in front of the driver, where its work can be fully seen and controlled without effort. The furrow-wheel moves, attached to a swivel plate, the same as a front wagon axle, so it can freely turn at a right angle either way, and it is so adjustable as to completely gauge both the depth and width of the furrow. The swivel pole obviates all neck and side draft. The draft is about the same as a walking plow. Also, the Moline Steel-frame Power-lift Sulky Plow, the features of which are the same as in the plow just described. Also, the Western Walking Cultivator, with self-lifting springs and automatic hitch attachments for gauging the depth of the work, thus accomplishing deep tillage in hard ground independent of the operator. Also, the Little Joker Tongueless Cultivator, which readily stands up alone and is adapted to new ground, and is easily worked by boys or inexperienced persons. Also, the Imperial Combination Riding and Walking Cultivator, which is a successful endeavor at a complete tool for cultivating corn and fallow ground. Whether carrying the operator or not it is without neck draft. Also, the Pearl Six-shovel Riding Cultivator, which carries the operator and is designed to work especially well in heavy or fallow ground.

Also, the Moline Scotch Clipper Plow. It will scour in any soil, and is used in sod and stubble ground. Also, the Empress Combination Steel and Chilled Plows, adopted to clay and upland soils.

Also, the Moline rakes, harrows, and scrapers.

H. P. Deuscher, Hamilton, O., exhibited a corn drill. No furrowing is required, and it will plant any kind of grain down to broom-corn seed. It is adjusted at three places, can be thrown out of gear while in motion, and has a light open wheel.

Also, a two-horse planter. In dry weather it follows the rows and in wet weather it runs inside of the rows. The cover shoves the clods off and covers the corn with moist earth. It is wide in the heel, and also has an adjustable covering arrangement. Both seats are adjustable, and the driver's hands are entirely free for driving. It has a pressure for hard ground. The check rower is very simple, and it is easily changed to drop by hand.

Also, the Soil Pulverizer, which is made of section wheels. It claims great advantage in pulverizing clods. It also packs the ground. It is claimed that after using it the ground will not bake. It is light and very durable.

The Evans & Foss Manufacturing Company, Springfield, O., exhibited a corn planter, which has a very simple drop—a double-acting lever for hand and foot. It is remarkable on account of the absence of springs and triggers. It is complete, with drill and check rower attachments. This firm exhibited three planters, all gotten up in good order.

The Sterling Manufacturing Company, Sterling, Ill., exhibited the Sterling potato digger. It has a broad share which runs under the potatoes and throws them out without bruising them, and it has bars to sift the dirt out.

Also, the Sterling hay tedder. It has eight forks, which are flexible. It has a superior spring arrangement. It is very simple, is positive in and out of gear. The bearings are all turned and the boxes all bored, and it is very light.

Also, the Sterling Revolving Rake. It has a single lever, and acts as a self-dump.

The Wm. Anson Wood M. and R. Co., Youngstown, O., exhibited a hay rake with a nine-inch hub, with a friction band connected with a foot lever. It locks by a treadle, and a sliding block changes the angle of the teeth. It is very simple.

The Elkhart Iron Works, Elkhart, Ind., exhibited the Elkhart Sulky Plow Attachment. It is light draft, turns square corners without backing, the land-wheel is never in the furrow, and the furrow-wheel never gets out of the furrow in turning corners. It claims greater variety of work and less labor on the team than any other. A lock puts direct pressure on the beam, if necessary, and a loose connection takes the friction off the bottom of the plow. Its construction is simple, and it is easily handled.

The Economist Plow Co., South Bend, Ind., exhibited the Economist Hand Plow. It is light draft, easily handled, and the manufacturers guarantee a saving of two-thirds the cost of running any other. It has a reversible point, and is made in both chilled and steel, and the combinations are all interchangeable. Also, the Economist Sulky Plow. It is the same as the above, with reversible points and shares. It also has a revolving land-side, rolling the friction of the land-side on a wheel, it turns corners without touching a lever. It has a flexible frame for rough surfaces, as ridges and hills. It is of light construction, for it is all of steel and malleable iron. It has an absolutely straight hitch for three horses, and is entirely free from side draft. Also, the Economist general purpose hand-plow, in different combinations and sizes.

The J. I. Case Plow Company, Racine, Wis., exhibited a center-draft hand steel plow. The beam sets in the center and divides the load, reducing the friction on the land side and the bottom. It is easy running. Also, a full line of steel plows. Also a full line of chilled plows. Also, the Jay Eye See sulky plow. This is claimed to be the king of the field. It is made entirely of steel, and, having only one lever, it is claimed to be the simplest, lightest in weight, and most easily handled of any other sulky in use. The colter attaches directly to the axle by positive and adjustable fastening. Also, an adjustable harrow, the teeth of which are adjusted by means of a lever to

four different angles without stopping the team, which adapts it to hard or soft ground. The bars run crosswise. Also, the tongue and tongueless cultivator. It has an independent hitch, each horse pulling his own bar—an adjustable arch, which is automatic when the cultivator is used tongueless. Also, a riding cultivator, in which a foot treadle raises and lowers the beams to clean the cultivator or to go over obstructions. The wheel and axle are either steel or wood.

Kendrick, Robinson & Robinson, Indianapolis, Ind., exhibited a soil pulverizer. It is a combination of a roller, a crusher and a harrow. By using this implement the seed can be planted soon after the soil is prepared. It will cultivate wheat and grass in the spring and does not tear it out of the ground. It will cultivate sod ground without tearing up the sod. It will harrow and roll corn at one working. It is made of wheels and in sections, and can harrow ground from one to five inches deep.

The Oliver Plow Works, South Bend, Ind., exhibited, by H. B. Dickson, Indianapolis, Ind., the Casaday sulky plow. The furrow wheel operates at an angle to counteract the friction of the land side. Also, a full line of general purpose plows, both steel and chilled. It is claimed that the material of these plows is three times as hard as cast iron, and is susceptible of a very high polish. The plows were made in excellent style and the display was very elegant. Some of the work was inlaid with pearl. A model plow was exhibited which was on exhibition at the Centennial Exposition, which is made of nickel and is triple plated with gold.

The Albion Manufacturing Company, Albion, Mich., exhibited a sulky spring tooth harrow and seeder combined. It sows grain broadcast and harrows it in at the same time. The sulky harrow is detachable. These instruments are made so they can be sold cheap. Also, the sulky corn spring-tooth cultivator. It can be made a fallow machine by an attachment.

The Eau Claire Chilled Plow Company, Eau Claire, Wisconsin, exhibited the Eau Claire plow. There were seven plows in the exhibit. It has a patent curved standard, which prevents choking in clover or weeds. There is the same curve in the jointer. The iron used is McIntire's crystalized iron, and it gives a superior quality for scouring.

The Mechanicsburg Machine Company, Mechanicsburg, O., exhibited the Baker drill. It has a tubular iron frame, which gives strength and durability. It has a spring hoe pressure, which regulates the depth by a lever, and also a zig-zag lever. Also, the same with a share-shaped hoe to raise the ground, and the grain is delivered underneath.

The Indianapolis Plow Company, Indianapolis, Ind., exhibited the Indianapolis cultivator. The shovels are always in line of the draft, and it has a spring lift which regulates the depth.

The Kimbertin Manufacturing Company, Indianapolis, Ind., exhibited the Iron Duke harrow. It has a wrought iron frame made of wrought and malleable iron, forty-eight steel teeth. It is durable, and the frame is adapted for pulverizing.

The Remington Agricultural Company, Ilion, N. Y., exhibited the New Remington clipper plow. It is made of steel and carbon metal. It has twelve plows, and runs light. It has a steel jointer.

J. E. Sickler, Indianapolis, Ind., exhibited the Sickler sulky plow. Both wheels are placed in the furrows, and they run on smooth, level and hard ground. It always lays a smooth furrow. Its construction is very simple. It is so constructed that the point of the plow enters the ground first, and the plow slides out of the ground, and it runs light.

The Odell Check-Rower Company, Fairbury, Ill., exhibited a check-rower. It has but seven points of friction, being very simple, is easily handled: has no side draft, and is adjustable to all planters.

The Farmers' Friend Manufacturing Company, Dayton, O., exhibited the New Monarch drill. It is a power lift, the horses raising the hoes, and the power is shifted by a foot treadle.

D. E. McSherry & Co., Dayton, O., exhibited a two-horse drill. It is an independent feed, by means of a spiral feed wheel; is easily adjusted and feeds easy. Also, a fertilizer drill which is a force feed. Also, a five-hoe drill and a three-hoe break pin drill. Also, the McSherry harrow, made under the LaDow patent. It is made of revolving discs. It has a continuous bearing, which secures durability. The angle of the sections is regulated by a lever.

Chambord Bros., Fayetteville, O., exhibited a tile ditching shovel. The shovel is adjustable to the handle, and is well braced. It is elliptical in form.

Wm. Dungan, Rockland, Ind., exhibited the American bag holder. It holds the bag open with additional width by means of a hopper, keeps it straight while filling; the weight of the grain is on the bottom of the machine, which keeps it steady. It is easily adjusted to the length of the bag. It imitates a hand hold, but it is better. It is now exhibited with an improvement, which relieves the bag instantly. This is a simple, cheap, but very useful device, and has for several years been in successful operation.

II

LAUNDRY AND DAIRY MACHINES AND IMPLEMENTS, STOVES AND OTHER DOMESTIC APPLIANCES.

Meal & Bradley, Indianapolis, Ind., exhibited the bent-wood churn, which has a simple dash. It will churn quick and is easily cleaned. Also, the Zimmerman evaporator and baker, which is an excellent apparatus.

The Victor Steam Washing Company, Bluffton, Ind., exhibited the Victor washer. It washes without any hard labor or any wear and tear of the clothing, the work being done by steam. The machine is strongly made and durable.

M. T. Rice, Brightwood, Ind., exhibited the Sweepstakes washer and wringer. The machine is shut up tight, and the steam loosens the dirt, and there is very little wear on the clothing.

The Vermont Farm Machine Co., Bellows Falls, Vt., exhibited the Eureka butter worker. It has a plain smooth roller. It gives the butter even pressure throughout, without grinding it or injuring the grain. It works rapidly and easily.

Also, the Davis swing churn. It churns by concussion without the use of paddles or dashes, which makes better butter and more of it easier than by dashes. It has ventilation without stopping, strains the buttermilk as it is drawn out and churns quickly. Also, the Champion creamery, which has round cans, easily washed, and the covers are ventilated. The bottoms of the cans are pointed, so as to run the sediment out with the skim milk. It also has nickel-plated faucets, and a perfect cream line at the bottoms of the cans. The refrigerator is in the lower part of the creamer, and it has inlet and outlet pipes for the water. It has double walls and a dead-air space, and a thermometer indicating the temperature of the water in the creamer. Also, a copper evaporator for liquids. The liquid is introduced through a regulator in the front end, and comes out syrup or jelly at the other end. It has crimps in the bottom, which increase the heating surface fifty per cent.

H. F. Bachelor & Son, Rock Falls, Ill., exhibited the barrel churn, without dash, no rim on the inside, and is easily cleaned. It is made of hard wood, has the most secure corners, cork packing, held on by thumb-screws, and the butter can be turned out. Also, a butter color, manufactured by Strickler Bros. & Co., Sterling, Ill. This liquid for coloring butter claims to be the most natural in use, and it will keep in any climate.

Cornish, Curtis & Greene, Fort Atkinson, Wis., exhibited the Rectangle Churn. It consists of a box hung by diagonally opposite corners. It has no dash board, revolves easily, and gives the cream six concussions to each revolution. This churn is very popular.

F. B. Fargo & Co., Lake Mills, Wis., exhibited butter ladles, dairy thermometers, milk testers, and butter coloring. This coloring is claimed to be strong, free from rancidity, and extensively used.

Johanson & Bennett, Indianapolis, Ind., exhibited the Missouri Steam Washer. The garments are not rubbed, but washed by steam. It is simple and is warranted.

Perry & Co., Albany, N. Y., exhibited the Argand and Century coal stoves. They claim cleanliness and economy and have a full combination of nickel and tile ornaments. Also, the Happy Home and Brighton ranges. Also, an assortment of stoves for wood burning. Also, the Lyman gasoline stove. Its generating principle is simple, and it can be lighted as a gas jet.

Wilnot, Cussell & Co., Rochester, N. Y., through R. H. Jones, Indianapolis, Ind., exhibited the Arnold Automatic Cookery. It consists of a tin vessel for steaming vegetables and meats. It is very complete; it is cheap and greatly improves the quality of some articles.

Pursell & Medsker, Indianapolis, Ind., exhibited the Splendid base heater in square and in round style. The top gas escapes; it has a sectional fire pot and the foul air is drawn off. Also, the Art Jewel. This stove has a round fire pot and is very beautiful. Also, the Banner Franklin. This is an open-front stove and the heat comes out on top. Also, the Jewel Star, which is a soft coal burner. Also, the Venus and Estate, both open grate stoves. Also, the Jewel base heater. This is a soft coal burner with a radiating apparatus inside and is very complete.

Corbin & Wall, Indianapolis, Ind., exhibited the Patent ironing table. The board attaches to a table; it is adjustable to any table, and it has a solid fastening by means of a simple device. It is padded and covered ready for use.

Seward & Co., Bloomington, Ind., exhibited a sorghum evaporator. It has a self-skimming pan, and the metal is extra heavy.

H. T. Conde, Indianapolis, Ind., exhibited the Favorite washer. It is on the washboard principle, and is easily operated.

Shepley Frey, Aton, Ind., exhibited the Dairy Queen churn. It works by a treadle, and is tin lined.

Also, the Acme creamer, with butter cooler attachment. It uses no ice, the butter cooler being entirely surrounded by water except on top. The milk can be kept in the coldest weather without freezing. It is a top skim, and therefore no sediment is left in the cream, and it has two sets of cones or lids. This is an admirable apparatus.

The Flint Cabinet Creamery Company, Flint, Mich., exhibited Wilson's Cabinet Creamery. It has a narrow can with a large cooling surface, and a tin cover which retains the condensed steam and prevents it from running back into the cream. The water is introduced under the can, and rises, stopping the bottom to the water tank. It is cleaned without removing the cans, and the cans are skimmed without removing them from the tank. Also, Wilson's Barrel churn. The pressure of the cover is by a screw and lever, for which reason the cask will last longer. Also, the New strainer, which strains without cloth or seive, or with both.

G. M. Custer, Terre Haute, Ind., exhibited Custer's farm gate. It is simple, cheap and durable. It is operated with or without levers. Without levers it can be hung on the same posts that hold plank or wire. Its bearing is straight down, and it can not swag. It is never obstructed by snow or ice, and it has a roller between every two slats. It is thoroughly braced, and is easily converted into a double-strength gate. It can be made any length or height.

The U. S. Encaustic Tile Company, Indianapolis, Ind., exhibited a very fine display of encaustic majolica tile.

J. H. Clark & Co., Indianapolis, Ind., exhibited a physician's operating chair and reclining chairs. The operating chair is complete, and is for general purposes.

Wm. Terrell, Indianapolis, Ind., exhibited a line of artistic wood and slate mantels, including eight mantels, some of which were slate and some carved wood, all of them being very fine. Also, tile floors and brass goods.

III.

CARRIAGES AND BUGGIES.

The Chicago Metal Felloe Company, Chicago, Ill., exhibited the Tubular Wrought Iron Felloe. This felloe is hollow, and of the best wrought iron. Into this tube seasoned hickory is forced, then the tube is bent into the proper shape. The spoke is set in, so as to get the whole strength of the wood. Five times the strength of an ordinary tire is claimed for this felloe; it won't wear in the frozen ground or on street-car tracks, as the rim of an ordinary wheel wears, and there is no resetting of tire. The same company also exhibited a banded hub.

Helfrich & Dunley, Indianapolis, Ind., exhibited a line of carriages, wagons, etc., among which was a spring wagon which does away with a king-bolt and a fifth wheel. It also runs over obstacles without binding the gearing, on account of a joint in the coupling-pole. Also, the wheels work up and down without tilting the bed. Also, the Dalton Shaft-Coupling. It has a press-anti-rattler, which is out of the way, and a catch holds it while the shaft is placed in position. The pin is locked without a tap. Also, a contrivance for adjusting the seat and locking it. Also, a hind spring, hung on a hinge in such a way as to eliminate the strain. Also, a line of sporting wagons, noted for strength; one of them hangs very low.

The Connersville Buggy Company, Connersville, Ind., exhibited a road wagon competent to stand wear and tear. It has a perfect carriage gearing under it. It is very easy to get in and out of it, and is very convenient for business purposes. Also, a sewing-machine wagon, the side-bar of which extends in the rear of the axle and supports the cross spring.

The Middletown Buggy Company, Middletown, Ohio, exhibited three nice buggies in different styles.

Charles H. Black, Indianapolis, Ind., exhibited nine buggies and carriages. This was the largest display of goods manufactured in the State. Also, the jagger wagon, one or two seats, easily adjustable. Also, the Buck wagon, a side-bar, very light and convenient. Among the buggies were two very fine park phaetons, fine driving wagons and barouches.

Irvin Robbins & Co., Indianapolis, Ind., exhibited one platform panel rockaway, with shifting front for four passengers. It has wrought iron gearing, French glass, and rich upholstery. One half-platform curtain rockaway. Two extension top barouches, one of which was on three springs, and the other on full platform gearing. One ladies' Victoria phaeton, very roomy, richly upholstered, and low wheels.

The Columbus Buggy Co., Columbus, O., exhibited three phaetons, one with combination spring, one with platform spring, and one with end springs.

Also, one side-bar buggy, very fine.

Also, a surry and a carriage and a park wagon for pleasure. Extra qualities are claimed, and the work of this firm is extensively shipped to Europe and other foreign countries.

The David Bradley Manufacturing Co., Indianapolis, Ind., exhibited ten jobs, including a variety of springs, among which was the Mulholland spring, which claims all the advantages of a side-bar, with its disadvantages overcome. All the wheels are dipped in boiling oil. Also, the Stratton jump-seat, which is adjustable to one or two seats, and is easily changed. Also, a surry with the Mulholland spring.

Also, a platform spring phaeton.

Respectfully submitted by the committee.

SAMUEL J. TOMLINSON.

REPORT OF THE COMMITTEE

ON THE SPECIAL MERITS OF

UNPREMIUMED ARTICLES ENTERED IN BOOK F,

EXHIBITED AT THE

INDIANA STATE FAIR,

SEPTEMBER, 1884.

SEPARATORS.

The Northwestern Manufacturing & Car Co., Stillwater, Minnesota, exhibit one 10-horse separator, "Minnesota Chief." The leading characteristics of this machine are general simplicity of construction, and adaptability to threshing all kinds of grain and seeds ready for market. This machine has a separating table, or rack, reaching the entire length and width of the machine. It is constructed of light slats running crosswise in the machine, overlapping each other, with openings between, so that a complete separation of the grain and chaff from the straw is secured. The separating table is pivoted to reciprocating crank arms, which imparts to the table an upward and backward movement, thus tossing and agitating the straw in such a manner as secures a very complete separation from the grain. The capacity of this machine for rapid work is only limited by the amount of power and the amount of grain that can be handled by the men attending it. By a change of sieves it is adapted to threshing flax and timothy seed. It has, also, a clover hulling attachment.

Robinson & Co., Richmond, Indiana, exhibit one of their ten horse *Bonanza Separators*. This machine uses riddles of large surface, the width of which is in excess of the length of the cylinder. The straw is carried from the machine by pickers extending from the back of the cylinder to the front of the machine, equalizing the straw as it passes away from the machine. It has a patent device for preventing the heating of the cylinder journals, and an arrangement for putting on the main belt without unlacing it. The throat is peculiarly constructed—affording the cylinder an excellent “suck,” making the machine easy to feed, and quite free from dust. It has patent pickers which work into the straw from above, and to all appearances do the work in an admirable manner. It has large riddle surface, and extended tailing spout, to which any grain that may be carried or blown over the stacker is returned and carried up by the elevator. This machine has clover huller attachment. It requires but a few moments to change for hulling clover, which is done by regulating the concave adjuster without stopping the machine. The machine is of low speed, and remains steady while in motion without brace or prop.

Eagle Machine Works, Indianapolis, Indiana, has one of their Oscillator Separators on exhibition. By its construction it is impossible to throw grain from cylinder back into the straw. Extended riddles and internal agitators; runs with one belt. Double cylinder used for hulling clover seed, as well as all kinds of grain in plain threshing. A little back of the cylinder is arranged a revolving deflector, throwing the straw and grain from the cylinder onto the oscillating floor, making a draft which takes the dust from the feeder. This oscillating floor is divided into four sections, each moved by an ingenious contrivance of cranks, giving them a double motion to which is added the aid of carrying or lifting fingers, thus assuring the passage of the straw from the machine, and a complete separation from the grain. Any amount of straw, either dry or damp, that may pass through the cylinder can not possibly choke or obstruct the oscillator, and will always be separated from the grain.

The same firm exhibited one of their Victor grain threshers. This machine is strong, durable, and of large capacity, and on general principles a good machine.

Nichols, Shepherd & Co., Battle Creek, Mich., exhibited one of their Vibrator separators. This machine has two vibrators, one over the other, hung on suspension rods, and have a forward and backward motion in opposite directions. The upper vibrator allows the grain to pass through transverse slats onto the lower one. The lower shaker extends from under the concave to the riddles, and has a tight floor, over which the grain passes to the riddles. The back end of this floor is perforated so that the grain is equally distributed over the riddles. Over the upper shaker are six sets of fingers, which are inserted in a transverse bar which is connected by a leather strap to the frame work. The motion of the shaker gives an up and down motion to the fingers. The grain on leaving the cylinder passes to a beater, which throws it up on the upper shaker, from whence it is taken up by the fingers and so thoroughly shaken as to completely separate the grain from the straw. This machine has clover huller attachment ranking well up among machines of that class.

The Case & Willard Manufacturing Company, of Battle Creek, Mich., exhibited one of their Advance separators. This machine has some points worthy of especial note. It embraces a combination of principles somewhat different from any other machine on exhibition at the Indiana State Fair this year. The cylinder is about one foot nearer the ground than in the average of threshers, thus affording the convenience of lower tables. The cylinder has two center supports for the bars. The heads are solid. The shaft is of steel, one and three-fourths inches in diameter. The teeth are made of steel. The sides of the cylinder frame are of iron. The separator being wider than the length of cylinder enables all pulleys for belts on the cylinder shaft to be on one end. The pulleys for the main belt to the engine run inside of the yoke and box. This yoke is bolted to the posts. The belts which drive the separator are outside of the yoke and box and close to the side of the machine. This novel arrangement of the belts, pulling in opposite directions, saves a large amount of friction on the bearings and boxes of the cylinder shaft. By a simple device both ends of the concave are raised and lowered at the same time by one motion. This machine has folding tables, which are not removed when moving the machine from place to place. The cylinder teeth, instead of being at right angles with bar, are bent at the shoulder so that they incline backward, thus tending, it is claimed, to feed easily without bunching or choking. The machine is strong, steady and durable, possessing a wonderful capacity for rapid and efficient work.

The Springfield Engine and Thresher Co., of Springfield, O., exhibit one of their "New Springfield" separators. This is a beautiful machine of superior symmetry and workmanship. While upon general principles it has justly merited a place among first-class threshers, it has some points worthy of special mention. It has straw rakes of positive motion. The rakes are thrown down with the same speed as they are thrown up, striking the straw again before it reaches the pan. One-half the straw has an upward motion while one-half has a downward motion, by which means the grain is thoroughly separated from the straw. No cog wheels or pinions are used on the machine. The concave adjuster is positive both ways.

Roberts & Thorpe, of Three Rivers, Mich., by C. E. Merrifield, Indianapolis, Ind., exhibit one of their "Invincible" threshers. This machine is of extra length and width, affording a broad surface for separating and cleaning. It is claimed for the "Invincible" that it is light running, easily operated and very durable. The beater is placed a little in rear of the cylinder and so near to it that the straw is closely combed from it—leaving little chance for straw to choke or wind around the cylinder. The alternate motion of sheet iron shaking pans, operated by double pitmans, not only produce a counterbalance, but hurries the separated grain rearward towards the shoe. This separator is built diverging from the cylinder to the discharge end, so that by thus gradually widening the separator a greatly increased separating capacity is given. The cylinder is constructed with heavy cast heads and wrought iron bars, twelve in number. The concave is made in three sections and is adjustable from front or rear, and is perforated, the holes distributed in such a manner that a large amount of grain passes through and is separated at once.

The Guiser Manufacturing Co., of Waynesboro, Pa., exhibit one of their separators, "The Guiser." This machine has been on the market for a quarter of a century, but from time to time many valuable improvements have been added, nearly all of which are patented and belong exclusively to this company. The "Guiser" separator is put together without mortices or tenons, being lapped and fastened with bolts. When in motion it remains steady without brace or blocks. The chief points made on this machine are that it is strong and adapted to all kinds of threshing.

Gar, Scott & Co., Richmond, Ind., exhibit one of their New Peerless threshers. This is a handsomely proportioned and well constructed machine, with some new features in separating and cleaning. A reserve beater behind the cylinder lifts the straw upward instead of downward after it has passed the cylinder, leaving the grain an unobstructed passage to the conveyor and riddles without once becoming intermingled with the straw at all. Two distinct separations, and using a new combined end-shake chaff riddle, outside shake shoe and cleaning riddle. The velocity of the straw is checked by the straw lifter, drawn upward and then thrown downward and spread evenly upon the first separating rack, from whence it is carried upward again in a thin sheet to the second separating rack—all the time having a vigorous vibrating motion. It has a secondary separation above the riddles by which all the trash and short straws are carried overboard, reducing the labor for the fan, riddles and elevator very greatly. All parts of the Peerless are driven by four belts. It has a clover-huller attachment, and threshes timothy, orchard grass, etc. It is claimed for this machine that it is wider in proportion to length of cylinder than any other machine made. The machine is strongly put together, well braced, and bespeaks great durability.

Russell & Co., Massilon, O., exhibit one of their New Massilon threshers. This is an old machine which its manufacturers have not allowed to fossilize or fall out of the line of progress, but have each year added some new and valuable improvements. It has an ingenious device for separating grain from the straw. As soon as the straw and grain pass the cylinder they meet a sudden check at the first beater. This stops the mass for an instant, then pounds and beats the straw until it is placed on the notched strips of the table, and moves on, first surrendering the greater portion of the grain it has protected. The second beater, running at a little less speed than the first, in its turn pounds and whips the straw, compelling it to yield another quota of grain, while the "kickers," an original device of this company, "kicks up" such a commotion as to separate all grain from the straw that perchance may have escaped separation. The cleaning riddles are made of wire. This machine is simple and neat, very free from what may be styled "trappy devices."

J. I. Case, Racine, Mich., exhibits one of their Agitator threshers. It is claimed for the Agitator, in a general way, that it is a good and reliable thresher, and, so far as the committee was enabled to determine, its claims are well founded. No especial points of merit are advanced by the manufacturer.

Frick & Co., Waynesboro, Pa., exhibit their Vibrator thresher. The good qualities of this machine are of a general character. Its owners claim for it fast and clean work, simplicity and durability. No detailed points of special merit are put forward. The owners of this machine seem to direct special attention to the achievements of their machine rather than to its *modus operandi*.

HARVEST MACHINERY.

The Minneapolis Harvester Works, of Minneapolis, Minn., exhibit one of their Minneapolis Twine Binders. This binder is very symmetrical in its proportions, and strongly put together, being ironed on the corners. The master wheel is very strong, has a wide face with malleable iron lugs, laid diagonally across the tire, affording great traction power, and tending to prevent the machine from jolting when on hard ground. The gearing is simple and strong, securely fastened in an iron tie frame. The bearings are long, and the oiling facilities such that the full length of the shafts can be lubricated. The reel is run by a detachable chain, and always at the same tension, whatever the position of the reel. The reel has a broad scope vertically or horizontally, and is managed by one lever. The cutter-bar is made of iron, running the entire length of the platform. The guards are fastened to the bar in a way that the machine will cut within $2\frac{1}{2}$ inches of the ground. The grain wheel is of iron, cast in one piece, and runs in an iron sleeve. The back sill is of one piece. The driver can change the height of cut without leaving his seat, and while the machine is in motion, by means of a lever at his side. The adjustable features of the knotter are such that lost motion can be taken up without replacing the whole knotter. The Minneapolis uses the double packer trip.

D. M. Osborne & Co., Auburn, N. Y., exhibit one of their Osborne No. 14 Twine Binders, which is an improvement over the Osborne No. 11, used in the harvests of 1883 and 1884. The special points of merit claimed for this machine are lightness of draft, easy management, and durability. The Osborne Binder has been so long before the grain-growers of our country that any description of its general structure would be superfluous and a waste of time and space.

The same company also exhibit four different styles of independent mowers, and one independent self-rake reaper.

Walter A. Wood Mowing and Reaping Machine Company, of Hoosac Falls, N. Y., exhibit one Wood's Binder. This machine has no side draft, is light running, well balanced, no weight on horses' necks, is easily controlled, all levers convenient to driver; has a light, strong reel, which stops turning when machine is out of gear; has malleable iron guards with steel leger plates; guards secured to iron cutter-bar with bolts instead of rivets. The sickle is driven from the end. The gear for the drive-wheel is on the outside of the binder attachment. All machinery is in sight above the table. The packers are over the grain, and stop while the bundle is being bound. The discharge arms lift up, coming down behind the bundle, and effectually discharge it. There is attached to this machine a bundle-carrier, that places the bundles in winrows.

William Deering & Co., of Chicago, Ill., exhibit one of their Junior Deering Harvesters and Binders. This machine claims special merit for lightness of draft, easy adjustment, and being well adapted to handling all kinds and conditions of grain.

By the same is exhibited a Deering Giant Harvester. This is a large, strong binder; no especial points of merit offered.

The Plano Manufacturing Co., of Plano, Ill., have on exhibition one of their Plano Harvesters and Binders. The points of special merit attaching to the Plano are light draft, no side draft, tight binding, gearing on outside of master wheel, and the reel effectively handled by one lever.

George Esterly & Son, of White Water, Mich., have on exhibit one Esterly Self-Binder. The representatives of this machine are quite modest in their claims of superiority over all other machines. Its leading points of merit are lightness of draft, a good balance, and simplicity of binder. The Esterly is a beautiful machine, strongly built, with unique and simple machinery, having all the essential marks of a good general purpose self-binder.

The Peerless Reaper Co., of Canton, Ohio, exhibit a Peerless Reaper with enclosed gearing, Ball, Pitman & Johnson rake.

Hoover & Gambol, of Miamisburg, Ohio, exhibit one combined table rake and mower, the Junior-Senior. This machine has strong merits in its ease of management and lightness of draft.

By the same, one dropper and mower combined. The strong point of this machine is its being well adapted to uneven ground.

By the same, harvester and binder, Excelsior No. 3. This machine is easily manipulated, and so constructed that all improvements can be readily attached to old machines as well as new. It has a bundle-sizer and bundle-gatherer.

The Dennett Harvesting Machine Company, Milwaukee, Wisconsin, Henry F. Ward, General Agent, Indianapolis, Ind., have on exhibition one Dennett harvester and twine binder. This machine exhibits several points worthy of special note. By its simplicity of structure there is a saving of many pieces of machinery. The cutter bar is made by bolting a flat and angle iron bar together, combining strength and durability. The construction of the cutter bar enables the operator to run the sickle very close to the ground. The guards are made of malleable iron, and on the face of the guard, where the sickle plays back and forth, there is a steel leger plate riveted. The edges of these plates are ground sharp so that when the sickle is put in motion it acts like a pair of shears. The guards are bolted to the cutter bar, and one can be taken off and another put in its place with little delay or trouble. The sickle is raised or lowered by one lever, by the driver, without stopping the motion of the machine. It will cut stubble from four to twenty-two inches in height. The reel is large, and driven by a double sprocket wheel, giving it a fast or slow motion, as speed of horses or condition of the grain may require. The reel has a vertical and horizontal reciprocating motion, each independent of the other, and can easily be put into any position by the use of one lever under control of the driver. The master wheel is large and broad. A cast iron sleeve runs through both nuts, so as to prevent binding on the shaft or axle.

Aultman, Miller & Co., Akron, O., exhibit their Buckeye Down Binder. This binder is low, narrow and light, and easily passed through an ordinary farm gate. The raising and lowering of the machine is effected by means of a hand wheel directly in front of the driver, and can be accomplished without stopping the team. The driver has within easy reach the gear lever, for throwing the entire mechanism in and out of gear; the tilting lever, for dropping the points of the guards; the reel lever, for moving the reel to any desired position; the trip adjuster, for regulating the size of bundles, and the foot lever, enabling the driver to bind the sheaf at any moment. The driver can perform any or all of the above operations without leaving his seat or stopping his team. The binder is automatic and has an adjustable butter. The Buckeye Down Binder, it is claimed, is more especially adapted to small farms and hilly land. It is well suited for cutting short wheat.

By the same: One Buckeye Cord Binder. As the cut grain is discharged from the elevator of the harvester it is taken by two arms (driven by cranks) called packers. These packers gather the straw into a bundle, which, when it reaches the desired size, presses against a trigger with sufficient force to release a catch and throw the tying apparatus into gear. The arms from both sides at once close in upon the bundle of straw, compressing it tightly, so that at the moment of tying there is little tension on the string. By adjusting a set screw the binder can be set to bind a bundle of any desired size. The tension can be so altered as to bind as tightly as may be wished. When the binder has been set to any desired tension, the bundles will be uniform in size and bound alike tightly.

The Johnson Harvester Co., Batavia, N. Y., exhibit one of their Johnson harvesters. This machine can be easily run by two horses. Has improved knotter for 1885; is dispensing with plunger bolt, which disposes with 21 pieces formerly used, and doing the same work with 3 pieces.

Wm. Anson Wood, of Youngstown, O., exhibits one self-rake reaper. The rake is run by worm gear. The pitman is counter-balanced; is run by eccentric, with 4 pieces of gearing. One lever throws all out of gear by one motion.

By the same, is exhibited one S. D. Locker's binder. This is a light machine, with a very simple binder. Can cut from 2 inches to 14 inches in height, and 5½ feet in width, with a 6-foot cutter bar. The elevator is open in the rear, thus preventing obstructions.

The Russell Harvesting Machine Co., Polo, Ill., and Indianapolis, Ind., exhibit one of their Russell self-binders. This machine uses a double steel cutter bar, and in the binder uses an under compressor, thereby dispensing with ten parts formerly used. The weight is 1,140 pounds.

The St. Paul Harvester Co., St. Paul, Minn., exhibit one of their St. Paul binders. The reel is supported at both ends. Has sloping elevator, steep deck; discharges the bundles easily, which it is claimed absolutely prevents the binder from choking or clogging. Has short hitch, shifting binder, and does good work in all kinds of grain.

The Toledo Mower and Reaper Company, Toledo, O., exhibited their Toledo platform twine binders. No weight on horses' necks; loose tongue; grain controlled by a rake instead of reel; bundles parted before being tied, which parting continues until bundle is delivered on the ground. Registers 325 pounds draft while at work in the field.

The McCormick Manufacturing Company, Chicago, Ill., exhibited one of their McCormick steel binders. The metal parts of this machine are all made of either steel or malleable iron. This machine is light, neat, compact and attractive. Sloping elevator; adjustable reel. All agents keep full stock of repairs. The binding mechanism of this machine is reliable and simple—cuts off the twine close to the bundle, making a very durable knot. The special features of this machine sums up as follows: Economy in use of twine; security of the knot; certainty of binding every sheaf; ability to cut as high or low as may be desired; even balance; lightness of draft; durability, and consequent freedom from liability to breakage.

By the same firm, New Dropper. All lost motion can be taken up at will. Reel driven by cog and tumbling shaft.

By the same, the Deering reaper. Tread extra wide. Rake under easy control of operator. No side draft. Weight 700 pounds.

MOWERS.

The Eureka Mower Company, Utica, N. Y., exhibited one of their Eureka mowers. Drive wheel of extra size. Direct draft, does away with double gear, pitman at right angles with knife. Always in line. Draft of a six-foot mower as light as of an ordinary four-foot cut. Grass not tramped.

Walter A. Wood Mowing and Reaping Machine Company, Hoosac Falls, N. Y., exhibit one of their Enclosed Gear Mowers. Very high wheels; long axle; cutter-bar carried on wheels; the bearings are easily removed and renewed; draft direct from horses to mower frame; no weight on horses' necks when at work; bolts secured with forked nuts and spring keys.

William Deering & Co., of Chicago, Ill., exhibit one of their Deering Giant Mowers. Strength, durability, ease of adjustment and lightness of draft embrace its strongest points of merit.

By the same, one Deering Light Mower. This machine is very light, easily adjusted, with either rigid or flexible bar; cuts very close to the ground without necessary obstruction. It has large cutting surface to the sickle. The Deering Light Mower is a close, clean cutter.

The Johnston Harvester Company, Batavia, N. Y., exhibit one of their Dennett Light Iron Mowers. All metal parts are made of either steel or malleable iron; double geared, moving driving shaft at each end; no crank shaft; pitman is adjustable in length, so that all wear can be taken up and sections made to center on the guards.

The Curtis Manufacturing Company, Albion, N. Y., exhibit their *New Home Mower*. Front cut, with floating draw-bar, which passes in and out of holes without cramping the knife, and with same ease as rear-cut mower; free from pushing, bars extending from main frame to wheel of machine tending to lift the trunk from the ground in hard cutting.

The Toledo Platform Twine Binder Manufacturing Company, Toledo, Ohio, exhibit a *Toledo Mower*. A foot-lever raises the cutter-bar while turning the machine at will of the driver. No weight on horses' necks; every box a babbit; carried on two forty-inch wheels; flexible bar; compensating and adjustable pitman.

The McCormick Manufacturing Company, Chicago, Ill., exhibit one of their *McCormick No. 2 Mowers*. The knife receives power from both wheels, and cuts squarely on any turn; high wheels and broad frame; pitman connects with knife-head without bolts; center draft; doubletree so attached as to remove all neck weight; floating cutter-bar; guards are pointed up while in motion, and lowers or raises the cutter-bar; pitman protected by screen.

The Plano Manufacturing Company, of Plano, Illinois, exhibit their *New Plano Mower*. This machine has some strong points of special merit. It adjusts itself readily to uneven ground. The cutter bar is easily folded up, and carries on mower axle. It is light draft.

CLOVER HULLERS.

The Newark Machine Company, Newark, Ohio, exhibits a *Victor Double Huller Clover Machine*. A double huller, both cylinders are hulling cylinders. Teeth corrugated or roughened in both cylinders and concaves. The separation peculiar alone to the Victor consists of toothed zentel bars secured by crank shafts at each end, performing at one and same operation the carrying out of straw, and separation of bolls and seed, and carrying unhulled balls back to the second or hulling cylinder. From the second cylinder the chaff and seed is thrown out direct into the sieves where the seed is partially cleaned, and then deposited in a seed elevator on the outside of the machine, and by it carried to the recleaner where it is fitted for market. By the peculiarity of its cylinders and concave this machine—it is claimed—will hull clover when damp or frozen.

The Birdsell Manufacturing Company, South Bend, Indiana, exhibit their *Monitor Junior Clover Huller*. This machine has an iron bar threshing cylinder, with adjustable concaves. The clover passes from the cylinder bolt where the bolls are separated from the straw. The bolls pass down to the lower floor which conveys them to the hulling cylinder, which is constructed with steel rasp. The concaves are made of steel rasps, and are adjustable so that they can be set to or from the huller cylinder. After hulling, the seed is conveyed to the main shoe where it is partially cleaned, from there it is conveyed to the recleaning attachment where it is cleaned for market. The tailings are conveyed and thrown upon the lower shake at the rear end of the machine, which conveys them back to the hulling cylinder, thereby throwing the dust to the rear end of the machine.

The Ashland, Ohio, Manufacturing Co. exhibit one of their Eureka Clover Hul-
lers Drops lower concave by removing two bolts, and, also, by displacing two
bolts the hulling cylinder may be removed. The tailings are emptied directly into
the hulling cylinder. There are five bucket separators, and no two work alike.
Both cylinders are driven directly by main belt.

HAY RAKES.

The Newark Machine Co., Newark, Ohio, exhibit a Newark Hay Rake. Has drop
teeth, easily replaced if broken. The shafts or thills are thoroughly braced; an
adjustable lock lever, completely under control of the driver; an overhanging
cleaner, supported by well-braced posts. The weight of driver assists in the dump-
ing of the rake.

P. P. Mast & Co., Springfield, Ohio, exhibit their Sulky Hay Rake; teeth not rigid,
and very lengthy; rake made of wrought iron; foot self-dump, without cog
gearing.

J. H. Thomas & Son, Springfield, Ohio, exhibit one Thomas Hay Rake. Iron
seat rests on axle, and assists in dumping. Brass spring overcoil tooth, causing the
teeth to slide instead of drag, and avoids breaking them. The teeth are extra
length. Hanging-over cleaner, on rollers, for dumping the hay.

A. W. Coats & Co., Alliance, Ohio, exhibits one Coats Back-Lever Hay Rake. It
is simple and durable; easily managed by a back lever. The weight of the driver
dumps the rake.

The Knowlton Manufacturing Co., Rockford, Ill., exhibits one Knowlton Sulky
Hay Rake; 14-spoke wheels; wooden hub; double land and pipe box; double
back lever, by means of which the teeth are raised perpendicularly, carrying the
hay, and tending to avoid dust and trash.

The Springfield Manufacturing Company, Springfield, O., exhibits their sulky self-
dump hay rake. Either wheel is a positive dump. A slight pressure with the
foot on the chain locks the head to the wheel, and a partial revolution dumps the
rake. It dumps every time, and any time, and only when desired; easily balanced;
no weight on horse. When used as a self-dump only short lever is used; long
lever dumps by hand. Wheels 54 inches in diameter. A truss rod prevents the
head from sagging. Drop-tooth rake, independent teeth, turned wrought iron
axles.

By the same is exhibited one Springfield foot-dump rake; rapidity and accu-
racy of motion; rake head under complete control of driver's feet; hands entirely
free.

Acme Hay Harvester Company, Peoria, Ill., exhibits one of their Acme hay rakes;
clean work, avoiding trash and old straw. Rakes without rolling and tangling
straw. Wooden rake, teeth of hickory.

The Beedle & Kelly Co., Troy, Ohio, exhibits one Troy Champion coil-tooth rake. The construction of this rake is a combination of the self-dump and lock-lever principles, raises and lowers teeth in a vertical plane leaving trash on the ground; back lever at will of operator; dumps by shifting the draft; combines the draft, and weight of driver with pressure of peg to throw up the teeth.

By the same is exhibited one Drop-tooth Troy Champion hay rake. Teeth fastened with a cast cap, giving $3\frac{3}{4}$ inches bearing on axles, holding teeth at uniform distance at point. The teeth have depressions where they pass through slotted bar affording additional spring where the greatest strain comes.

The Albion Manufacturing Co. Albion, Michigan, exhibit an Albion Sulky Rake. Height of drop 36 inches. Adjustable draw iron enabling operator of any weight to dump the hay. Clover and timothy seed attachment.

The Sterling Manufacturing Co., Sterling, Illinois, exhibit one Sterling Revolving hay rake, self-dump horse rake. Simple and easily handled. No special points advanced.

David Bradley Manufacturing Co., Indianapolis, Ind., exhibit one of their common horse rakes. This is a strong hand, dump-rake made of wood.

By the same, a one-horse dump rake. No points of merit advanced.

The Long & Allstatter Manufacturing Co., Hamilton, Ohio, exhibit one of their Hamilton hay rakes, steel tooth hand dump; strongest points of merit—superior strength and durability.

The Greensburg Manufacturing Co., Greensburg, Ind., have on exhibition one of their Greensburg hay rakes. This rake is a novelty in the line of agricultural implements, being the first revolving rake ever made that can be operated by the rider of the horse that draws it. A ten-year old boy can ride and do the work. It is made of wood, and is simply an improvement on the old fashioned hand turn over dump. It is revolved by means of a rope and rollers—one end of the rope being carried by the rider.

The Belcher & Taylor Agricultural Tool Company, Chicopee Falls, Mass., exhibit one of their S. R. Nye's National Rake. The teeth are independent in action and self-adjustable on uneven surface. By the curving inward of the four end teeth, bringing them forward of those in the center, is formed what may be termed a "barrel-shaped head," and as the hay works away from the wheels toward the center, scattering and roping at the ends is prevented. Each tooth is supported at the side by the guide, which operates with the tooth, and is held down by a coiled spring within the tooth-holder, causing a yielding pressure upon the surface. A slotted treadle, operated by the toe of the driver, partly rotates a rod having an eccentric or cam at each end, which acts upon a weighted pawl (dispensing with all springs) and locks the rake-head to the wheels. This forms a dumping arrangement, positive in action, responding promptly to the light touch of the driver's toe. The seat is placed on steel springs. The machine is built of white ash; fourteen-spoke wheels.

STRAW-STACKERS.

Reeves & Co., Columbus, Ind., exhibit one of their Reeve's Stackers. Self-oscillating; a stem-winder; does its own swinging about on the straw stack. It has no guy-ropes, derricks or props to raise or fasten by hand. Two men will set it up in working order in less than one minute, and take it down in the same time. Rope is attached to the shifter-wheel, and passes up to the top of the stacker, so that the operator has control and can throw it out of gear, move to any part of the stack and throw in gear again. The end of the stacker keeps the perpendicular from beginning to end, depositing chaff in the center of the stack; has a safety-latch, and the chaff-drive prevents the chaff from falling back. It has a cylindrical stacker-head, which prevents chaff and straw from falling through the lower end of the stacker when elevated.

Robinson & Co., Richmond, Ind., exhibit one of their Eureka Straw-Stackers. Always attached to separator in line, and ready for work. It is light, durable, and easy of adjustment.

C. E. Merrifield & Co., Manufacturers, Indianapolis, exhibit one of their Imperial straw stackers. The elevator conveyor raises and lowers with worm gear, securing safety in handling without any ratchets and pawl. It is operated by a wire rope passing around quarter wheels and winding around a worm-wheel shaft, giving a great leverage. It has automatic gear for turning the stacker, which will turn to or from the wind without any diminution of speed; has universal coupling in the main shaft, thus preventing the gearing from cramping while the stacker is vibrating or is not yet level; has shifting bolster blocks for the purpose of lateral brace. The stacker turns at right angles, delivering straw in a half-circle 60 feet in diameter. It is a light machine.

S. W. & W. J. Hasselman, Indianapolis, Ind., exhibit one of their Eagle straw stackers; light-mounted stacker, little gearing, strong and simple. One man can raise and lower it without assistance.

Moore & Ball, Manufacturers, Thorntown, Ind., exhibit one of their straw stackers, Little Giant; pivot derrick, dismounted stacker. When in use avoids digging and leveling up. Pivoted pulley always in line with separator, while positive derrick revolves, thus avoiding any lining up with separator. Carrier supported by guy rods and stretcher, holding at three different points, preventing any swinging or warping. Automatic, sideboards stationary, and no cog wheels. Weight, 625 pounds. Perpendicularity preserved by means of derrick and guy rope.

HAY FORKS AND RICKERS.

The Superior Drill Company, Springfield, O., exhibit their Hall's reversible hay elevator and carrier. This is an absolute reversible hay carrier, reversed by weight of the rope. The main lifting wheel and the rope attachment is connected with the frame of the carrier by means of a swivel.

The Columbus Hay Tool Company, Columbus, O., exhibit the Imperial horse-hay fork. "The only steel fork made." Opens wide, is strong, durable, and easily worked.

By same, one reversible carrier on iron track, supporting hooks, supporting tracks. Pulley easily reversed. This company manufactures six varieties of carriers.

The Acme Hay Harvester Company, Peoria, Ill., exhibit an Acme Hay Ricker and Loader. Light draft in elevating hay; stacks twenty-four feet high; only two common pulleys; simple in construction and easily operated.

Myers, Howard & Co., Canton, Ohio, exhibit one of their Hay-Fork and Carriers. Simplicity; few pieces; cable carrier.

The Brower Hay-Fork Company, Crawfordsville, Ind., exhibit Reversible Elevator and Carrier. Hasps on each side of driveway, without changing the carrier; ropes are reversible while standing on mow floor.

By same, one Harpoon Fork. Full capacity and completion of mechanism.

The Sterling Manufacturing Company, Sterling, Ill., exhibit one Hay-Fork. It does away with funnel end registering, pulley, ratchet and dogs; registers with great accuracy, despite any shape of rope.

HAY TEDDERS.

The Sterling Manufacturing Company, Sterling, Ill., exhibit one Sterling Hay Tedder. Wrought iron crank-shaft; flexible forks; coil on fork, making adjustable spring; high wheels; easily operated by hand-lever.

The Springfield Manufacturing Company, Springfield, Ohio, exhibit one Springfield Tedder. Light draft, and no weight on horse's back. The forks alone are tilted, which is done by a lever conveniently located to the driver. Each fork-spring or tine is made of crucible spring steel, and, being separate, each one can be removed or replaced without interfering with the tine on same fork. A sectional malleable iron cramp; turned journals for both cramp and fork; boxes for each crank; each crank, journal or section can be replaced in case of accident by any means; each wheel drives one-half the forks; each gear has its relative labor to perform; wheels, 52 inches in diameter; weight, 400 pounds.

The Belcher & Taylor Manufacturing Company, Chicopee Falls, Mass., exhibits one Bullard Improved Hay Tedder. This claims to be the oldest tedder on the market; has a fork on the outside of each wheel, preventing their running over the spread grass. The points of merit of this machine are practically described in the fact that it has been in the field twenty-five years.

FANNING MILLS.

Lovett, Pettig & Co., Peru, Ind., exhibit their Peru fanning mill. Operates by compressed air. Raises out all light material without blowing out the grain. Cleans and makes three perfect separations at the same time. End shake regulated by pitman. Enclosed screw box. Improved feed. Very select and durable in construction.

Dickey & Pease, Manufacturers, Racine, Wis., exhibit a Young Giant fan mill. A superior cleaner and grader of grain and seed. Neat and small. Light and convenient to handle.

The Newark Machine Co., Newark, O. A self bagger or sacker. The shoe is provided with screens that have an independent motion, which keeps the sieves clean and thereby does superior cleaning. The shoe is provided with an elevated tail board, and also is pivoted at lower end, and can be adjusted while mill is in operation.

BINDER TRUCKS.

The Franklin Binder Truck Manufactory, Franklin, Ind., exhibit one of their binder trucks. Ease of loading and cheapness are its chief merits. Adapted to farm wagons. Is carried on high wheels.

E. Over, Indianapolis, Ind., exhibits a binder truck of his own manufacture. Ease of loading is one of its principal features. The truck is placed together under the binder, thus avoiding lifting. No strain on binder over rough roads.

POTATO DIGGERS.

A. Speer & Co., Pittsburg, Pa., exhibited one potato digger. Operated by horse power and has a spoke wheel.

Sterling Manufacturing Co., Sterling, Ill., exhibit a Sterling potato digger. Long side bars steady the plow. It is claimed to be the standard successful potato digger.

GRAIN SACKERS.

Ashley Cooper, Mooresville, Ind., exhibited his Automatic grain sacker and weigher. It can be set to weigh any amount of any kind of grain. Sack fastens on square frame by means of spring. Two sacks are used, and the grain or seed is turned from one chute to the other instantly by means of a cut off, when the required quantity is filled into the sack. The sack frame is adjustable, keeping the sack constantly well stretched. The desired weight is reckoned by a toggle joint, causing an instantaneous cut-off, thus making the device a self weigher. This machine is neat, light, and portable. Can be easily attached to any separator.

ARTICLES NOT EXAMINED BY THE COMMITTEE.

The following entries were made, but, in some instances, after due diligence of your committee, the articles could not be discovered, while in others neither the articles nor exhibitors could be found, and consequently the exhibits were not examined:

- J. H. Bookwalter & Co., Springfield, O., hay rake.
- Remington Agricultural Company, Hyon, N. Y., hay rake.
- A. G. Barton, Constantine, Ill., hay rake.
- Upton Manufacturing Company, Battle Creek, Mich., separator.
- James Buchanan, Indianapolis, Ind., separator.
- Crawfordsville Stacker Company, Crawfordsville, Ind., thresher.
- Marcus Lane, Chicago, Ill., fruit gatherer.
- Dorsey Machine Company, Milton, Ind., harvester and binder.
- Rude Bros. Manufacturing Company, Liberty, Ind., hay rake.
- Johnston Harvester Company, Chicago, Ill., reapers.
- J. H. Sciberling & Co., table rake and mower.
- O. H. Camion, Indianapolis, Ind., self-binder.
- Bradley & Co., Syracuse, N. Y., mower.
- Empire Drill Company, Jackson, Mich., horse hay rake.
- J. M. Stoddard, Dayton, O., hay tedder and mower.
- Gregg & Co., Lawrenceburg, N. Y., mower.
- Springfield Engine Co., Springfield, Ohio, straw stacker.

The Committee in Special Merit Department experienced some embarrassment and confusion in the prosecution of their work. This, in part, was occasioned by vague and incomplete entries. The committee would suggest that every article placed on exhibition should have name and place of manufacture recorded in entry book. Another source of confusion was in the neglect of exhibitors to place entry cards on their goods. If this rule was observed it would benefit both exhibitors and the examining committee. The committee desires to express its satisfaction and gratification, not only at the large number, but the great variety and superior quality of the exhibits in this department, and, also, at the very intelligent, prompt and courteous men who represent them. The patience and kindness of the exhibitors of this department justly entitles them to the thanks of the committee.

Respectfully submitted,

ISAAC G. TOMLINSON.

REPORT OF COMMITTEE

ON

SPECIAL MERITS OF ARTICLES ENTERED IN BOOK G,

ON WHICH

NO PREMIUMS WERE OFFERED.

The Scientific Corn and Feed Mill, by Foss Manufacturing Company, Springfield, Ohio. This is a well gotten up mill for grinding corn, either with or without the cob, and other grains for feed. The grinding surfaces are a hard metal that wears a long time, and are self-sharpening by running them backwards; and when worn out, are easily replaced by new ones at little cost. In grinding, the grain is gradually reduced to the required fineness in passing through the mill, the heavier breaking being done near the shaft, where it has great leverage, and is finished at the outer edge by a sort of rubbing process that gives it a sort of soft floury feeling. The whole mill is iron, with the frame cast in one piece, furnishing three bearings to the shaft that can not get out of line. They are made of different sizes, with some special arrangements for different kinds of work.

Fodder Crusher, by Newark Machine Co., E. L. Williams, Agent, Indianapolis. This is an excellent power fodder cutter, that cuts the stalks and passes the cut material out between two toothed discs, that chaffs or breaks it up into a finer, softer and more edible condition, making a much better feed of it. It is well made, and does good work.

Queen Bee Shelling and Grinding Machine, by Winchester & Partridge Manufacturing Company, Whitewater, Wis.; Howland & Johnson, Agents, Indianapolis. This is a new combined shelling and grinding machine, that has a novel way of getting power to the sheller. The grinding part is worked by a lever, much after the old style of feed-mills. The mill is provided with changeable grinding surfaces, that

may be readily replaced when worn, and will grind about 100 bushels per day in good shape. The sheller is placed on a platform on the sweep, close to the mill, and is driven by a wheel, like a mowing machine driver that rolls on the ground and supports the end of the lever, and has an internal gear-wheel cast on its arms; a pinion gears into this wheel, that is on the end of a shaft that reaches into the sheller and drives it by means of sprocket wheels and chain. It will shell from 200 to 300 bushels per day, and may be used independently of the grinding mill, or grinding may be done independently of sheller. One heavy or two ordinary horses are required to work it.

Buckeye Feed-Mill and Corn-Sheller, by Canton Car Company, Canton, Ohio; Howland & Johnson, Agents, Indianapolis. This is a geared mill, running about 300 revolutions per minute, intended to be operated by two horses. It is very compactly arranged, with the master-wheel, to which the sweep is attached, around the mill. There is also an arrangement for connecting a tumbling-shaft for driving a corn-sheller, feed-cutter, wood-saw, or anything else, either while grinding or independently. The grinding-buhrs are easily and cheaply replaced when worn out, as they only cost \$1.00 per set. It is an excellent mill, and is independently a good horse-power for any purpose.

Geared Corn and Cob Sweep Grinder, by Stover Manufacturing Company, Freeport, Ill. This may be used as corn and cob crusher, or as a grinder alone; and has some peculiarities worthy of note, the main one being, that while the sweep is attached to the outer shell and revolves as the team goes around, the inner plate is made to revolve in the opposite direction at much higher speed. The frame or foundation of this mill is a three-armed casting, with a post in the center, on which a spur wheel revolves that carries the inner buhr. At the proper distance from the center on each arm is a chilled stud that carries a pinion or intermediate wheel that transmits motion from the master wheel to the center wheel. These intermediate wheels serve a useful purpose in dividing the wear and strain on the wheels and frame. Different grinding surfaces are used for grinding very fine.

The All Right Self-Feed Cutter, Newark Machine Company, E. L. Williams, Agent, Indianapolis. This is a good hand feed cutter that will cut corn tops or any kind of straw. The knife is attached to a lever, and the length to which the material is cut is regulated by the height the lever is raised, being connected to feed roller by ratchet. The iron against which the knife cuts is curved, instead of having square corners into which the straw can bunch.

Feed and Fodder Cutting Boxes, Eagle Machine Company, Lancaster, O. This is a rotary cutter machine intended only for hand power. It has good self-feeding arrangements, and will probably give good satisfaction to those using it. It is well made, of three sizes, and sold at popular prices.

Stalk Cutter, by Deer & Mansur Company, Moline, Ill. This is a machine for cutting corn stalks into such lengths in the field, preparatory to plowing, that they will not materially interfere with the after cultivation of the crop. This is an im-

proved machine for the purpose, and is so arranged that the weight on the knives is easily adjusted, giving all, or any part of the weight of the driver and machine on the knives as may be required. The head is operated by springs, which gives an effective chopping blow of the knives.

Ten Broeck Corn Sheller, by Howland & Johnson, Indianapolis. This is a very good sheller of the ordinary make and style, without any special novelty.

Buckeye Corn Sheller, by Howland & Johnson, Indianapolis. This sheller is intended to be run by power, and is geared with reference to being run by the Buckeye mill power. It has a fan and a cob carrier, and will shell 500 bushels per day if properly attended to. It is a good one.

Triumph Feed Steamer, by Rice, Whiteacre & Co., Chicago, Ill. This is a well designed apparatus for generating steam in an economical manner for cooking feed for stock, or other purpose, where it is used under low pressure. It is a vertical boiler with a cast-iron base and dome, and has a row of water tubes around the outside of fire space which connect a hollow cast base-ring around the fire, with the dome above. The water is supplied from a barrel, or other reservoir, a little elevated, having a pipe near the bottom connecting it with the water space in the boiler. A pipe also connects the dome of boiler with upper part of barrel, giving a pressure of steam on the surface of the water in the barrel equal to the resistance, which allows it to flow as freely as though there was no steam. The supply of water is automatically regulated by a float, connected to a lever that opens or closes a valve as required to keep the proper supply. Any kind of fuel may be used.

Feed Cutters, by Belcher & Taylor, Agricultural Tool Co., Chicopee Falls, Mass. This company make three entries of feed cutters, which they exhibit and which are all well made of the best material, and adapted to the wants of all classes of feeders, whether for a few animals or a large number, requiring a power cutter.

First. The Self Sharpener. This is a heavy machine with knives on a cylinder, made for either hand or power, which, it is claimed, will do nearly double the work that most other machines will, and that it is easier sharpened than any other. They are made of sizes requiring considerable power, that cut from one to two tons per hour, and are used in large stables and paper mills.

Also, the Lion cutter. This is a machine with two knives attached to a revolving frame, making a shear cut against an adjustable hardened bed piece, and will cut different lengths. All the working parts are secured in iron sides fastened to the frame, which is strengthened by them. All the working parts are securely covered to guard against accidents. They are made for both hand and power use.

Also, the New York cutter. This is a lever machine, with either a straight or curved knife, as desired, and gauge plate. It is made of different sizes, and is a good, well-made, low-priced cutter.

Dick's Feed Cutters, by Meal & Bradley, Indianapolis. Four of these machines are entered and they have some novelties not found in any other. They are intended to cut all kinds of feed, from corn stalks with the ear on to fine hay. Two straight

knives are used that are attached to the fly-wheel, which runs across the front of the machine. There is also an attachment called a splitter placed just before each knife, which is intended to split and divide the stalks and ears into small pieces as they are cut. This splitter consists of a plate on which are two rows of steel blades alternating each other, and are set on circles concentric with the wheel, which split, cut or crush into small pieces corn stalks and ears, or other coarse material, but are not needed in cutting hay or straw. It can be adjusted to cut from $\frac{1}{4}$ to $2\frac{1}{4}$ inches in length, and is made of different sizes for use by hand or power, or two cranks may be attached to a light power machine for two persons to work at. All the working parts are securely covered to prevent accidents.

Rein or Check Line Holder, by G. M. Custer, Terre Haute, Ind. This is a very simple, cheap and efficient contrivance for holding check lines, halter straps, or any similar purpose. It consists of two jaws jointed to a plate in such way that they approach each other if moved in one direction, and separate if moved in the opposite. The jaws are so rounded as not to injure the material held. It is very readily attached to a wagon box, or where needed. The harder the line is pulled the tighter it is held; and is released by simply pulling back.

Respectfully submitted,

JOHN M. SEWARD,
Committee.

REPORT OF THE COMMITTEE
ON THE
SPECIAL MERITS OF UNPREMIUMED ARTICLES,
ENTERED IN BOOK H,
AND EXHIBITED AT THE
INDIANA STATE FAIR, SEPTEMBER, 1884.
WIND ENGINES.

Flint, Wolling & Co., Kendallville, Ind., exhibited the Star Wind Engine. The wheel is known as the solid or rosette pattern, and is strongly braced in front by heavy iron braces connected to the arms and to an extension of the main shaft. The rims in which the wheel slats are fitted are so interlocked and bolted to the arms that they form one continuous rim. The boxes are lined with babbit metal, and have self-oiling cups protected by caps. It also has an automatic friction brake, that holds the mill still when not at work. It is so nicely balanced that it will be run by a very light wind.

Meal & Bradley, 79 West Washington street, Indianapolis, Ind., exhibit two wind engines manufactured by the Iron Monitor Wind Engine Manufacturing Company, of Troy, Ohio. These mills are made entirely of iron, and are so constructed that the fans open or close to regulate the power or stop the motion of the wheel. They are well made and perfectly balanced.

The American Well Works, Aurora, Ill., have on exhibition a wind engine, hydraulic jetting tool, and a power earth-auger. The wind engine has an adjustable stroke that can be lengthened or shortened at will. It has a wrought iron mast and side vane. The jetting tool is operated by hydraulic pressure, and in boring or drilling a well a greater diameter can be given than the pipe through which it operates. The earth-boring augur is very simple and of great capacity.

The Kirkwood Iron Wind Engine, of Elliott City, Md., on exhibition, has more than ordinary wind surface, and, being made entirely of iron, is very strong and durable.

Mast, Foos & Co., Springfield, Ohio, exhibit an iron turbine wheel of very great power, differing in construction from all others, and has many points of excellence.

FARM GATES.

D. B. Matlock, San Francisco, California, exhibited the California Farm Gate, patented March 4, 1884, and has many new and novel features. It operates vertically, like a window, having weights to counterbalance the weight of the gate. The gate is raised by the driver pulling a cord as the team approaches, and is latched at two heights—one for ordinary loads, the other for high loads. After the team passes through, the gate is unlatched by another cord, and descends gently until closed. It is a durable, practical gate, easily operated, not affected by snow, and is as readily opened by a man on a load of hay as on the ground. The gate exhibited was a full-sized farm gate, its practical utility being demonstrated by a horse and vehicle driven back and forth through it without halting while the driver opened and closed the gate.

Oldfather & Grandstaff, of Bunker Hill, Ind., exhibit a simple, practical automatic gate, very light, and well braced. The gate is made in two sections, opening upward and backward to either side, by means of rods above ground connected to a trip that is sprung when brought in contact with the wheel of a vehicle. This is a cheap, serviceable gate, not complicated or liable to get out of order.

G. M. Custer, Terre Haute, Ind., exhibits a farm gate, very simple and practical. It runs on rollers, and is easily opened or closed.

IRON, WIRE AND PORTABLE FENCES.

C. D. Shellabarger, Indianapolis, exhibited a machine for making fence of wire and wooden slats, and a sample of the fence. The fence is cheap, and has the appearance of being serviceable. To attempt a description of the working of the machine would require more space than can be allotted to it in this report.

Cleveland & Darnell, Indianapolis, exhibited an iron post and barbed wire farm fence and grape trellis. This is a cheap, durable fence, very serviceable as to turning stock of all kinds, and is quite ornamental.

Meal & Bradley, Indianapolis, exhibited an iron fence manufactured by the Champion Iron Fence Company, of Canton, O, that is a very handsome, strong and durable fence. Posts are made of four T shaped bars arranged around a central rod. It has a T shaped rail to which the pickets are fastened by malleable iron clamps, rendering it thereby easily adjusted to any angle of ground.

Nelson Faught and R. Miles, of Pittsborough, Ind., exhibited a portable fence of wire and wood combined. This fence is built of timber locked together with wire, the ends of the timbers placed upon tiles to secure it from dampness, and firmly anchored to the ground by a patent anchor. It is a very cheap, serviceable fence. They build it in three styles.

Kiler & King, 14 Virginia Avenue, Indianapolis, Agents for Hanika Iron Fence Company, of Springfield, O., made a very handsome exhibit of plain and ornamental iron fence in a great variety of styles. All their fences are so put together as to allow for expansion and contraction, a very essential feature in an iron fence. The picket is attached to the rail by means of a locking plate, which gives additional strength to the rail.

The Morris Combination Fence Company, 57½ West Washington Street, Indianapolis, exhibited a hand machine for making wire and picket fence. The machine works easily and rapidly, and the fence, when made, is light and durable.

F. Bruneman, Indianapolis, exhibited a good farm or garden fence of pickets fastened together with plaited wire.

E. Over, Indianapolis, exhibited an angle iron fence post that is calculated to work a revolution in fence posts. This is a substantial iron post easily driven into the ground, and is comparatively inexpensive.

He also had on exhibition a woven wire gate and iron gate hinge. The gate is made of wire woven together in open lattice work, making it cheap, light and ornamental. The hinge is a very simple, cheap iron hinge with rollers.

Thomas Huston, of Kokomo, Ind., exhibited a fence made of rails fastened together with wire. A very serviceable cheap fence, well adapted for turning stock.

E. Over, Indianapolis, exhibited two post-hole diggers of different patterns. Either of them are practical and simple in their operation.

Cole & Fleming, of Springfield, O., exhibited a speedy post-hole digger, differing from others in the manner in which it is forced into the ground, being driven in by a driving attachment. The dirt is easily and readily discharged.

CORN STALK CUTTERS.

David Bradley Manufacturing Co., Indianapolis, exhibit a corn stalk cutter in two sizes, for cutting either one or two rows. This cutter has straight knives, high wheels, and so arranged as to be easily weighted for wet stalks.

Geo. W. Brown & Co., Galesburg, Ill., exhibited a stalk cutter with wrought iron frame. The knife arms are fastened to an iron shaft which revolves in wooden rollers that move in circular grooves, thereby allowing the knives to adapt themselves readily to any irregularity in the surface of the ground.

Avery Planter Company, Peoria, Ill., exhibit a spiral knife stalk cutter. These knives are spiral in form, and run diagonally across and around the cylinder, and are so arranged that one or more knives are constantly on the ground, relieving the cylinder from any jar or concussion in its revolutions.

CIDER MILLS AND PRESSES.

The Superior Drill Company, of Springfield, O., exhibited three sizes of hand cider mills and presses. These mills and presses are very strongly made. The mills have adjustable throat and grinding rollers. The presses are made with iron beams and screws. Two tubs and a strainer board are furnished with each press.

P. P. Mast & Co., Springfield, O., have two sizes hand cider mills and presses. These mills and presses are very similar to the ones exhibited by the Superior Drill Company, of the same city. They are well made and of great strength.

E. Over, Indianapolis, had on exhibition a cider press on a larger scale than either of the others and of much greater capacity. It had the appearance of being a practical press and easily operated. In connection with it he exhibited a mill for either hand or horse power that was a rapid grinder.

The same party exhibited a stump puller of his own manufacture. It is simple, cheap, readily moved on the ground, easily worked and of immense power.

Also, a set of bob runners, very substantial and well calculated for bearing heavy loads.

WAGONS.

In the line of spring, farm and log wagons, the display was very large, and they were so uniformly well made and well finished that to attempt to draw comparison upon the part of your committee would seem to be out of place. Yet each exhibitor claimed and each article possessed some distinctive feature peculiarly its own.

Meal & Bradley, Indianapolis, exhibited quite a variety of wagons manufactured by the Winona Wagon Company, of Winona, Minn. The distinctive features of these wagons are a self-oiling seamless skein, so shaped, it is claimed, that they are entirely relieved of side draft in the wheels.

G. Shover, 172 and 174 East Washington street, Indianapolis, displayed a dandy wagon, log wagon and two farm wagons, that, in material, workmanship and style of finish, were worthy of consideration.

Nelson Faught and R. Miles, of Pittsborough, Ind., exhibited a 2-horse wagon, made by Helfrich & Danley, Indianapolis, with a patent bolster, which allows of the standards being easily and speedily removed and the bed taken to pieces. This is a novel arrangement, and appears practical.

David Bradley Manufacturing Company, Indianapolis, made a very creditable display of farm, spring and delivery wagons. The farm wagons were supplied with self-oiling cups and extra binding rods to the beds. Their platform, spring or delivery wagon was a very meritorious one, solid, and substantially made. The felloes were riveted between the spokes, the ribs were cut out of solid board, ironed on both sides with iron corners. All their wagons were well made and well finished.

Cherry, Morrow & Co., Nashville, Tenn., exhibited three farm wagons that were well made, well finished, with either iron or steel skeins.

The Studebaker Brothers, of South Bend, Ind., occupied a prominent place, and made much the finest display of wagons on the fair grounds. Their exhibit consisted of several styles of farm wagons, spring wagons and side-bar buggies. In addition to several styles of wagons finished in the same manner as those regularly turned out of their shops for the trade, they had on exhibition several wagons made and finished purposely for exhibition at the fair, that were artistic specimens, and did honor to the enterprise of the firm, and were a credit to the skill of their workmen.

CORN SHELLERS.

The Eagle Machine Company, Lancaster, Ohio, exhibited a hand or power sheller, that runs light, shells rapidly, and cleans and separates perfectly.

Gere, Truman, Platt & Co., New York, exhibited a very meritorious hand sheller runs light, separates and cleans well.

ROAD SCRAPERS AND ROAD MACHINERY.

David Bradley Manufacturing Company, Indianapolis. A thirty-four-inch steel bottom scraper, wood sides and end. A good cheap scraper.

E. Over, Indianapolis, exhibited several different patterns of road scrapers, his object being to meet the demands of the trade both in quality and price. Among them was noticed a wheel-dump scraper, that is an excellent machine, easily handled and very speedy; the Slusser steel back, wood end scraper, with runners; the Columbus scraper, all steel, without cut or seam—a very desirable scraper; the Empire, C and Haslet are good, low priced scrapers; McLane's scraper is steel and wood combined, well braced with rods, making it very strong; the Victor dump is a solid, cheap one-horse scraper. He also exhibits a surface grader that is an excellent implement, and very convenient to farmers.

R. E. Burk, Anderson, Ind., showed a four-wheel road machine, with wrought iron axles and steel skeins. The machine is readily adjusted by levers to any angle, and is easily dumped. Can not slide sideways. A very meritorious machine.

The Fleming Manufacturing Company, Fort Wayne, Ind., exhibit the Boss road grader and leveler. This is a two-wheel machine, easily handled when at work, simple in construction and direct draft, the tongue being attached to the knife or scraper. An excellent machine.

MISCELLANEOUS.

J. W. Buchanan, Indianapolis, had on exhibition a very fine looking coal cart. It had the appearance of being able to bear an immense load.

L. D. Railsback, Indianapolis, exhibited a double-acting stone force pump, a simple, powerful pump, anti-friction stone cylinder, and so constructed that the valves may be easily and readily taken out.

The Indianapolis Pump Company, Indianapolis, exhibit a double-acting pump, with rods inside secured from damage by binding or kinking. A good, durable pump.

G. W. Hotton, Indianapolis, exhibited a safety wagon-tip tongue attachment, the invention of a lady. This is an iron tip to be placed on the end of wagon tongues, with a very simple and ingenious device for locking the neck yoke securely, so that it can not possibly slip off. It is inexpensive and practical.

The McCoy Manufacturing Company, Indianapolis, displayed a great variety of doubletrees and singletrees. The peculiar merit of these consist in the clips, which are put on the wood cold. Each clip has two spurs, and are attached by a bolt, forcing the spurs into the wood, preventing them from slipping or getting loose.

E. Over, Indianapolis, exhibited a lot of bolster springs. They are substantial steel springs, the center resting on the bolster, the ends outward and upward, springing the load from the center, whereby they claim the wheels will pass over obstructions with greater ease and less jar.

Whitman Agricultural Company, St. Louis, Mo., exhibit a horse-power hay-press. This is a rebounding plunger press, with steel shafts and bearings, continuous in its operation, and very powerful.

John Fennimore, Orleans, Ind., shows a hay-press that is very simple and powerful. One end of the press is filled while the other is being pressed, making it a rapid baler.

M. Henley & Co., Monrovia, Ind., exhibit four nest-boxes. A simple, ingenious arrangement, whereby the hen shuts herself in secure from intruders. They are boxes, slatted at the sides for ventilation, with the door attached to the nest, which rests upon a spring, so that when the hen takes her position upon the nest her weight closes the door. The moment she steps off the nest the door opens, and she is at liberty.

The Monitor Works, Beloit, Wis., exhibited a sample of what they term "Farmless Barb Wire." It is made of two wires, with a revolving spur between them at regular intervals, instead of the fixed barb, that pricks an animal coming in contact with it, and rolls without tearing. It is doubtless what it purports to be, a punisher of unruly stock, but does not injure.

O. W. Bartlow, Omega, Ind., exhibits a combined wheel-trestle and tire-cooler. A very simple, practical machine for blacksmiths.

Numerous articles entered in this book I could not find after the most diligent search. Many of them were evidently not on the ground, while others may have been, and were overlooked. If such was the case, I can but express my regret that I failed to discover them. If exhibitors or Superintendents of Departments would report to the Entry Clerk as soon as they have their goods in position their exact locality, and have it noted on the books, it would materially aid the committees and lessen their labors.

This report is not as comprehensive as it should be, or as I would be glad to make it had I fully comprehended what was desired until too late to remedy the defect. Many of the articles merited a more elaborate description than I am able to give from the meager notes taken at the time.

Respectfully submitted.

GILES W. SMITH.

REPORT OF COMMITTEE

ON

SPECIAL MERITS OF ARTICLES ENTERED IN BOOK I,

AND EXHIBITED AT THE

INDIANA STATE FAIR FOR 1884,

On Which no Premiums were Offered.

Aurora Tafel Beer, by August Erbrich, Indianapolis. This was a large and handsome display of bottled beer, in which the bottles were artistically built in the form of a pyramid, surmounted with a mammoth boot, represented as overflowing with the beverage. This beer is represented as being made on correct principles, and as being pure and healthful.

Challenge Fire Extinguisher, by Marcus Lane, Chicago. This is a fluid, put up in cylindrical-shaped bottles, that when thrown, or got onto a fire in any way, instantly extinguishes it with the gas generated or set free, which excludes or displaces the atmospheres from which oxygen is obtained to support combustion, and the fire dies out instantly, as it can not burn a moment without oxygen to support it. This fluid does not injure either flesh or fabric when applied to them; does not deteriorate with age, and is not injured by any temperature above 25 degrees below zero. The utility of keeping at hand such means of extinguishing incipient fires is too apparent to need argument.

Lightning Cleansing Compound, by A. M. Tyler, Sturges, Mich., Thomas K. Barrett, Agent, Indianapolis. This is a preparation of Quilya bark, and is a superior article for removing dirt, grease, pitch, paint, etc., from fabrics of any kind, or from kid gloves or similar material, without injuring them or leaving a dirty ring around the spot cleansed. It is easily applied and satisfactory in its effect.

The Lilly Cleaner, by J. L. Clark, Indianapolis. This is claimed to be a very superior article for removing tar, grease, paint, oil or pitch from any kind of cloth, perfectly, and without injury to the goods. It is easily applied, and by its use articles may often be made presentable that would be otherwise thrown aside in consequence of accidents to them.

Physician's Office Chair, J. H. Clark & Co., Indianapolis. This chair has arrangements for all adjustments that may be required in a reclining chair, and may be adjusted at any angle with the patient on it. It is a superior operating chair, with all the advantages of more expensive and complicated chairs, and is the most simple, solid and durable of any.

Book Binding and Stationery, by W. B. Burford, Indianapolis. This is a large and handsome display of books in the best styles of bindings, comprising all forms of blank books in use, which were tastefully arranged for display.

Chicago Shoe Store, by G. L. W. Mack, Proprietor, Indianapolis. This was a very fine display of goods in this line, comprising the best makes of English and French manufacture, as well as a full line of American goods from the best manufacturers, in all styles, from the most stylish to the more common for ladies' wear, and from a jockey boot, weighing only nine ounces, to the more substantial for men's use. This exhibit was notable for the taste displayed in its arrangement, which made it a conspicuous and attractive feature of the second floor.

Orchestrone, by Lauder & Davis, Agents, Indianapolis. This is a musical instrument which, in general appearance and tone, is much like a reed organ, and requires a paper web, properly perforated, to produce the music required. No training or skill is required to play it. It is gotten up in a style to make it an ornament to the parlor, or wherever it may be desired to use it.

Musical Instruments, by Emil Wulschner, Indianapolis. This exhibit consisted of three pianos, one organ, and a set of band instruments, which were all of the best makes and of superior quality, both in tone and finish.

Royal St. John Sewing Machine, by E. E. Brown, Agent, Indianapolis. This is one of the many good machines claiming to be superior to all others, which has points of excellence that make it worthy of careful examination by those wanting a sewing machine. It is claimed that it does its work perfectly, is easily managed, runs light and without noise, and is simple and durable in construction.

Eldridge Sewing Machine, by W. H. Iddings, Agent, Indianapolis. This appears to be an excellent machine, and has some peculiarities not found in others. The fly-wheel runs as a loose pulley, if turned backwards, making it impossible to run the machine backwards, but is used that way to wind bobbins. It has, also, a self-threading tension, and keeps an even pressure all the time with uneven thread. It has, also, an adjustable automatic take-up, which is easily regulated for the lightest or heaviest work. In threading, the eye of the needle is the only hole to pass the thread through. The driving-wheel axle is hung on adjustable centers, and has an inside crank. The machine is well made in all respects.

New Home Sewing Machine, by A. F. Singer, Indianapolis. This seems to be a first class machine, and is claimed to possess many points of superiority. Among these are, that it runs lighter, has fewer working parts, and being more simple, is easier managed by inexperienced persons. It has large space under the arm, giving good room for any kind of work, and has a spring tension shuttle that has only one hole to thread through, and the tension can be changed without removing the shuttle; that the feed works perfectly with heavy or light goods, and keeps the same length of stitch in crossing seams. Has automatic tension that accommodates itself to any size of thread, which, when once adjusted, will seldom need attention. The workmanship in its manufacture is superior.

Clothing and Men's Furnishings, by When Clothing Store, Indianapolis, Ind. This was a large and handsomely arranged display of men's, youths', boys' and children's clothing and furnishing goods, of all styles and grades of goods, from the finest and more fashionable worn by the wealthy, to the plainer and cheaper, adapted to the wants and means of those in humbler circumstances. They manufacture their own clothing, and retail it at their store at the same price they sell to dealers at wholesale, giving the purchaser of a suit or single garment the retailer's usual profit.

Clothing and Men's Furnishings, by Model Clothing House, Indianapolis, Ind. This was a very large and tastefully arranged exhibit of everything in the clothing line adapted to the wants and circumstances of persons in any position in life or society, from the extra fine, not generally kept by retail clothiers and only purchased by the wealthy, down in every grade to a suit that is sold for only a dollar and a half. These goods were so arranged as to show their qualities to the best advantage, and attracted marked attention from visitors.

Men's Furnishings, by E. E. Parker, Indianapolis. This exhibit consisted of a number of men's shirts, made in the best style and of the best material, without other special feature to distinguish them than their superior quality and low price.

Oriental Shirt, by Palace Shirt Store, Indianapolis. This is a new style of shirt that is neither open at front or back. It is well made, being reinforced where needed; is made of good material, and is much more comfortable than the open back, as it thoroughly protects the body from the sun.

Respectfully submitted,

JOHN M. SEWARD,
Committee.

REPORT ON
SPECIAL MERITS OF ARTICLES ENTERED IN BOOK K,
AND EXHIBITED AT THE
INDIANA STATE FAIR FOR 1884,

On Which no Premiums were Offered.

W. B. Burford, Indianapolis, Ind., made a large exhibition in general lithography, showing many of the various styles of work to which this art is specially applicable. There seems to be no limit to the possibilities of lithography as a means of producing at a minimum of cost, pictures and other works of art, of the very highest degree of merit. The work produced by Mr. Burford is second to none in quality, and well deserves the highest commendation.

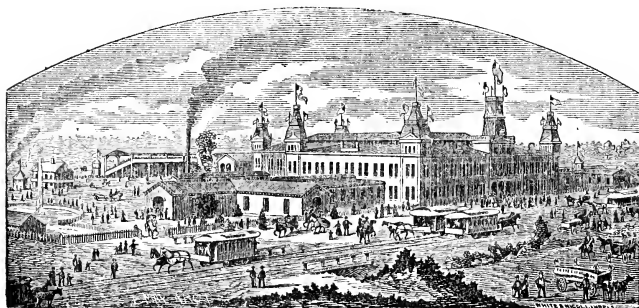
Bryant's Business College, Indianapolis, Ind., made a large and varied exhibition of penmanship, consisting of pen pictures, general penmanship, etc. Specimens of rapid writing by a student, Mr. E. J. Heeb, were very fine, and a collection of penmanship by Messrs. Bryant, Hamilton and Heeb, was of very great excellence, showing to what degree of perfection it is possible to attain by system and practice.

G. W. Hill & Co., Indianapolis, Ind., made an exhibition of emblems, showing much skill and taste. This firm is largely engaged in making emblems, regalia, etc., for all the various societies having use for such things. It is an old and well established firm, and their work must commend them to all interested in the use of such goods.

Drawings from Public Schools. A large exhibition of drawings made by the pupils of the Indianapolis Public Schools, was very fine, and was an attractive feature of the fair. Much of this work, while done by amateurs, showed the skill and taste of experts. The latent talent thus brought out in school children, will, in the end, result in producing artists of the highest order.

The love for pictures is a part of the nature of every one, and those capable of making them have always been held in the highest esteem in all ages of the world's history, so that a field for distinction is here open to every one, and judging by the specimens on exhibition not a few of those making these works of art, may attain an enviable distinction at no distant day.

Purdue University, at Lafayette, Indiana, made a very creditable exhibition, and, as the Agricultural College of the State, was appropriately represented by the work of the students, in shop productions and industrial designs, which attracted much attention. The management should be proud of the high rank this Institution has attained, and the agricultural community can not too highly appreciate the great advantages there offered to so educate and assist the farmer in reducing agriculture to a science.



COMMERCIAL FERTILIZERS.

REPORT OF STATE CHEMIST.

PURDUE UNIVERSITY, LAFAYETTE, IND., Feb. 7, 1885.

Alex. Heron, Secretary State Board Agriculture :

DEAR SIR—Forty-six samples of fertilizers sent by manufacturers were analyzed in 1884, as required by law. The percentages “of soluble and reverted phosphoric acid” have been separately reported (as by my predecessor), although this involves one more determination for each analysis than the law prescribes. The greater part of the analytical work was carefully performed by W. H. Peters, A. C., Assistant Chemist.

In computing the valuation of fertilizers, a lower estimate is given for some ingredients than in former years. In accordance with mean values estimated by State chemists of several of the Middle and Eastern States for the year 1884, I have allowed

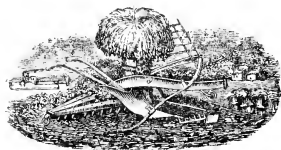
- 10 cents per pound for soluble phosphoric acid.
- 9 cents per pound for reverted phosphoric acid.
- 5 cents per pound for insoluble phosphoric acid.
- 15 cents per pound for ammonia.
- 6 cents per pound for potash.

The retail selling prices of the fertilizers analyzed are not reported to this office ; the values above are taken from the most reliable data at hand, but they may not accord with market rates in this State.

Great caution should be used by those who contemplate purchasing, in regard to the column of “Estimated Values per Ton,” as printed in the following table. It will be observed that every pound of soluble phosphoric acid is rated at twice the value of insoluble phosphoric acid. The benefits of the latter, in the form of ordinary ground bone, are well known. Superphosphate (bone or phosphatic rock, made soluble by sulphuric acid) is more expensive, will yield quicker returns, and is properly considered more valuable ; but, on the other hand, it is more liable to injure the crops when applied in excess, while it is also more likely to wash out of the soil and be lost, in case of excessive rains. The “Estimated Values” are be-

lieved to represent the average cost of fertilizers like the samples analyzed, when supplied at retail in commercial centers; but a sensible man will neither live entirely on corn-bread because it is cheap, nor on venison because it commands a high market value. So, in selecting a fertilizer, the farmer should observe what brands supply the soluble (quick-acting) or insoluble (slow-acting) phosphoric acid in requisite amounts, with any desired proportions of potash and ammonia. "Reverted" phosphoric acid is intermediate in properties between the "soluble" and "insoluble." The "potash" reported is soluble in water, and therefore available as plant food. "Ammonia" includes the total nitrogen from whatever source. Fragments of hoof, hair and even leather scraps yield ammonia when ignited with soda-lime in the process of analysis, but these resist decomposition in the soil a long time, and therefore are of less actual value to the farmer than ammonium salts, nitrate of soda, dried blood, fish scrap and similar materials. The ammonia (or nitrogen) of a commercial fertilizer, if drawn from the standard sources, is the most expensive ingredient, and purchasers should not waste this by applying it in large quantities to fields that still have a fair amount of organic matter.

A careful study of the analytical table will show the character of the samples sent to this office. Numbers 103-105 were inadvertently published last year, with the percentage of fertilizing constituents calculated to the dried substance. The figures given below represent the actual percentages in the samples, as received at this office. Of course these will vary with any changes in the amount of hygroscopic moisture.



ANALYSES OF FERTILIZERS.

NAME OF FERTILIZER.	MANUFACTURER.									
	Per Cent. of Water.	Per Cent. of Soluble Phosphoric Acid.	Per Cent. of Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.	Per Cent. of Ammonia.	Per Cent. of Potash Soluble in Water.	Value, per Ton. See Note Below.			
103 Ammoniated Bone Meal	8.42	.00	.00	13.35	3.76	.00	24 63			
104 Boss of the Field Phosphate	4.05	6.08	1.07	5.11	1.36	.00	23 28			
105 Ammoniated Superphosphate of Lime	5.26	4.72	.31	10.92	2.05	.00	27 07			
106 Corn Fertilizer	9.89	7.04	2.58	2.18	4.08	.00	33 14			
107 Fine Raw Bone	10.60	.00	1.63	21.12	3.91	.00	35 78			
108 Ralston's Bone Meal	15.58	1.24	1.36	13.18	2.98	.00	29 05			
109 National Bone Dust	16.21	5.16	1.99	3.31	2.94	.00	26 03			
110 Twenty-Six-Dollar Fertilizer	20.51	5.19	1.48	2.12	1.53	.00	19 75			
111 Garden City Superphosphate	16.42	5.07	2.44	2.89	2.96	1.15	27 08			
112 Banner Bone Dust	8.03	.00	2.38	9.80	3.15	3.64	27 90			
113 Ammoniated Phosphate	7.77	.00	2.90	6.27	2.80	3.55	24 18			
114 New Standard Fertilizer	9.74	4.53	.68	1.20	2.93	2.48	21 25			
115 Complete Fertilizer	12.06	.00	2.61	8.41	2.81	1.43	23 25			
116 Bone Dust	13.22	.00	3.76	12.42	3.83	.00	30 70			
117 Complete Fertilizer, No. 2	10.20	7.43	3.12	1.29	2.04	.97	29 15			
118 Atlas Ammoniated Phosphate	14.43	3.14	3.26	5.97	2.04	2.34	27 05			
119 Ammoniated Ground Bone	10.33	.00	4.79	19.56	2.55	.00	35 83			
120 Golden Harvest Superphosphate	13.21	.00	5.65	7.37	3.83	.31	29 40			
121 Superior Fine Ground Bone	9.45	.00	2.65	19.31	4.93	.00	38 87			
122 Fine Ground Bone	10.89	.00	3.46	22.26	1.62	.00	33 35			

123	World of Good Ammoniated Sul-	Thompson & Edwards, Chicago, Ill	11.13	5.10	2.47	6.08	2.78	.00	29 07
124	perphosphate	Thompson & Edwards, Chicago, Ill	11.41	6.05	2.31	6.32	2.87	.00	29 21
125	Dissolved Bone Meal	Thompson & Edwards, Chicago, Ill	12.51	5.55	2.83	6.49	3.81	.00	25 24
126	Indiana Sure Growth Phosphate .	St. Louis Carbon Works, St. Louis, Mo	8.81	.00	3.03	20.32	4.84	.00	40 59
127	Raw Bone Meal	C. O. Knoblauch, St. Louis, Mo.	7.98	.00	2.53	18.01	4.24	.00	35 28
128	Bone Meal	Struss, Astroth & Co., Louisville, Ky.	9.76	.00	1.76	19.00	3.56	.00	32 25
129	Complete Fertilizer	E. Rauh & Sons, Indianapolis, Ind.	9.87	.00	3.25	14.20	2.54	1.35	30 01
130	Bone Meal	Indianapolis Fertilizer Co., Indianapolis, Ind.	9.38	.00	3.16	16.00	2.95	.00	30 54
131	Raw Bone Meal	J. B. Jones, Louisville, Ky	9.80	.00	3.20	19.35	4.19	.00	38 28
132	Pure Raw Bone	E. Rauh & Sons, Indianapolis, Ind	8.88	.00	1.96	21.46	3.37	.00	35 10
133	Straight Bone	E. Rauh & Sons, Indianapolis, Ind.	9.01	.00	2.98	14.05	4.95	.00	34 20
134	Huoster Bone Phosphate	Cleveland Dryer Co., Cleveland, O.	10.83	7.95	.99	3.25	2.85	.40	29 99
135	Pure Raw Bone	Conrad & Kammerer, New Albany, Ind	8.78	.00	2.28	13.92	5.27	.00	38 83
136	Compound Raw Bone	Conrad & Kammerer, New Albany, Ind	10.31	.00	3.58	15.00	3.40	.00	31 64
137	Superphosphate	P. B. Mathiason & Co., St. Louis, Mo.	14.73	7.77	.28	2.63	4.42	.00	31 93
138	Bone Meal	P. B. Mathiason & Co., St. Louis, Mo.	8.39	.00	2.95	17.94	3.94	.00	35 07
139	Raw Bone	Indianapolis Fertilizer Co., Indianapolis, Ind.	10.89	.44	2.60	18.42	3.83	.00	34 59
140	Globe Wheat Fertilizer	Robt. P. Brown Oil Co., St. Louis, Mo.	10.89	4.44	1.65	1.63	5.20	.71	29 93
141	Ammoniated Dissolved Bone	Wahl Bros., Chicago, Ill	9.23	4.34	3.66	3.63	3.91	.00	30 63
142	Ground Bone	Wahl Bros., Chicago, Ill	8.33	.00	2.46	18.92	3.66	.00	34 33
143	Common Sense Fertilizer	Common Sense Fertilizer Co., Louisville, Ky . .	9.18	.00	3.00	7.37	1.53	2.00	19 75
144	Fall City Bone Meal	Fall City Fertilizer Co., Louisville, Ky	9.18	.00	2.20	17.45	2.98	.00	30 35
145	Carriers' Raw Bone Meal	Falls City Fertilizer Co., Louisville, Ky	8.10	.00	2.42	18.61	4.68	.00	37 01
146	Square Bone	Cleveland Dryer Co., Cleveland, O.	9.95	2.25	3.88	8.84	9.55	.00	27 97
147	Raw Bone Superphosphate of Lime	J. B. Jones, Louisville, Ky	9.95	8.53	5.67	10.95	3.14	.00	31 34
148	Corn Fertilizer	Robt. B. Brown Oil Co., St. Louis, Mo	8.48	5.84	.21	1.26	3.91	.00	23 05

NOTE—Those who may consult this table with the intention of purchasing are requested to note the cautions on page 199.

Every law is inoperative unless there is some power to enforce it. Whatever good our present fertilizer law may have accomplished, it needs revision. Samples of fertilizers for analysis are taken by the manufacturers only, and there is no provision for official inspection. This requires salaried officers; and to meet the expense of fully protecting the consumers, some of the States assess a tax of fifty cents per ton on the fertilizers sold. The fees paid by manufacturers in Indiana are rather more than ten cents per ton. Our present law should be amended—

1. To provide for inspection of fertilizers sold;
2. To provide for the analysis of a reasonable number of samples furnished by farmers;
3. To meet the extra expense thus incurred; and
4. To conform with such plan of analysis as may be generally adopted in other States.

The primary object of the fertilizer law is to protect the farmer by informing him of the character and value of the goods purchased; but with no system of official inspection, the published results may be very misleading. There is no real guarantee that the fertilizers sold conform in composition to the samples analyzed.

The records for the past year afford a means of estimating the total quantity of commercial fertilizers sold in the State. It will be of interest to compare this amount with the annual requirements of the farm; we may thereby gather some profitable lessons for the future. The most costly constituents removed from the soil by farming are phosphoric acid, potash, and nitrogen. The latter may be obtained indirectly from the atmosphere; but every pound of potash or phosphoric acid taken from the soil leaves it permanently just so much poorer, unless an equal weight of the same is returned.

The amounts of phosphoric acid and potash that may be supplied to farmers is estimated as follows: The law requires that a label from this office shall be placed upon every package of commercial fertilizer offered for sale in the State. Sixty-nine thousand such labels were issued during the year ending Sept. 30, 1884. The sacks used hold either 100 or 200 pounds each. If, then, we assume that each label is attached to a 200-pound package, ten labels would be required for each ton, and the tags issued represent 6,900 tons of the various fertilizers. No larger amount can be sold in conformity with the law; while the probability is that some surplus tags will remain in the hands of dealers, and less than the estimated amount of fertilizers will be sold. Now, by calculating the amounts of phosphoric acid and potash in the whole quantity of each brand whose sale is authorized, we find that 1,051 tons of phosphoric acid and 65 tons of potash may be supplied during the year in our commercial fertilizers, but the estimate is above rather than below the truth.

An estimate of the total quantity of these important constituents drawn from the soil annually in the State was also computed, under my direction, by students in agriculture. In each case of doubt, the figures were so chosen as to give a result below the truth, rather than above it. The aggregate production of wheat, corn, oats, rye, barley, buckwheat, hay, potatoes, and tobacco (exclusive of straw) was

taken from the census for 1880, and these figures were combined with the known composition, to calculate the quantities of phosphoric acid and potash thus removed from the soil. In like manner, from the total number of horses, cattle, swine and sheep, with usual feeding standards, an estimate was formed of the mineral constituents consumed in the food of these animals. The analytical data, etc., were taken from Wolff's tables in Johnson's "How Crops Grow," and from Armsby's "Manual of Cattle Feeding." The results are given in the following

COMPARATIVE TABLE:

	<i>Phosphoric Acid.</i>	<i>Potash.</i>
Drawn from the soil by field crops	35,268 tons	34,589 tons
Consumed in feed of live stock	52,131 "	87,813 "
Furnished in commercial fertilizers	1,051 "	65 "

It must not be understood that these large amounts are lost to the State, for the mineral constituents undergo a constant rotation from the soil through the plant and animal back to the soil again; the wheat, corn, hay, etc., are very largely consumed at home, and animals in pasture leave the undigested constituents of their food upon the ground. In view of the inevitable loss by export and by drainage, we may note the following points:

1. The present supply of plant food, as furnished to the State in commercial fertilizers, is insignificant as compared with the amount removed from the soil in field crops. It is probably but a small fraction of that which is exported in grain.

2. The artificial supply is likewise a very small part of that which is consumed by live stock.

3. The potash sold in fertilizers is utterly inadequate to maintain the fertility of our soils. In the eager demand for ground bones, the value of potassium compounds has been almost overlooked. The total annual supply is scarcely one-third of the amount clipped with the wool.

4. The greatest care should be taken to return all barnyard manure to the fields, not allowing the liquid portion to drain off into the streams. A waste of two per cent. of the matter discharged by our live stock, would represent all the phosphoric acid and thirty times all the potash sold in the State for fertilizing purposes, worth some two million dollars. The actual waste is more likely to reach ten or twenty million dollars annually.

5. Considerable importations of salts from the German potash mines will probably be needful within a few years, and may prove advantageous at once. In the meanwhile, wood ashes should be applied to worn fields, and when dry leaves are burned, the ashes are particularly valuable, and should not be wasted.

Very respectfully,

ROBT. B. WARDER,
State Chemist.

THE FARMER AND HIGHER EDUCATION.*

BY PROF. C. H. HALL, OF FRANKLIN COLLEGE.

Mr. Chairman, Ladies and Gentlemen: I appreciate the privilege of being permitted to address so many men before me this afternoon, who represent the farming interests of our State. While I have never been a practical farmer, yet, oftentimes in my study, when my brain has been wearied with the philosophy of Plato, and the beauties of Homer, or meditating on that splendid "March of the Ten Thousand" and kindred lines of thought, in memory I go back to the days of my boyhood, when, barefooted, I pressed my feet in the soft, mellow, upturned earth and heard the blackbirds sing and saw them pluck the long slender worm from the furrow. As it is my privilege to address you at this hour I come with the thought, *The Farmer and Higher Education.*

By higher education is meant the education that some of your boys and girls are receiving from the colleges and universities of our State and other States. Beyond the shadow of a doubt the Indiana farmer's higher education should come from the universities and Christian colleges of Indiana. These are of vital importance and inestimable value to the sons and daughters of our State. Consider

First. The farmer's attitude toward the higher education. In traveling over our State from north to south, and east to west, there is scarcely a neighborhood in which you will not find the majority of our farmers in an attitude of practical indifference towards our colleges. The farmer too often feels that the higher education sustains no relationship to himself. It is necessary for the man who desires to be a doctor, a Governor of our State, or President of the United States, but to him, the man who plows and gathers in the grain, this higher education is of no appreciable value.

Be it said to the credit of those whom I address this evening that there are many who may not be classified thus, and yet there is a multitude of farmers all over our State with whom you will have to reason and plead earnestly, if their sons are to take a college course, and thus secure the advantages of the higher schools of learning. To be really educated there must be a well drilled and disciplined mind. No man can claim to be an educated man, no matter how many M. D.s, D. D.s or LL. D.s may be attached to his name, if he has not a disciplined intellect. He must also be in the possession of knowledge. These two factors—a disciplined mind and an accumulated fund of knowledge—mark conspicuously the truly educated man. No matter where the discipline and the knowledge are obtained, whether in the work-shop, or in the counting room, or on the farm, if he possesses these two factors he is really an educated man. Another assumption altogether too prevalent among our farmers is that the higher education does not con-

* Read before the Annual Agricultural Convention January 6, 1885.

cern their sons and daughters as farmers to be. I have looked into the faces of the young men gathered into our halls of higher education and have seen there the flash of intellect, and there has risen before me a vivid conception of the possibilities before them, if they may give themselves to the years of toil and culture. Here is one who has in him the powers of an orator, a logician, a sculptor, a chemist, a metaphysician or mechanic. He naturally asks himself: How long shall I be in college? I am going back to the farm again, therefore but little of this study concerns me. Thus he has caught and reflects the spirit of which we have spoken, that the higher education does not concern the farmer's son who expects to farm. On what ground does he thus practically exclude from the farm the drilled intellect and the cultured mind and the sagacious spirit—the best powers of manhood? Is not the farm worthy of such men, and does our country not need such men on the farm?

This question is often asked the teacher: Why is it that these young men who enter the college halls go out any thing but farmers? The answer is brief: Because the farmer father gives his stalwart, big-souled son, who intends to farm, no encouragement to seek the higher education that brings him moral and intellectual power. And such a son accepts the logic of his sire and only learns its weakness when too late to remedy it.

Another phase of the farmers' attitude toward the higher education is more hopeful and prophetic of the future. He does value the higher training for the sake of his children who intend to enter the professions. If he has a son who is depraved, or one not particularly bright, and who hates all toil, he is inclined to send him off to college that he may become a lawyer, a doctor or a third-rate preacher. He recognizes that in all other lines of work, except farming, an education is of real value in obtaining the highest success. And yet for precisely the same reasons that the higher education makes the workman more competent in the varied walks of life does it make the farmer better qualified to find the best in his calling. Consider—

Second. The farmer's need of a higher education. The farmer is in need of the higher education—the disciplined mind and a larger amount of information—as a means of self-protection. The farmer in whose brain, in whose heart, in whose soul, are lodged the best possibilities of our civilization and generation, will be able to defend himself and his against the sharks and humbugs which so often entangle him, when he brings to his farm life the culture of severer thought. What he wants is ability disciplined, and knowledge widened, until he is able to measure arms, forecast results, and thwart the purposes of his unscrupulous foe. He wants to be drilled so that he may be able to meet the drilled intellect of the knave on the road, of the scoundrel on the street corner, and of him who enters his parlor to court his fair and favorite daughter.

The farmer needs the drilled intellect and disciplined mind in order to elevate his profession and to master the art and science of his vocation. The farmer's occupation is both a science and an art, a science in that it has to do with soil and seed and season, an art in that much that he does may be a delight to the eye, a stimulus to the imagination and taste. Such a farmer's barn will not be in front

of his house, his fence corners will be free from thorn and thicket, his corn rows as straight as the eye can run them, and his house will not be as one seen this morning from the passing train. It was a well built house, elevated on pillars about three feet high. Scarcely a foot of soil was in that yard that had not been turned up by the nose of the savory pig. It was a landscape of mingled mud and mire. Such scenes as this science must certainly condemn and the crudest artistic taste forbid. The farmer, therefore, needs the higher education in order that he may develop to the highest degree possible the useful and the beautiful, in his own vocation.

Third. The farmer's obligation to support the schools of higher education. If I were gifted with the tongue of eloquence I would stand before this audience and plead with you, as representing the farmers of Indiana, until there would not be a county in our State that would not have a score of young men and young women pursuing a course of study in Purdue University; until half of the students of Indiana State University were the lusty sons and fair daughters from the farms of our State; until every Christian college in our commonwealth is thronged with eager students, the noblest and truest of whom are the children of Indiana's broad acres. It is not enough that the farmer should be satisfied with a hundred and sixty acres of land. It is not enough that he should be contented that his fine horses and cattle should take the premiums at our fairs. There is more at stake than fat sheep, horses and cattle, and while these are valued highly as they deserve to be, let each farmer not fail to be loyal to that higher education whose aim is to make him a man more competent in all his chosen toil. No man, whether he be a farmer, or lawyer, or doctor, or of any other profession, has a right to esteem so lightly these powers of the soul—reason, conscience and the will—as the masses of men esteem them. The farmer is above his profession. He is larger than his toil, richer than his flocks, more beautiful than his herds, more valuable than every possible development of his lands. The farmer's own intellectual, moral and spiritual development are concerns of such far-reaching interest that in comparison with himself, his lands and his flocks, his houses and his crops, are but as the shadow to the substance, the garments to the man. Realizing his own value, recognizing the fact that the higher education has to do with that in himself which makes him of supreme value, how can the farmer fail in an appreciation of and loyalty to our institutions of higher learning? Speedily may the day come when the youth all over our land shall be compelled to subject themselves to a much more rigid course of instruction than the few now receive by choice. If the sons and daughters of the farmers of our State have not the advantages of a higher education, who will be responsible in that eternity whither we are all moving, and where mind and conscience and heart are measured and not lands and grain? I urge you therefore to be loyal and in earnest in the advancement of the higher education, for the good of the boys and girls—that they may grow in their mental powers and moral sensibilities. Then will they bring to your old age the merited joy that life can bring—the privilege of seeing your sons and daughters noble and true as you go down into the valley whence there is no more return to earth.

The farmer is under obligation to support the higher education for the sake of

the perpetuity of our State. There can be no continued enjoyment of freedom and liberty, no perpetuity of our nation, that is not based on intelligence and conscience—on the enlargement of all the powers of the soul. The flag that floats above us, as the symbol of our freedom, ought to be recognized and revered in all our great State from the lake to the river. You glory in the possibilities of Indiana, in its hills and valleys, in its rivers and rocks, in its plains and mines; and if you value these resources and possibilities as you ought, you will aid with all your ability, and keep ever in your thought the advancement of our higher institutions of learning. If you are neglectful here, in proportion to the neglect you will ever be at the mercy of him who seeks not you but yours. But not only intellectual development or power is necessary in our individual growth. There must also be that subtle something which is called character. A man must not only *know*, but he must be a *power* in the locality where he lives. There are three hundred thousand farmers in our State—more than they of all the other professions put together. When you remember this fact, then will you understand that just in proportion as the higher education reaches the boys and girls growing up on our farms, and crystallizes into character, in that proportion will there be a rational basis for expecting the continued prosperity, virtue and happiness of our Commonwealth.

This character is built by discipline and knowledge, and grows in strength in proportion as these boys and girls shall have the power and the courage to say, "I will," and "I will not," in the interests of our great State, in the interests of liberty and humanity, in the interests of truth and their own souls. If the men and women of our country have spirits loyal and true, if they have trained intellects and a character that knows the true value of "*I will*," and "*I will not*," if they are trained in a comprehensive knowledge of the domestic, political, and social problems of our time and State, there are not powers enough on this continent to sweep Indiana from her foundation of civil and religious liberty.

The farmer, therefore, needs to emphasize to himself the necessity of arousing himself, if he does not wish to be left behind in the struggle for the highest and noblest in his employment. If he does not wish to lose that which is dearest and sweetest in his toil and in his talent, he must be among the number to lift up his voice, take out his purse and send his sons and daughters to our State Institutions, and to the Christian colleges of our Commonwealth.

A FARMER'S RECREATIONS AND AMUSEMENTS.*

BY MISS LULU A. DAVIDSON, OF MONTGOMERY COUNTY.

In all the discussions relating to agricultural interests in State assemblies and farmers' institutes, we have seen no attention given to the subject, of how the farmer and his family shall spend their leisure hours. Hours of improvement they should surely be. To me, it seems the key to the intellectual progress, and hence to the social status and future position of the farming class; so, let us put aside fish, fowl, flocks and herds, and consider what is the proper employment of idle time. Poor Richard's almanac says: "Leisure is the time for doing something useful," and especially is this true with those whose labor is largely manual. Tired hands do not necessarily make a tired brain, and reading comes first as the best recreation. Just here let me explain that I use recreation in the sense of a diversion, or change from toil, and amusement as entertainment for the mind in the way of games, etc.; also, that I deal with the farmer exclusively. This may be sauce for him, but not for the merchant or professional man. To prove that reading is a recreation, let me ask if your long evenings thus spent are not restful? Now are they, or how can they be made beneficial? The first step is to keep the family well informed; let them know that other people are "up and doing." For this purpose we want at least one county paper, the best one regardless of politics, for which we charge \$1.50; next we want one paper for general information, a daily if possible, but better than none, a weekly, \$1.50. For the children we want something; those boys are to take your places, the girls are to be their helpmates, and must be educated; we touch your plethoric pocket-book for \$2. Then the wife may want to know something about home management as well as you about the farm, give her \$1.50. Then you want a magazine which discusses art, science, religion, politics, new reforms and all the etcetera, with which the family should be acquainted. If they encourage high art and extremely modern notions, why let them; they will all elevate and instruct; \$4.00 for this (if you are not posted as to agencies). This much for the family. Of course, the head of the house has his agricultural paper, maybe two; he can't possibly do without them. Say \$2 for this; in all, exclusive of dailies, \$12.50. Now that hurts somebody; of course none of you, but your neighbors. But look here, don't you feed your hogs all they can profitably consume? Are your cattle, sheep or horses ever hungry? To be sure each pound of flesh on them has a *cash* value, yet you starve the minds, the impulses of your family, and entail an inestimable loss on generations. Is intellect, future prosperity and happiness to be weighed in the balance with gold? The pursuit of gain when it comes to this can only corrupt. Economy is all right, to gain a competency, it must be rigidly observed; but prudent economy does not

* Essay read before the Delegate and State Board of Agriculture.

mean starvation of the mind or any of the forces which help to make a perfect being. One of those fat hogs will pay the bill, and if necessary put less in the stomach and more in the head. There is no limit to newspaper literature if you exercise proper judgment and can afford it. If the childrer run to specialties, foster their inclinations—the doctrine of vocations is a good one. For the machinist, take a mechanical gazette, for the musician, a musical publication, etc. Encourages them to be cranks, you say? Since this is the age of cranks, let me remind you that Fulton and Franklin and Morse would be called cranks if they lived now; Joan of Arc was one, Edison is one to-day, and yet all have done great and lasting good. To be sure Barkis says: "Nothin's sure but death and taxes," and fame is a fractious animal in a large field, but let the children enter and catch him if they can.

Next we come to the library. If it is full of stale agricultural reports and religious debates as some we know, take the former to the attic, place the latter on the top shelf, and educate *up* to them, teaching Christianity by every day work. Begin at the bottom, put in histories first for the children and progressively up to concise standard works for adults, interspersed with good biographies and books of travel. The next shelf is for poetry and fiction, and we place caution at your elbow to make you put in only the best. If you don't, the whole family by dint of borrowing and exchanging will get hold of the trashy, "Saturday Night" kind, and even yellow-back novels. We presume every county has had a boy who tried to turn Buffalo Bill. It is said our impulses spring from something within us responsive to a call from without, and we are largely dependent on literature for our incentives. A good deed will call forth a good one; then let the tales of bravery and valor be of the best. Such books as David Copperfield, Ivanhoe, and our own peerless Ben Hur will educate and elevate. Scientific and religious treatises come next in order, then the encyclopedias and indispensable dictionary. Compare a family thus supplied with one where the tables are primly neat, with only a basket of work on them. Which one is first in business and society? Whose children are most at ease in older company? Whose example is most commended, whose advice most sought? Litter your house with papers and books. They are fresh and clean and will shut out tobacco and other ills attendant. Two young men, rivals in business, each recently fitted up a library. One, in accordance with his dignified bearing, placed over the entrance the motto, "*Dum vivimus, vivamus*," which as you know means "while we live, let us live," and learn, ought to be added. The other, a shrewd fellow with an eye to business, in a few days placed over his door on the opposite side of the hall, "Git a plenty when you're a gittin'." Both are to the point, and if you follow them, thus getting quality and quantity, be assured your winter hours of recreation will be useful and happy.

As summer brings so much work on the farm, the idle hours are more limited, but none the less enjoyable. There is usually an extra horse which may be driven to the postoffice or county seat. If there are errands to do, make it a pleasure instead of a task. The plowman will ride for recreation, the one who drives much will relish a walk. Let quitting time be at a reasonable hour. The body must be refreshed for the next day's labor, or else in a week's time there will be lagging and

slighting of work. In occasional drives you will see much to encourage you in this course. Your corn looks better than that of neighbor Brown, who works from five o'clock in the morning until eight at night, who hires his men to put in every hour, except when eating or sleeping. His labor is hard, he turns the farm crank with his eyes shut, thinking work is work any way, and does not realize he is knocking off profits here and there by unintelligent labor. He plows his corn too deep, literally tending it to death. He has a light yield, and can't understand it. His family are thin and sickly in the fall, and he has doctor bills to meet. He whistled and whittled last winter away, and don't know any better. He has yet to learn that moderate and intelligent labor pays. The mother and daughter on their drives see blue chickens in Brown's yard where flowers ought to be, the washing just on the line at 4 P. M. What did these women do last winter? They knit—mittens, stockings and socks, they sewed shirts, aprons and frocks; and now they wonder why your work is done, how you can ride, fish, or swing lazily in the hammock at even tide. No wood-house, no cistern, but back-breaking tubs, a dasher-churn, and rickety stoves at Brown's, and he is but one of hundreds. Fill your yard with hammocks, the boys can tie them, with chairs and seats where the family can read and swing at will.

BETWEEN THE CORN-PLANTING AND PLOWING,

Gather up girls, wife and all, and go fishing; before harvest have a picnic, and so on through the summer vary the programme. In the autumn comes the fairs. The intelligent man attends them to learn and to rest. The family have something to exhibit, and are interested in the several departments. The whistler and whittler takes it in as a great show for his benefit. He is the man who patronizes the side shows and catch-penny games, if you admit them; he learns more profanity and vulgarity, buys more tobacco and beer, goes home no whit the wiser, and thinks the association is getting rich. The intelligent man takes his family to the city and State fair, or exposition, and with broader views of life they return to the home as a rendezvous of rest.

We have filled the year with recreation which can not all be called amusement while all amusement is recreation, and hence is secondary, but no less the proper portion of the well-regulated family. Games entertaining to both old and young are to be found at the stores at low prices. The time-honored backgammon and chess have their place, and legion only names the instructive games for children. Authors and Logomachy are always good, especially the latter, for poor spellers. Then, on account of their numerous diversions, we admit playing cards, believing, contrary to popular prejudice, that in perversion alone lies the trouble. Because they are the gambler's tools, it does not follow that cards contaminate. Because we abuse our appetites, the blame should not fall on the inoffensive food. Admitting, for the sake of argument, that they carry a little extra fascination, it only strengthens my belief that the family should be acquainted with them, in order that temptations to excess may be curbed at home. Shut them out, and the perverse nature in every breast, which demands self-experience, and will not listen to

another's teaching, will drive the boys to hay-mows and vacant rooms. Haven't some of you, in boyhood, done this very thing, making a wrong by the deception? The proverbial profligacy of preachers' sons comes from just such stringent rules. They are a whetstone to the morbid curiosity, which will be gratified. A tight parental rein makes an uneasy, restless child, sure to break loose sooner or later. A good lesson of self-government may be taught along with these games, and the dangerous fascination will wear out before a boy comes to manhood, just as a child's pleasure with a new toy. We have seen cards admitted in good families, and have never known a case where it caused trouble, and since we are to learn from example, let us profit by it.

We have disposed of quiet games, and must hastily speak of the rollicking blind-man's buff and puss-in-the-corner, so dear to childish hearts. Of course they are noisy and boisterous, but a little indulgence will not hurt you. Give the family the range of the house a few times each winter for parties, taffy-pullings, and the like. Do not frown on these pleasures; give your neighbors' children a warm welcome and enter into the sport yourselves. Add ten years to your life by being a boy again once in a while. Perchance in just such roguish play you first saw the rosy face of the wife who now watches your children with happy eyes. If you are bilious and blue, if crops are bad and hogs low, call the family together and have a hearty romp and laugh. You will see them growing healthy and strong, and the reaction will be better than a doctor's prescription.

For summer there are the out-door games of croquet, tennis, and base ball. If you use proper judgment, and know when enough's enough, no moment devoted to healthful exercise will ever be wasted. Your pay will come in the light heart and willing hands of your own boy, or the lad you may hire. Treated as men, they will work like men.

Passing over many things with mere suggestions, I want to deal a little with generalities. I feel a little out of place here, being conscious that I address representative men, who I can not believe come from homes illy supplied with the things which make life enjoyable and progressive. Yet I would like you to think about it and talk it to your neighbors. Assist those really unable to procure reading matter and they will soon learn to help themselves. It must be an excellent country where you can not find the whistlers and whittlers at every fourth house. Doubtless you can think of boys within a mile of you, who spend their evenings at the village store or show, where roughs congregate and spin foul yarns. Their sisters are foremost in the hugging and kissing bees yet held by this class. Follow these children home and methinks you will stop at neighbor Brown's cottage, where the sources of pleasure are vested in two mongrel dogs and a wheezy cat. We have in mind a family of sad-eyed, listless children whose educational advantages in the way of school have been good, who have been reared in a Christian home, are regular attendants at Sunday school and church, and yet are lifeless, aimless and uninformed, lacking the vim and ruddy faces of hearty youth. The truth is the Christianity stopped with the moral teaching—the moral, mental and physical development have been neglected and the germs of perfect man and womanhood have shrunk into a mere shadow. Their reading is confined to one channel, their amusements to the mildest games. Through mistaken kindness, the common laws

of health are disobeyed and we find them tender and delicate. You may preach and teach, but boys and girls will be boys and girls so long as time lasts. Let your frosty frown fall on their natural desires and you nip the strength of will and body. A certain amount of pleasure is the birth-right of a hearty child as much as a good supply of "creature comforts," then let it be unstinted; devote every leisure hour to the cultivation of mind or muscle.

Scarcely a month passes that we do not see articles on how to keep boys on the farm, harping on the low wages and tedious work of town life. It is not the lighter work so much as the various kinds of evening pleasure which draws them to the city.

TO ERADICATE THIS INCREASING TENDENCY,

the tap-root of its growth must be struck, by supplying the farm as far as practicable with what they seek in town. Our city friends have the advantage of us so far as amusements and intellectual treats are concerned, and unless there is a visible effort at compensation with frequent trips to the city, the wife as well as children will rebel at the "heaps of work" and little pleasure. The masculine members of the household have the advantage of the others as their frequent business calls, serve to keep the confinement from galling. This is not a plea for feminine supremacy, but equality, and we can't resist jogging your memories.

To illustrate again, allow me to give you a true picture found in our own county. Within a stone's throw of each other, live two men, each owning considerable land. One of them recently said he made it a point never to hire a man who owned a horse or buggy, or anything from which to derive pleasure; that he never allowed them to indulge in games, and dictated as to how they should spend their Sundays. As a result, his whole farm is in a state of dilapidation, with fences down, gates hanging by one hinge, buildings out of repair and a general air of destruction about. The labor he secures is that of a mere machine. No sympathy or intelligence guides the hands which help him. The other man employs men owning horses and buggies, believing it an evidence of their own thrift; he lets them off early in the evening, supplies them with various kinds of amusements, and to-day has

ONE OF THE MODEL FARMS

and residences of Montgomery county. He is prominent in social, business and political circles, and his family do him credit. The other man we never knew existed until a short time ago. Scores of such examples might be given, and I can not feel that I overestimate this great fault of the farmer.

We hear of an aristocracy of letters, of wealth, of the middle classes, with the farmer at the bottom, and unless you wide-awake men inaugurate a reform he is likely to stay there. He has the strong body which can support a strong mind, but the latter demands nourishment outside of the ordinary education. And school life is but the beginning; there we get the outline which only years of experience and study can fill and call the completed life. The somewhat isolated condition of

the farmer gives him an opportunity of judging people and things with unbiased mind, the source of the little common sense in the world. If this opportunity was cultivated and fostered, who shall say the next decade will not chronicle

AN ARISTOCRACY OF COMMON SENSE.

A few have already prophesied that the farmers are the future aristocrats, but long strides are to be taken ere we fulfill it. The treacherous "jingling of the guinea which helps the hurt that honor feels" must be overcome and blinded eyes must be opened. The Chatanqua Circle has proved a good thing in cities and towns. Would not a similar plan be good for the country? Country churches seem to belong to new countries, at any rate the tendency now is for people to flock to the numerous villages for worship and general intercourse, making such an idea feasible. Can not this circle be extended or this State produce a second Dr. Vincent, to arrange and perfect a plan for the intellectual advancement of the farmer?

In conclusion let me say that I have tried to present things as they really exist. If I slipped off the subject now and then, remember that that is a woman's way. If I failed to properly provide for the farmer and his wife, it is because I believe that in providing for the children they will include themselves.

You who think I dwell on an imaginary evil, and begrudge the time I have taken, will begrudge the leisure hours. You have but a misty idea of the immortal future and no conception of the chief end and aim of life.

All right, farmer friends, let these men sleep on; meanwhile let us develop our higher and better instincts as an interpretation of God's holy plan. The beginning of the twentieth century will find the Rip Van Winkles still asleep, while the farmer's craft with progressive crew floats on to a perfect hereafter.

WHITESVILLE, IND., December 30, 1884.

FRENCH AGRICULTURE AND THE BREEDING OF NORMAN HORSES.*

BY COL. J. A. BRIDGLAND, OF RICHMOND, IND.,
Late Consul of the U. S., at Harre, France.

Mr. President, and Gentlemen of the State Board of Agriculture:

I have the honor to appear before you to-day, at your request through your honorable Secretary, to submit a few remarks upon the subject of French agriculture and the breeding of Norman horses, and, with your permission, I will add a few remarks upon international commerce between the United States and France.

The new part of France was ceded to Rollo, a leader of a band of Northmen,

*An address delivered before the Delegate State Board of Agriculture, January 7, 1885.

who had been accustomed to invade and overrun the country, by King Charles, the Simple, and became a duchy under the name of Normandy. The Duke of Normandy continued to rule the country, and the duchy became one of the most prosperous and powerful in France. William VI, Duke of Normandy, invaded and conquered England in 1066, and became King of that country, while still retaining his dukedom. His successors in the dukedom were enterprising and powerful Princes, and took an active part in the crusades and other warlike enterprises. At the same time they encouraged both agriculture and navigation, and the people of their sea coast were the most daring and skillful amongst the navigators of that time. They conducted an active traffic with foreign countries, and as early as the fourteenth century established treaty ports on the coast of Africa, and elsewhere. In the sixteenth century they discovered the St. Lawrence river, and occupied its shores; and also established settlements in Brazil and other parts of South America. This commerce necessarily called for the establishment of seaports in France. The last important of these ports was Havre, at the mouth of the Seine, founded by Francis, the first King of France, about 1535, the previous port of Harfleur, at the mouth of that stream, having become ineligible on account of the filling up of the stream by alluvium, similar to what has occurred at the mouth of the Mississippi and other rivers of its kind. The harbor has ever since been maintained and improved at great expenditure of money, and its docks are now more extensive than those of any other port except Liverpool, and its commerce equals, if not exceeds, that of any French port. During the growth of the commercial property the agricultural interests of Normandy made corresponding improvement, this being mainly due to the fact that, unlike England, the land, instead of descending always in a body to the eldest son, was divided among all the children, until the whole country is held in small tracts. This state of things have continued until this day, and now nearly the whole of France is owned by occupants of the soil, who thus have the greatest interest, as it is to their advantage, to bring and keep the same in the highest state of cultivation and productiveness. The lands are now in better condition than they were five hundred years ago, the policy of the farmers being to replace the drain upon the soil each year by its equivalent in barn-yard manure. The proprietors of land make it an invariable practice in renting to require the tenants to be skillful producers of barn-yard fertilizers. Such tenants have but little difficulty in renting the best lands in Normandy. Many of these lands are occupied by the fifth and sixth generation of tenants.

Three-quarters of all the land in England is owned by less than 20,000 proprietors, while three-fourths of all the lands of France are owned by three-fourths of the people, who work them; hence, for seventeen consecutive years, up to the last twelve years, the French farmer, with about 40,000,000 of people on a territory but little larger than the State of Texas, produced a surplus of wheat, horses, cattle, butter and eggs; and, in fact, furnishing a very large share of table supplies to London. A French farmer on sixty acres of land, with but few fences to keep in repair, other than mud fences, that require little or no attention after they are made; although they are about four feet at the base, they take up less than no land at all, as they are four feet high and two feet wide on top, and as they are universally cultivated in grass, which is cut and grazed as grass lands are in this

country, with the addition of a line of trees, mostly beech. This class of French farmers, which are about the average, will have at the end of the year a little balance sheet of sales about as follows :

Six head of cattle, at an average of 1,400 pounds; 8 head of hogs, at an average of 200 pounds; 400 to 500 chickens, worth 80 cents each; 700 to 800 pounds of butter; 3 to 4 Norman draft colts, where they work mares (for they do not keep their stallions and mares on the same farm); together with their wheat and fruit, for there is an orchard on almost every tract of land. Such farm has more money to its credit than the average of our farms with 200 acres. When our people raise corn and hogs and pay taxes on at least one-half of a 300-acre farm that is not cultivated, our farmer making his land poorer, and the French farmer increasing the productive quality of his land every year. The tillers of the French soil understand, furthermore, the importance of growing crops adapted to particular qualities of land, taking into close consideration climatic influences and weather probabilities. Grapes are grown, as we know, to the highest possible perfection, but entirely different in different localities and qualities of soil; for example, the finest Clarets are grown upon very few estates, such as Chateau Margaux, Chateau Lafitte, and not many others. The grapes grown in Cognac are worked into brandy, known as Cognac brandy. Those grown in Champagne are manufactured into Champagne wine, and so on in continuous crop, until France to-day is the richest agricultural spot in the world, for in the month of June you may drive hundreds of miles and feel that you are driving through a succession of parks owned by private gentlemen.

Mr. President, about twenty years ago I observed that the quality of our work horses was sadly retrograding, seeing that a mania for trotters was making rapid inroads into the quality of the useful and necessary draft horses, and about that time I made my first voyage to Europe landing at Liverpool, where I saw the immense Clydesdales and other English draft horses that were powerful, but slow in motion, and it seemed to me as much oversized as ours were undersized; but when I reached Paris, I found there omnibuses on the streets of that magnificent city with two Norman horses hauling from twenty to thirty passengers, at a swinging gait of from eight to ten miles an hour, with no brake to be used as we do to stop such a load; but this wonderful horse, known as the Norman, at the mere word of his driver throws himself back into the harness, with this wonderful load behind him, which he stops more readily than our most improved and powerful brakes could do. In starting up he is patient, true and kind, and is again soon under headway at his former gait. Seeing so many of these horses in Paris at various kind of works, I was induced to go down into Normandy and see how they were bred and raised. I found no large estates or ranches, as we would call them, producing these wonderful animals. On the contrary they were bred by the small farmers heretofore mentioned. It is rarely you find more than half a dozen on any one farm for sale, oftener one or two only. They are put to light work by the farmer at from fifteen to eighteen months old, and from the time they are two years old do the work of a full grown horse. And their capacity for work, endurance, and general adaptability to the demands for draft and heavy work is unequalled by any other strain of horses within my knowledge. And by close observation I am thoroughly convinced that

they are less liable to the diseases and blemishes of the horse than any others—they are rugged and of immense power, the muscular formation amply protecting the weaker points, rendering them invaluable for the heavy work of our country, as they are able to pull and back great weight. I have owned them that weighed 1,800 lbs. and could trot a full mile in four minutes. I have some now that I will take ten dollars for if they can not haul four people ten miles inside the hour. The crossing of these valuable animals with our American mares has been demonstrated in Illinois, during the past fifteen years. The truck men of all of our Eastern cities have been compelled to go to Illinois for their horses, as well as the lumbermen of the North. Indiana, side by side with Illinois, has allowed Eastern buyers to pass through for their draft stock when they should have stopped here, as freight and expenses would be less. Our farmers would find this a very remunerative field for their consideration, and by the judicious raising of this class of draft horses diversify their labor and add to their wealth much more rapidly than by the old channel of wheat, corn and hogs, as the world is now a wheat field.

The farmer has something else to do beside all the work incidental to the proper cultivation of a farm. Let him be as intelligent as he may, diversify his crops as he will, if, by bad legislation and incompetent representatives abroad, his efforts will be wasted, as in my last dispatch to the State Department at Washington, No. 245, Havre, June 14, 1881, with regard to the prohibition on the part of the French Government, will show. I give you a copy of the same, in part, from the records of the Consulate at Havre, which applies to international commerce between the two countries. We accept almost everything from France. She rejects more than 200 articles of American production, including our pork, manufactured cotton goods, plated silverware, all kinds of machinery, without fixing any tariff whatever, but simply prohibition, they alleging that so far as our pork was concerned, that it was infected by trichinae, yet not a single case of sickness or death could be found from that cause by the Medical Department.

In the report I refer to I give you the following tables, which are official, showing the increase of our exportation to France through the port of Havre, during a part of my administration of eight years, and which now, by the action of the French Government, is almost destroyed and wiped out :

	1875.	1876.	1877.	1878.	1879.	1880.
Cotton, bales	350,572	488,788	397,635	482,859	424,064	438,244
Lard, pounds.	11,444,130	20,183,500	29,903,250	50,038,514	44,609,585	56,240,267
Salt pork, pounds	3,059,090	10,660,845	23,974,305	59,689,937	66,204,030	65,931,630
Corn, bushels.	28,552	46,280	716,889	829,804	341,704	936,350
Wheat, bushels.	39,880	259,063	902,456	8,207,900	10,858,540	11,312,850

In view of these figures, France found that the balance of trade had turned against her, when, for many years, we had paid her large balances, as much as \$55,000,000 in one year. The prohibition of salt pork and other articles by France

is unjust, and demands reprisal by our government, and if our State Agricultural Association will kindly ask the co-operation of the other like associations of our country in demanding our rights through Congress in international commerce, the time is not far distant when our substantial will be refused in the ports of France, and Germany likewise, no longer; should proper reprisals by our country in the way of spurious wines, gewgaws, and the thousand and one articles of foreign manufacture, that are better produced at home, be required. In conclusion, Mr. President, permit me to say that it is in the power of the Agricultural Associations of the country to regulate the commerce we hold with foreign nations, and if through their various organizations they fail to instruct their Representatives in Congress as to the wishes of the great agricultural interests of the country, it will be their own fault, and should not complain if all ports abroad are closed against their surplus, which they had better not produce unless they can find a foreign market for it, as it can not be produced for nothing. France has just revised her tariff, discriminating largely against us and in favor of the farmers in Europe, charging us twice the duty on wheat of any other country. I ask you gentlemen, representing as you do the agricultural interest in Indiana, is this right?

With my best wishes for the Society, I will close my remarks.

FOOD, AND THE ADULTERATION OF SOME ARTICLES OF DIET.*

BY DR. JOHN N. HURTY, OF INDIANAPOLIS.

All mankind take interest in consuming food, desiring in a general way that what they eat be clean, pure, and wholesome, yet very few, comparatively, care to study and understand the subject.

What is a food? will be the first question to answer. I think a consideration of the causes which compel us to eat will give most light. Our bodies wear away at every movement, however slight. To merely arise from sitting in a chair increases the heart's beats several to the minute. Greater exertion increases the heart's action still further, until a certain limit is reached. The phenomenon of life is also accompanied with heat, which must have continual support. Inasmuch, then, as our whole structure and its vital processes must be continually renewed and maintained, whatever material subserves that end would be a food. It is as essential, in the animal economy, to destroy as to construct, and as both these processes stop upon the withholding of food we infer that they depend upon the same cause for support.

*An address delivered before the State and Delegate Boards of Agriculture at their annual meeting January 8, 1885.

It is to be noted that reparative and building material can not alone be termed food, for that term must include also all substances necessary to the maintenance of vital processes. According to this conception, then, the air we breathe is as much a food as the bread we eat. The water we drink undergoes no digestive process, but is simply absorbed into the body unchanged. It is present in every part, yet can hardly be considered a tissue-forming material, being rather a medium for carrying building material, and also for carrying away waste.

Water, however, is a food, as it is necessary to maintain vital processes.

Some foods are very rich in nutritive qualities, and there are still others that increase vital action in a degree far beyond the amount of nutritive material which they supply. Some foods are identical with certain structures of the body, and, being introduced, may be incorporated with little or no change. Illustrative of this class is the mineral matter, necessary for the growth of bony structure, and water, the general necessity.

Some foods are valuable, not so much because they are very nutritious, but because they are easily and quickly changed into the substances of the body; or again, because they act quickly in sustaining the vital functions; such are classed as easily digested and assimilated foods.

Foods are animal and vegetable; is a classification of general character, but can not be considered by the chemist, because vegetable and animal matter are similar in chemical composition, an indissoluble bond seemingly existing. Plants derive their carbon from the air by decomposing carbonic acid gas, which has been supplied to the air by the lungs of animals. Mineral matter, water and nitrogen, plants derive from mother earth, the nitrogen proceeding from animal sources.

The animal consumes the plant, and after its material has served to build, repair and sustain, he gives it to nature to be used over again for plant food. Thus there is an unbroken circle in the production of food from different sources. All vegetables contain water and mineral matter; so do meats of all kinds.

The solid carbon and the gasses hydrogen, oxygen and nitrogen, make up the major composition of foods.

Flesh has for its base of construction fibrine; vegetables lignine, two substances almost exactly alike in chemical composition, subserving like purposes. Albumen is found alike in vegetable and animal foods. Thus may be traced the similarities of these two.

Most foods require more or less preparation before they are fit to be eaten. Cooking is an art as old as history, and yet, although of the greatest importance and worthy of the attention of the best minds, comparatively no scientific study has been made of it. Cooking is intrusted to that class in society known as servants, and, as is well known, they do not possess high intelligence.

The gastronomic world is cognizant of the names of numberless famous cooks, but the whole list probably contains only a very few who had the slightest idea of the changes effected by heat on food materials. They only knew heat to be a means for the accomplishment of an end, but an intelligent understanding was far from them.

Count Rumford's labors in the art of cooking are well known, and the great Liebig's studies in the same line are of inestimable worth.

Dr. Mattieu Williams has recently written a work on "The Chemistry of Cooking," which is very complete, being written with a full knowledge of the subject.

Miss Juliet Corson was the first one to start cooking schools in this country, her course of instruction including, beside empirical formula and the manipulations necessary to their successful execution, a resume of the chemistry of the subject.

Those who have given little thought will ask, Why does a cook need to know anything about the chemistry of cooking? What good will it do them to know whether such a substance as albumen exists or not, so they produce the results? As ignorant prejudice only would be likely to ask such questions, an answer would be a waste of time.

Innumerable discussions have taken place among scientific men as to the natural food of man. Too much importance is, perhaps, attached to meat, but it is now generally accepted that a mixed vegetable and animal diet is best. A common vegetable food, such, for instance, as the potatoe, contains in 1,000 parts 760 of water, 200 parts of starch, and some mineral salts and albuminous compounds. In cooking the starch cells absorb water, and the greater number of them burst, undergoing also chemical change. This disintegration of the starch cells is preparatory and necessary to more important changes. The starch in all vegetable substances must undergo a similar change before it can mix with the various fluids developed in the mouth and the walls of the alimentary canal. Some of the fluids, such as the saliva and pancreatic fluids, change starch into dextrine and then into sugar, and this change appears necessary before the carbon and hydrogen can be oxidized.

Without the preliminary operation of cooking, this change would in all cases be imperfect, and often impossible; and the thorough cooking of all starchy foods is of the utmost importance. When this is imperfectly done, the albuminoid envelope which incloses the starch granule has to be dissolved by the gastric juice, which is often difficult, and even impossible. Much indigestion, probably, arises from the imperfect cooking of starchy foods. The chief constituents of animal food are albumen, fibrine, and fat, with juice and mineral salts. The flavor of meat is due to osmazone, and some methods of cooking, such as roasting and boiling, appear to increase the flavor. Albumen and fibrine form about one-fifth of the meat. The former always coagulates by heat, and the expansion of the juices tend to separate the solid fibers, and this separation depends very much upon the method of cooking. Albumen is as constant a constituent of all animal food, as starch is of vegetable, but these bodies differ greatly in their chemical composition, and in the changes which they undergo in digestion.

Plain cooking is healthiest, and in the long run gives greater enjoyment to the sense of taste. High seasoning is pernicious, serving frequently to cover up poor quality in foods, and again disguising poor cooking. Its worst effect is to numb the sense of taste, and unduly stimulate the stomach. Salt, in small quantities, is salubrious, but used in excess, scurvy and kindred ills are induced.

Spices being used largely and liked by many, it is desirable that they be pure and unadulterated. In the unground condition, a novice can form a good judgment of the quality and freshness of spices, but when pulverized, the very elect might be deceived.

The various priced mustards found upon the market of itself tells the tale of sophistication. The fact is, that it is quite impossible to furnish powdered mustard in an acceptable form without slight admixture with some absorbent powder. Mustard seed contains besides a fixed oil, much albuminoid matter, which have the effect of spoiling the powdered article upon keeping for a short time, unless it be dried by admixture with some inert and absorbent powder. Simple drying by heat or exposure to air would not do, because that would cause the loss of the volatile oil, upon which the mustard depends for its piquancy and flavor. Low grades are produced by excessive admixture of absorbent powders, the piquancy being maintained by addition of red pepper, and the color by various coloring agents. The absorbent powder used is generally fine and well dried corn flour, while the yellow turmeric is used to keep up color. The corn flour is unobjectionable from a health standpoint, and turmeric is of itself a condiment highly prized by some; so these sophistications can only be objected to upon the ground of deception. Our pepper is made cheap by admixture with ground cocoa-nut shells, which furnish a powder in appearance quite indistinguishable from ground pepper. Powdered almond shells serve to adulterate powdered cinnamon, and ground roasted peas are used for admixture with ground allspice and cloves.

Powdered spices of all kinds are exceedingly liable to deterioration. They all depend for their peculiar properties upon volatile matters, which are easily lost, upon the powder being kept for some time. I would advise housekeepers to supply themselves with a small, easily cleaned hand-mill, and grind their own spices, thus insuring freshness and freedom from adulteration.

Our sugars are all pure. I mean by this that they are not adulterated, sophisticated, these terms implying the addition of foreign matter in order to cheapen. The lower grades contain much molasses, which is uncrystallized sugar, and glucose in appreciable quantity, also coloring substances, together with dirt particles. These articles all occur naturally in raw sugar, and according to grade only is their removal claimed. Some time since, when grape sugar, dry and white, was first made cheaply, from starch and sulphuric acid, it was tried by sugar merchants as an adulterant of cane sugars. It promised well, but trial found the impossibility of so using it. One of its prominent characteristics is caking or lumping, and it was found that when mixed in any proportion with cane sugar, the whole mass soon lost its pulverulent form, becoming one solid chunk of dough-like appearance. This fact unfits it for sugar adulteration, and we need have no fear of it. The experiment cost its projectors many thousand dollars, as they were compelled to take up the mixture at great expense and supply in its place the true article.

In days gone by the market afforded but two kinds of molasses—New Orleans and sugar-house. New Orleans molasses was simply a dense solution of uncrystallizable sugar, which was formed in large quantity, owing to the crude and imperfect method of sugar making. This was separated by draining the portion that crystallized, barreled and sold. Sugar-house molasses was of the same chemical nature, but was minus the color, flavor and dirt. In the process of refining the raw brown sugar, more of the uncrystallizable kind was formed, but this always after color, dirt and flavor were removed, and it was this article which, being separated by draining from the white crystals, constituted sugar-house molasses.

Now the grocer confronts us with such euphonious names for his molasses, as golden drip, rock-candy drip, royal rock, sugar sirup, pancake sirup, etc. These sirups are frequently composed entirely of starch sugar (glucose), the higher priced kinds, however, contain varying quantities of cane sugar to impart greater sweetness. There can be no objections to these articles on the score of health, provided they be free from sulphuric acid, plaster paris, etc., and consist of pure starch sugar, for then it is identical with the sugar found in all fruits. The excessive use of glucose, as also sucrose (cane sugar), produces acidity of the stomach and gastric irritation; so does the excessive eating of fruit, and hence this fact does not inveigh against it. Before the now very general introduction of glucose, confectioners' waxy candies, like caramels and butterscotch, were produced by adding to the boiling sugar solution cream of tartar or other harmless acid material; which has the effect of transferring crystallized sugar to the uncrystallizable form, and so admitting of the waxy kind of candies. Now the same end is accomplished by simply adding glucose.

Cream of tartar is the acid tartrate of potassa, and is found as a deposit in wine casks. Its use in cooking is confined to baking purposes. Being an acid salt it liberates carbonic acid gas from a carbonate, which gas serves to lighten dough. Its adulteration is very largely practiced, and frequently mixtures containing not a trace of true cream of tartar are sold as such.

These mixtures consist of terre alba or plaster of paris mixed with tartaric acid, and sometimes containing free sulphuric acid. These mixtures are villainous and can not help but prove inimical to health.

The adulterations of lard, butter, milk, cheese, flour, etc., I have treated at length in the report of the State Health Board, and only wish here further to consider fertilizers, which, although not a food, are very closely related thereto, and must be of interest to this body.

A poor, worthless fertilizer is an imposition so gross that it would be hard to find words to express an honest man's opinion in regard to it. We have, however, annually shipped into this State tons and tons of so-called fertilizers, to spread which upon the land is not only a loss of money, time and labor, but probably is positively injurious. Our State law, designed to protect against this fraud, is not of the least value, but is a disadvantage to all concerned save the dishonest vender. The State Chemist faithfully performs his duty, but there is no guarantee that the article sent out is the same as that analyzed. Our feeble and incompetent law, then, is full of harm, inasmuch as it not only permits, but, also, because of weakness, invites the dealer in fertilizers to put out fictitious merchandise.

We have in this city two fertilizer companies, both well known for their integrity and honesty of purpose. I refer to E. Rauh & Sons, whose special brand of fertilizer is Rauh's Champion Phosphate, and the Indiana Fertilizer Co., of which Mr. Wiseloge is Superintendent. To my positive knowledge both these dealers have striven nobly to furnish goods in every instance up to the standard, and when they offer them for sale at a living profit, they are told so and so of Chicago or Cincinnati will furnish a fertilizer, bearing the State Chemist's tags, at one-half the price. This experience led E. Rauh & Sons to have a series of analyses made of this wonderfully cheap, but legally tagged stuff. Samples were carefully col-

lected from various sources, and in every instance found to be woefully deficient. Stink there was, always in abundance, but the ammonia, potash, phosphoric acid were not. Sand, salt, spent plaster and common earth made up their bulk. These facts make it plain that our State fertilizer law should embody a clause requiring the State Chemist to possess himself of samples of shipments, at times unknown to dealers, and if found deficient to visit a heavy penalty upon the offender.

THE FISH INTERESTS OF INDIANA.*

BY ENOS B. REED, EDITOR OF THE PEOPLE.

Ladies and Gentlemen: There may be those before me who take no interest in fish or fishing, although I can scarcely conceive this to be the case. It may be that some of you have never

“Baited your hook with a dragon's tail,
And sat on a rock and bobbed for whale.”

If so you are greatly to be pitied. O, the luxury of waiting for a bite, and O, the luxury of drawing in a whale—of a bass. I have the reputation of having done this to a considerable extent. I am not deserving of it. The largest bass I ever caught—“killed” some will have it—was, if I remember correctly, three pounds and a quarter. That was taken with a hard-shell crawfish about two inches in length, and a few minutes thereafter I captured its mate with a similar crawfish. They were as like as two peas—of course I mean the bass, not the crawfish.

But if not successful in the literal matter of taking large bass, I have found that compensation which lies back of all misfortune, in the knowledge I have acquired concerning the habits and dispositions of fish. For instance, I have learned that bass are particularly voracious in rainy weather. An old ballad says:

“The herring loves the merry moonlight,
The mackerel loves the wind,”

But the eccentric bass has a decided preference for the splashing rain-drops, and delights to sport with them on the surface. Therefore it is I was often seen, cowed and enveloped in rubber cloth, silent and solitary, sitting in front of the old mill at Broad Ripple, when all other sentient things were seeking shelter from the steadiest of summer rains; and upon these occasions I have strung my heaviest lines. I have heard of bass being taken out of White river that weighed eight and ten pounds. I never saw one of this description; a six-pound bass is about the largest I ever saw “with my own eyes” caught in these parts, although I have been

* Read before the Annual Agricultural Convention, January 8, 1885.

informed by truthful fishermen—and who ever knew a fisherman to lie?—that a seven-pound bass is not a rarity in some neighborhoods. I would rather see a ten-pound bass than hear tell of it, though I would not for a moment question either the veracity or voracity of the proverbially truthful fisherman.

It was, doubtless, the reputation I bear as a fisherman which procured me the honor of appearing before you, and knowing myself to be undeserving, at least practically, of such a reputation, I almost feel myself to be an old fraud who has honors thrust upon him beyond his merit; but, then, when one's heart is in it, that is half the battle. There are those who can distance me many degrees in fishing, and in knowledge of fish, perhaps, put me to shame, and yet I never go to Broad Ripple but I bring home with me a mess of fish. No, they are not given to me as a general thing; they are secured with patience and perseverance, and if they are small and many to the pound, why, you may say I like small fish best.

It was, I believe, the Rev. Myron W. Reed, who, once upon a time, said all fishermen were liars. As the reverend gentleman himself is quite a noted fisherman, I can not do such violence to his cloth as to believe the assertion unless taken *cum grano salis*. You will certainly bear me witness that I have not lied concerning my prowess as a fisherman. I can not say with the Hon. Sunset Cox, of New York, that I have fished under the shadows of our Sierras in Tahoe, lake and stream; that I have followed the mountain rivulet Restonica in Corsica, where the waters blanch the boulders into dazzling whiteness, and the associations of the vendetta and the Bonapartes give a ruddy tinge to the adventure; that I have caught the cod in the Arctic around Cape Nord, under the majestic light of the midnight sun; that I have angled in the clear running Malaren Saltsjön, which circulates healthfully amid the splendid islets of stately Stockholm, and in the Bosphorus, in sight of the historic Euxine and the marble palaces and mosques of two continents; that I have been tossed in shallops along with the jolly fishers of the Bay of Biscay; that I have had the honor of beholding the pillars near Iskenderoon in the northwest corner of the Mediterranean, erected by a grateful people on the spot where Jonah was thrown ashore by the whale; and that I have bounded through the league-long rollers on the shores of New Jersey, along with my favorite life-savers—to see and feel the “bluish wriggling on the hooks.”

No, I have not thrown a line in or at any of these places, but I have cast my hook in Salem Creek, New Jersey, for perch; have angled in Long Island Sound; gone for wall-eyed pike in “La Belle” river, have roamed the banks of the Muskatatak for red-eyes; have set trot-lines in the Kentucky for mud-cats; have angled in the two Miamis with indifferent success; have helped to set and draw the seine in beautiful and storied Wye river, Maryland; have sunned myself on the banks of the Monocacy, awaiting a glorious nibble; have seined for minnows beside “Mill creek's marshy marge;” have spent precious hours at Eagle creek; have lingered at Dollarhide; have taken croppies and spotted catfish from Shannon's lake, mullets from Fall creek, and an uncounted variety of fins, from bass to dace, from Broad Ripple. O, I have had sport, that let me tell you, even if I have never captured eight, ten and eleven-pound bass.

I am not only enthusiastically fond of the gentle art, but love to eat my fish

after I catch them. It was Sam Weller, was it not, who said that "weal pie is werry good if you know the young 'oman as makes it." So I say that fish constitute a most excellent article of food if you know where they were caught and who killed them. There is a marked difference between a "boughten" fish and a fish one takes himself. To get all the virtues of a fish it must be eaten the day it is taken.

The preferences of most people differ in regard to fish. To me the goggle-eye, or red-eye, is the best that swims. Take a goggle-eye about the size of your hand, if your hand is not too large, fry it in plenty of lard, steam slightly after being done to a turn, unless you like your fish crisped to a chip, which I do not, and if there is any better provender for a healthy man I have yet to find it out. Talk of your trout and your shad—don't mention them beside properly cooked goggle-eyes.

"Ye monsters of the bubbling deep
Your Maker's name upraise—
Up from the sands, ye coddlings peep.
And sing the red-eye's praise."

But, if my memory serves me, I was not invited here to direct how to cook fish, nor yet to express my poor opinion as to the best of the catch. I was called to discuss the "Fish Interests of Indiana." It would take a longer time than you would wish to listen to do justice to this subject, and, as our honorable congressmen do, I shall have to ask leave to print if I find that I am becoming too prolix.

I hold to the grand truth that Indiana has in its rivers and streams as fine fish as can be found anywhere under the sun, from the much bepraised black bass, whose fighting powers are immense, to my favorite red-eye, whose courage oozes out of its tail, as Mark Tapley's is said to have done at his finger ends. Judging from the following, the Illinois fish hatcheries have not been well attended to by the Fish Commissioner of that State:

"It is announced that 1,000,000 eggs of Loch Lerin trout have been received at New York, and will be forwarded immediately to the hatchery at Northville, Mich. It occurs to us that if our Fish Commissioner Bartlett were alive to the interest of this great and growing State he would secure a fair share of these spawn for his Illinois hatcheries. Mr. Bartlett appears to have been singularly remiss in his official duties of late. We are told that the hatcheries on the Hennepin canal, South Fork, Bear Creek, and other noble waters of this State are in a sadly demoralized condition, and an invoice of the stores of the fish commission shows that department of our public service in possession of only one drag-net, an eel-speer, and a can of cove oysters. It might be well for the Legislature to investigate this branch of the State government."

I am glad to know that the citizens of Indiana to a considerable number are turning their attention to the breeding of fish, and that throughout the State there are hundreds of ponds for the cultivation thereof. But, the truth is, it is not every one who can own a pond and enjoy the luxury of fishing on his own domain. Therefore, too great attention to pond fishing is, to my judgment, somewhat of the same nature as—

"The fond credulity
Of silly fish, which (worldling like) still look
Upon the bait—but never on the hook."

In a word, that it is most injudicious to pay such attention to pond breeding as to neglect a more universal interest. What I desire is for our rivers and streams to be well stocked with fish, and the fish protected and preserved from the Vandals who seine and dynamite. I do not care how many ponds are set apart for fish culture by private individuals, what I would should be first looked after is the good of the general public. I want it so that either a poor man or a man well-to-do may go out to any of the adjacent streams and secure a good mess of fish for breakfast, or any other meal. There is no trouble about those who are able to own ponds protecting their fish, but I ask protection also for those who have no ponds. I would protect the fishes in the public streams of our State so that those unblest with ponds may, if they so desire, indulge in the gentle art and supply themselves with one of the most choice of creature comforts. The Good Book says, "Men shall not live by bread alone," neither would I desire that they live exclusively on fish diet, yet there is no other article of food so nutritious to the stomach and stimulating to the brain, and no other in any land the procurement of which affords such delightful recreation. Even the "brown viking of the fishing smack," who in his picturesque red blouse and fur-lined jerkin braves the tempest on his professional cruise, dearly loves the dangers and adventures of his life. It is the excitement that we all love, better even than the dainty repast that follows. A few years and the rivers and streams of Indiana, protected from the encroachments of fish pirates, will furnish an inexhaustible supply of the best fish in the world. For I contend that there are no better fish than those which people our waters and all that is needed is some measure, or measures, for their protection. Our black bass is the favorite of angler and epicure; it has been the theme of the orator and the inspiration of the poet. The red-eye—well, you have already had my opinion of that beauty. The croppy, which is known by half a dozen other names, is a delightful fish if you eat it very soon after you catch it. No richer fish swims than the channel cat, while even the mud cat is not a back-set to a hungry man. The sportive sun-fish and the graceful perch, with the horned chub or dace, are splendid fish, and to string a yard or two of the last named is the labor I most delight in.

It is said that it takes a lazy man to catch fish. I deny it. No lazy man was ever renowned as a fisherman. To be a successful fisherman one must be forever upon the alert. He must not be caught napping. The slightest motion of a fish, although the fish may not be seen, is readily understood by the disciple of old Sir Isaac. He must know where to strike—and to strike with a will. It will not be inappropos, perhaps, to illustrate this by telling of an experience with the late George C. Harding. He had had but little luck that day—he was a better hunter than fisherman. My string was heavy with perch, red-eyes, sun-fish and dace; all were fish that came to my net—no, I did not use a net. He wanted to know how I did it, and I invited him to draw near; "and now," thought I, "I will have a little fun at the expense of this man who is so adroit at poking fun at others." I was baiting with craw tails and fishing for small fish in about four to six feet of water, up to my hips in rubber boots. I would throw my line in and when I felt a bite would say: "George, that is a red-eye." Then I would hook my fish and up would come a red-eye.

Sometimes I would say, "Here, George, is a perch," and up would come a wriggling perch. Then, again, "George, here's a dace," and sure enough the dace was hooked. I kept this up for some time, for the fish were biting voraciously. George looked on with solemn awe. He said I must be in league with some fair mermaid, whose assistance was invaluable. But, in fact, to an old stager of the hook and line, the peculiar nibble of each variety of fish is generally known, the bite of a bass in particular being unlike any other.

Of late years the German carp has been introduced into this country, and are thought a great deal of by those, probably, who have had the least to do with them. There were those who fancied we had not a sufficient variety native to our waters, but must needs introduce this foreigner, which is said to grow to the proportions of a good-sized shoat, and very much after the nature of a hog. They grow very rapidly, if there is any virtue in that, and it is said that a carp of a year or so is fit for the table, if, indeed, a carp is ever fit for the table. They are very much of the nature of a buffalo, and we all know what a buffalo is. Carl Nickhaus, in writing of the artificial feeding of the carp, says:

"The quantity corresponds to the demand for food by 1,000 pounds of live hogs, if the greatest possible quantity of flesh and fat is to be produced. I was of opinion that I must make the standard quantity of albumen the same as that demanded by the hog, and I did this for the purpose of not making it too low, remembering the fact that the hog is the most voracious of our domestic animals, requiring more food in proportion than any other, and that the rapidity of its growth resembles that of the carp."

I find that carp has been sent to Indiana from the fisheries for many years. From 1879 to 1881 there were four applicants to the Government fisheries who were supplied with carp. I find that F. M. Churchman, Indianapolis, on December 4, 1880, received fifty carp; Staunton Churchman, December 28, received twenty-five, and E. J. Howland and R. M. Thompson, on November 16, were also favored with carp, number not stated. It is estimated that there are at the present time at least 1,000 ponds in the State, of large and small proportions, devoted to the propagation of carp, which probably would be better devoted to the fish native and to the manner born.

There is one thing that may be said in favor of the carp: it can live almost anywhere. It is by no means a dainty fish—almost anything and everything will tend to support the life of a carp, and as it is a well-known fact that the acres devoted to fish raising produce four-fold more in dollars and cents than those appropriated to agriculture; and the carp is such a prolific breeder, I do not know but that raising of carp would indeed be a profitable business. But then the taste for carp can never be as that for more delicate fish. For my own part, I never tasted carp, and in truth I do not hanker after it—our native fish are good enough for me.

Our lake front is of such comparatively small dimensions that the troubles there between the pond netters are hardly of State importance, although everything pertaining to fish culture should be of moment to our growing State. Up at Michigan they complain of pond netters and their depredations. This is a matter that will no doubt bear looking into, and if there is that which is wrong it should be righted.

What is most desired now is the best protection to all the rivers and the streams of the State. The real fish interests of Indiana are what I most desire to see preserved inviolate, notwithstanding that they have been tampered with and rendered well nigh past redemption.

If the tax-payer only knew it, it would be to his interest to render all the aid possible to protect the fishes we have with us, not caring how many of strange variety may be introduced. Let our streams once be depopulated, and it will take hundreds of thousands of dollars to restock them. Do the tax-payers ever think of this? A few more years of depredation by the seiners and dynamiters and the rivers and streams of Indiana will be as useless as a barren waste.

But I will not weary you. I will close these desultory remarks with a little poem by one whom I knew and loved, T. Buchanan Read. It does not indeed, refer to the fish interests of Indiana, but it is a pretty pen picture dear to the heart of the amateur fisherman :

“The angler stands
Swinging his rod with skillful hands;
The fly at the end of his gossamer line
Swings through the sun like a summer moth,
Till, dropped with a careful precision fine
It touches the pool beyond the froth.
A-sudden, the speckled hawk of the brook
Darts from his covert and seizes the hook.
Swift spins the reel; with easy slip
The line pays out, and the rod like a whip,
Lithe and arrowy, tapering, slim,
Is bent to a bow o'er the brooklet's brim,
Till the trout leaps up in the sun, and flings
The spray from the flash of his finny wings;
But he dies with the hues of the morning light,
While his sides with a cluster of stars are bright.
—The angler in his basket lays
The constellation—and goes his ways.”

FISH CULTURE, AND THE PROFITS OF IT.*

BY HON. ISAAC N. COTTON, OF TRADER'S POINT.

“The past has its uses, but it is no place for a man to live.”

In the past fish culture in the United States has been very limited, both in theory and practice, but there seems to be a new day dawning for the fish as an article of culture for food. The General Government and many of the States have Fish Commissioners, but the result of their labor has only commenced to reach the

*An address delivered before the State and Delegate Boards of Agriculture at their annual meeting January 8, 1885.

masses. They have done much in restocking our lakes and rivers, and in introducing new species of fish, and we are looking for great results. I have no doubt that in the near future the Legislator of the past will bewail himself for the meagerness of the appropriations made for the Fish Commissioners, and especially of Indiana. But, sir, I am looking to a different source than the restocking of our lakes and streams for the great increase of food fishes, and that source is the private pond. Private enterprise has brought about all the great results that we have achieved in regard to clothing and food in this country when properly aided by the Government, and I am looking to the National and State Fish Commissioners more in the light of an aid to private enterprise than to any great results from them direct. With our innumerable springs and rivulets, besides the large proportion of clay land in which ponds may be easily made and filled with water by the rains and wind pump, springs turned into excavated ponds, and our rivulets dammed and swarming with innumerable carp, then, sir, we shall have fish for breakfast, dinner and supper at our choosing; and the farmers, who have acres of quag and marsh land, which have never produced enough to pay the taxes on them, will find them the most productive portion of their farm, yielding, as they will, a larger per cent. on the capital and labor invested than any tilled land. While we may make many mistakes, and meet with many failures, what improvements have we to-day that have not come up through mistakes and failures. The wooden moldboard plow, as compared with the hardened and polished steel plow of to-day, was a failure, but it filled its place in the past; and that practical experience which we shall receive in the next few years in fish culture will be a lesson that we could receive in no other way. Then let us not hesitate for fear of failure, but drive on, and success will be ours. Besides the pecuniary benefit derived from these ponds, the pleasure and recreation afforded by them will be worth untold millions to us as a people. My wife and children never tire in calling up the finny tribe and feeding them, and the husband is often found lingering about the ponds. Neighbors by the score, yea, by the hundreds, have visited my ponds, and the general declaration is that "I am going to make a pond," or "Oh that I had a place to make a pond."

We do not raise hogs, sheep and cattle without great labor and care; neither shall we raise carp without labor, but that labor is very light compared with the labor that it takes to raise hogs, sheep and cattle. The very season of the year when they need the most care and food, our carp are hibernating in the mud at the bottom of our ponds, without either food or care.

To make carp raising profitable we should feed with as much system as we feed our domestic animals. I look upon a carp as I do a pig, or any other domestic animal, in that the flesh will be affected by the nature of the food. The carp raised without feeding may be equal to the one that is fed, but we can only raise, to a limited extent, without feeding, for we must limit the number, where we do not feed, to the size of our pond.

WHAT FISH SHALL WE RAISE?

What fish we shall raise will be determined from the stand point of profit, taking into consideration the edible quality of the fish, as well as its period of growth. We have some fine fish, natives of the lakes and rivers of this country. The bass

has few equals, and by many thought to have no superior among the fresh-water fishes; but when you undertake to raise them in your pond, you find the cost too great. The food they eat is costly. They are carnivorous, and minnows or fresh meat they must have. The value of these overbalance his yield, for we have never yet been able to feed to any living creature a food, the price of which per pound was equal to the product, and obtain a profit, for the reason that a pound of food will not produce a pound of meat, fowl or fish. Then we must feed that which is much cheaper than the article we desire to produce. Out of nearly two hundred species of fish, natives of the lakes and rivers of Indiana, who has ever produced a pound of fish by cultivation that did not cost fifty cents per pond, or more? I admit that we may raise some of these fish in ponds without feeding, but not to that extent that will pay interest on the cost of ponds, when the cost is an important factor.

But we have found a foreign fish that seems to fill that want, in the German carp, and from my short experience, I believe that I can produce a pound of fish from the carp cheaper than I can produce a pound of pork, beef, or mutton. According to the experiments of hog raisers, it takes thirty bushels of corn to produce a hog weighing three hundred pounds, or a bushel of corn will produce ten pounds of gross pork, and on an average it takes one acre of land to produce thirty bushels of corn, and that gives you a three hundred pound hog each year from your acre of corn.

In three years your acre of corn will produce nine hundred pounds gross of pork, which, at five dollars per hundred, amounts to forty-five dollars. Now, take your acre pond, and place two thousand minnow carp in it, and at the end of three years (allowing twenty-five per cent. loss) you will take fifteen hundred carp, averaging three pounds each, equal to forty-five hundred pounds, which, at ten cents per pound, will be four hundred and fifty dollars. [Or at five cents, same price as pork, will yield \$225, five times the value of the pork.—ED.] Deduct one hundred dollars for food, and you have three hundred and fifty dollars to compare with your forty-five dollars from your acre of corn fed to the hog; and I am sure that the labor to care for the fish will not be greater than the care of the hog. I am satisfied that an acre of water, stocked with carp, will yield its owner a more profitable return, without food, than his acre of corn with all his labor. There are many things that the carp will eat and thrive upon that would be of little benefit to the pig, such as cabbage leaves, lettuce, beet tops, cucumber, potatoe and turnip parings, and parsley; and they will eat anything that your pig will eat.

EDIBLE QUALITY.

There may be some difference of opinion as to the edible quality of the carp, all may not relish it, for there is no accounting for tastes, except, perhaps, by its cultivation. I have known persons that were good judges of pork, who would discard the best lamb-chops and disdain to eat an oyster or a water chicken, and declare that the sucker was the best fish that floats. We have eaten them to a limited extent only, but the family and guests all join in recommending their edible qualities, and I think that they will be preferred by the farmer's family, taken fresh from the water, to any of the stale fish that they can buy on the mar-

ket. Another thing in their favor is their tenaciousness of life. You may take them from the water and let them lay on the ground until almost any other fish would be dead, and then place them in the water again and they dart off like an arrow. I took a four pound carp from the water at seven o'clock in the morning, placed it in a basket, drove twelve miles to the city, exhibited it to many admirers, and landed him at the Governor's office at eleven o'clock still moving his gills, after being out of water four hours.

Rudolph Hessel, Superintendent of Government Pond, has said of the carp: "That there is no other fish which will, with proper management, be as advantageous as the carp. Its frugality in regard to its food, its easy adaptability to all waters, in rivers, in lakes and ponds, and even salt water estuaries, its regular rapid growth and its value as a food fish are its best recommendations."

And he further says: "I maintain my assertion that the carp, whether it be scale, mirror or leather carp, is one of the most excellent fresh-water fishes, and its introduction will be of great value in point of national economy, especially on account of the facility of its culture, and the enormous extent to which this may be carried on."

Prof. Baird has said of the carp: "I have great faith in the future of this new fish, and am quite well satisfied that within ten years it will constitute a very prominent element in the food animals of this country. It is emphatically a farmers fish, and may safely be claimed to be among fish what chickens are among birds, and pigs and ruminants are among mammals. Its special merit lies in the fact of the ease with which it is kept in very limited enclosures."

And, notwithstanding the prevailing opinion in this country that they will not flourish in waters occupied by other fish, I believe, sir, that in a few years we shall find plenty of them in our lakes and rivers. If ponds continue to increase throughout the country as they are and will continue to increase, what will become of the innumerable carp that hatch each year? for you can hatch enough in a quarter-acre pond in one season to stock a hundred-acre pond; and I ask again, what will become of them? I answer, that they will be turned loose by the thousands in our lakes and rivers to flourish, notwithstanding the bass and pike. They already flourish in European rivers, and why not here?

Mr. President, I am often asked where and how can I make a pond. I answer, anywhere that you can make a place to hold water and have the water to fill it and keep it filled, either by a spring, creek, branch, rain, or by a pump. One care should be to turn off the surplus water from heavy rains. There are thousands of worthless ravines in this State with springs in them that might be converted into fish ponds by building a dam across them and cutting a channel around for the surplus water; and there are numerous quags that could be leveled or excavated, and if I had no better place I should excavate a pond in some clay land and depend on the rainfall to fill it, with the aid of a hand or wind pump. The carp are not so choice about the kind or amount of water that many of our native fishes are, and there is no doubt that the characteristics of this fish have been brought about by its long domestication. I have neither space or time to go into the details of pond making. Use your common sense and judgment as you would in other matters. In conclusion, let me say to you, go home and examine your premises and you will find a place to make a pond.

Mr. Hendry—I approve very highly of what the paper contains. It refers to the making of artificial ponds. Some one said this morning it was not difficult for every man to make a pond, but every farmer can make those ponds; indeed in the north part of the State it is quite difficult. There is a large artificial lake in Noble county which is well stocked with fish. It was made before the year 1837, while large internal improvements were going on in Indiana, and is a feeder to the canal to Fort Wayne. In that region of the State we are compelled to build ponds, but in the county of Steuben we have a large number of lakes occupying the highest ground between Lake Erie and Lake Michigan and Toledo and Chicago. We have in that county, in the square of twenty miles, between seventy-five and one hundred ponds and lakes. In many of those lakes and ponds they are now introducing fish from other localities. Some of the lakes are quite deep, one hundred feet or over. In some of the ponds the water can be taken out, and they are introducing carp, and in some instances eels. There are many there interested in fish culture, and many farms adjoining those lakes and the streams running from one to the other, make a fine means for raising fish. The object of the fish culture there is to advertise their facilities for raising and protecting fish. In addition to this we have many natural ponds for introducing the carp, which are said to be a good fish. The pickerel is a very prominent fish with us, and have been taken that measured two feet in length. I remember forty years ago a man fishing there brought in two large pickerel on his spear at one time; these were early times, but it is different now. The law is loose and the fish are being somewhat thinned out, but even under the protection we have, if the law is enforced, we will have plenty of fish besides those being propagated.

Mr. Miller of Johnson county, was invited to address the convention on the Fish Industry, and spoke as follows:

LADIES AND GENTLEMEN—I think that a great many of the essays and publications that are being written and published upon the subject of fish culture, are calculated to lead the minds of the people wrong. There is an interest in the State

that is manifest to raise fish and there is also an interest in the State manifest to raise an angle fish, a fish that can not be raised profitably. I will say that I have been experimenting with the native fish for some eight years and I have found the majority of our native fish not worth cultivating. The best variety of our native fish are the carnivorous fish that have to live upon animal food and the minnows. It was stated here this morning that the Bass is a fine fish and it is true. Also the Red Eye is a fine fish but practical experience and thought teaches us that we can not produce it as an article of food and place it within the reach of all. In connection with those carnivorous fish there has to be a hatching house for the impregnation and rearing of the young fry.

Fish culture is not without a record. We have in the United States a commission spending thousands of money, which is worse than thrown away; we have it to-day, and it is doing us much injury. Men are trying to draw others into the idea of placing fish in these filthy streams. Fish twenty miles below Indianapolis are not fit to come to the table as an article of food. I ask every intelligent person in my presence if you have had any of those fish which have been hatched and thrown into your rivers that are valuable. It is a failure. I will admit those fish grew in the rivers once, but what were the circumstances under which they grew? I want that we should come down to practical facts. Your streams at an early time were bordered with virgin forests, which shaded them and kept the water cool and clear; the little brook ran out from the woods and come to fill up the rivers. These carnivorous fish lived on minnows and became fat, and when you caught and used them they were good fish. Now they are scarce and nearly worthless. What has done this? It is laid to the fisherman. He is to blame to some degree, but there are other causes. The brooks are tiled and various obstructions; sewer pipes are laid in our towns and cities conveying filth and impurities into our rivers; slaughter houses and privy vaults contribute not a little to the impure condition of our streams. Think what the river is below this city. I have taken fish from the stream by the hundreds and put in my ponds, and found that they were not fit to be eaten; they were full of gasses from the sewers of Indianapolis, and were not fit for food. During the dry season of the year the water becomes low and muddy, and carnivorous fish will not thrive in stagnant and muddy water. Their culture in such a stream is a failure, and they will eat one another up. Those fine bass rear their young to a certain age and then turn around and eat the offspring. The little perch is also a failure. The pound fish and sword fish and cat may be raised, but they are not a success when you put them on the market for the rich and poor alike. This is my experience with the native fishes of the United States. Now, shall we go on and restock those streams? Some of those writing on this subject are doing the cause an injury. We have had croakers in all ages. When the Fultz wheat was first introduced there were croakers on that, but we did not cease raising it. The carp can be raised and also other fish can be. I have made many experiments and the time is not far distant when there will be much discussion on the carp. Some are doubtful as to whether we have the real German carp in the United States. I have made several experiments with the carp, and I find it is going to take care of itself. The United States Fish Association, that is organized in Philadelphia, has condemned a portion of the carp, which

is unjust, and friends of this variety are taking its part. There are three varieties of carp, the scale carp, the leather carp and the mirror carp, issued to us by the Government. I have experimented a good deal with it and find that it will do. The leather carp, I think, is about the same as scale carp. The scale carp is the original carp, a carp from which all other fish of the carp species have been derived. The leather carp and mirror carp are scarce, claiming to be improved carp. This, of course, will in time show itself. With these few remarks I will close. I thank you for your attention.

Mr. Seward. This is an interesting subject. I have derived much information by reading a small book on this subject by Geo. Finley, of Pittsburg.

A vote of thanks was tendered to Mr. Cotton for his paper, and to Mr. Miller for his remarks.

FERTILIZERS AND THEIR RELATION TO THE GROWING PLANT.*

BY F. G. WISELOGEL, INDIANAPOLIS.

Mr. Chairman, Ladies and Gentlemen: It is perhaps presumption on my part to offer an article relating to agriculture to the representative agriculturists of the great State of Indiana. I will, therefore, only relate the result of a few experiments made by ourselves and others, the lessons derived from them, and a few observations culled from thirteen years' experience as a manufacturer and salesman of commercial fertilizers.

Therefore, let us begin with the land when it is first prepared for the seed, being new and rich, because each year's growth of grass, weeds and leaves was left to decay where it grew, and returning to mother earth, the nitrogen, phosphoric acid, potash, etc., it had drawn from her during its lifetime, thus increasing, instead of diminishing the store of plant food contained in the soil, it became stronger and more prolific after each year's growth of plants had decayed.

* An address delivered before the State and Delegate Boards of Agriculture at their annual meeting January 8, 1845.

The husbandman comes, and after clearing the land of timber, brush, etc., plows or digs up the soil, pulverizes it as much as possible preparatory to planting the seed, the land being rich in plant food, it produces a bountiful crop, amply rewarding him for his labor. This being profitable as well as a necessity, he repeats the planting, and removing the crop year after year, without giving the subject even a passing thought that he was removing from the store of plant food contained in the soil of his farm a given quantity of nitrogen, phosphoric acid and potash, or without returning to the soil the constituents of plant food in the way of manure, or other fertilizers. And if this constant drain is kept up without a return being made to the soil, it is made poorer and poorer, until finally it will not produce enough to pay for the labor of cultivating it, and he must either do something to restore the land to fertility or abandon the farm. And in order to make the fields productive again, he must return to the soil the plant food of which it has been robbed—by hauling manure, turning under clover and weeds, or other crops, or by applying commercial fertilizers, such as phosphates, ground bone, etc.

Now the question presents itself, as to how it is best to apply this commercial fertilizer to obtain the best results, since it is quite expensive, and there being nothing like enough manure produced on the farm to compensate for the amount of plant food taken away with the grain, hay, and stock that is sold, it is therefore important to get the full benefit of the fertilizer. Therefore let us examine what this commercial fertilizer is composed of and how it is prepared, so as to be enabled to use it to the best advantage.

The manufacturer of fertilizers prepares his fertilizer to suit the soil and crop for which it is designed, about as follows: If it is to be used on a clay or compact soil, for wheat, clover, grass, or any slow-growing plant, he selects bone for the phosphoric acid it contains. The clean, hard, dry bone is ground fine, the coarser particles carefully screened out, and this finely-ground bone is placed upon the market as *raw bone*, to be used on wheat, clover, grass, shrubbery, fruit trees, lawns, etc.; or, if the soil be light or sandy, use only on a meadow or on wheat after it is up, or any crop that has roots to take up the particles of bone and hold them until they are dissolved by the action of the solvents contained in the soil, for a fertilizer is only plant food when in a solvent or dissolved state. The raw bone, being hard and flinty, is not readily dissolved. It is therefore necessary to hold it near the plant by some agency until it becomes solvent by the elements contained in the earth, otherwise it may be washed away or leach through the soil without giving the plant the nourishment it was designed to do. Therefore it is better to apply the raw bone to plants that are already rooted, as the roots will catch and hold the bone until dissolved.

Bones that are not dry, or not fit to grind as raw bone, are put into an iron tank and steamed under pressure until they become soft; they are then taken out, dried and ground in the same manner as the raw bone, and placed on the market as "steamed bone," "bone meal," "dissolved bone," or "bone dust," to be used and applied the same as raw bone, except that it having been steamed, it is much softer and a great deal more soluble than the raw bone, it acts much quicker, and in a porous or light soil gives decidedly better results.

The flesh and blood of the animal is dried and ground for the nitrogen or ammonia it contains, and to make an ammoniated phosphate, or any other ammoniated brand, the manufacturer uses ground bone for the phosphoric acid or bone phosphate of lime; flesh and blood for the ammonia, adds a certain per cent. of potash, saturates the whole mass with sulphuric acid, runs it through a mixing machine, and in a short time it is ready for the market.

Then, knowing the composition of the fertilizer and the soil upon which it is to be used, and the plant we desire to grow, we can, with a reasonable degree of certainty, determine which brand or kind of fertilizer it will be best and most profitable to use. Thus, for a light or sandy soil the Steamed Bone, Bone Meal, Bone Dust, or kindred brands of the fertilizers offered in this market would do better for wheat, or grass to be cut for hay. But if the soil be a stiff clay or its constituent, and the plant a shrub or vine, or a meadow used for grazing, or even wheat, a slow-acting, and consequently long-enduring, fertilizer, such as Raw Bone, would be the most satisfactory.

For all spring crops on any soil, a highly soluble fertilizer, such as Ammoniated Phosphates, is undoubtedly the most satisfactory, as it acts quickly and energetically on the growing plant, pushes it forward to a vigorous growth, insuring early maturity and an increased yield.

Now, a few words about the application of fertilizers. I will give you our own experience in this matter, what it leads to, and its logical deduction, and the conclusions arrived at. Some of these experiments were made on the Sellers farm near this city, and others by our customers in different parts of the State. And to begin with our first, six years ago, I will say that after the ground had been carefully prepared for the seed, our rule was to drill about two hundred pounds of bone dust to the acre with the wheat at the time of planting, which was the first week in September. Our wheat grew finely, too fine in fact, and the fly got into the wheat, and we got left. Another field was sown two weeks later, with the same amount of fertilizer. The wheat grew finely; the fly did not hurt it so much; we got big straw, but not the number of bushels we expected to get for the amount of straw, and felt that we were cheated, somehow or other, and set to work to discover the cause. The next fall we planted the last week in September and first week in October, with the same kind and amount of fertilizer. The result was much better, but still not enough wheat for the amount of straw.

It occurred to us that we were raising too much straw and not enough wheat, and unless we could do better the wheat-raising business with expensive fertilizer was not very profitable, and must be improved or abandoned. And in analyzing the situation it appeared that we fed our wheat plant too much in the start, by giving it all its food for the whole year at once, consequently it gorged itself, grew abnormally large for its age; by the time it began to head out and put on the grain its stock of food was well-nigh exhausted, and it required so much to nourish the immense stalk that the head suffered for want of proper food, and the consequence was a dwarfed head on a large body. It was therefore decided to give the grain just about food enough at the time of planting to give it a good start for the spring, and then give it its summer rations, thus avoiding the possibility of the fer-

tilizer being washed away, as the roots of the plant are there to catch it as it falls, whereas in the fall there are no roots or anything to hold it, and much of it is washed away and lost to the purpose for which it was intended.

We therefore adopted the following mode of applying fertilizer to wheat. It has worked well wherever it has been tried, and we recommend it to all our patrons:

After the ground has been prepared and ready for the seed, we sow or drill about one hundred pounds of fertilizer with the grain in the fall, about the 15th or 20th of October, and as soon as the frost is out, and the ground settled in the spring, we go over the wheat lot with a seeder and sow from one hundred and fifty to two hundred pounds of fertilizer to the acre, and then go over the whole field with a light harrow and break up the hard crust formed by the beating winter rains, and the result is, shorter straw, a great deal more wheat, and an earlier matured crop. Those who have tried this plan are highly pleased with it, and we earnestly recommend it as the true way of applying fertilizer to make wheat grow.

The same rule applies to corn. We find it best to soak the seed corn in a tub of water over night and just before planting put the fertilizer into a suitable sized box, put the soaked corn into it also, mix the two thoroughly together and plant. The fertilizer that adheres to the kernel of corn is sufficient for the present. Moles and crows don't like it and do not seem to bother it much, and when the corn is worked for the last time, that is when it is "laid by," put a good sized handful of fertilizer around each hill of corn in a circle of not less than a foot in diameter, or sow broadcast 250 lbs. to the acre. The reason for doing so is this: If too much fertilizer is put in with the grain at the time of planting, much of it will wash or leach away before the plant is ready for it, and what remains will shoot the stalk ahead to a great size, and when the time for earing comes, the same trouble arises that was cited with the wheat; therefore, if the stalks be not so very large, if the proper nourishment can be supplied at the time the sap begins to flow to the ear, the ear will grow large instead of the stalk, for then is the time to force the plant; but if the stalk be too large it will consume too much food for its own use at the expense of the new member, the ear, just setting. The reason for putting the fertilizer around the hill instead of into it is to make the roots spread out in quest of food, which they will not do if the food is put into the hill. The reason for wanting the roots to spread is that the plant will stand much firmer, will endure a drouth much better, and have a greater area to draw nourishment from.

The results of all our experiments and observations point to the fact that it is far better to apply the fertilizer in smaller doses and at shorter intervals to all growing crops. Judgment must of course be used in this matter, as it is quite impossible to lay down and adopt an iron-clad rule for all crops and conditions.

Raw bone sown over a pasture or lawn before freezing up in the fall, and the sod loosened up with a good harrow in the spring, gives excellent results. Fruit trees while in blossom, and vines and shrubs, all should receive liberal doses of bone dust around the roots, worked into the ground with shovel, hoe or pick.

For a meadow we recommend the use of ammoniated phosphates. Sow 200 pounds to the acre as soon as the frost is out and the ground settled enough to bear

up a team in the spring, and harrow the fertilizer well in. Repeat the operation immediately after cutting and removing the first crop. Wherever this process has been tried the result has been highly satisfactory. In many instances the yield of hay has been doubled, and of a better quality than in neighboring fields not so treated.

A few words more about sowing wheat. One year ago last fall we commenced drilling in our wheat on the 17th of October, 1883, drilling five pecks of Mediterranean wheat to the acre, without fertilizer. The temperature of the earth two inches below the surface was forty-five degrees Fahrenheit. Five acres were put in in this manner. Five days later another five acres were put in in a similar manner, and ten acres more were finished on the 28th day of the same month. The temperature varied from forty-five to forty-two degrees, but in following up the drill it was found that the temperature would rise in the newly-disturbed earth from 9 o'clock A. M. to 2 o'clock P. M. to forty-eight and fifty degrees, showing the tendency of freshly loosened earth to absorb heat, while a smooth, hard surface will repel it. All the grains sprouted in seven days. That planted first was through the ground in eleven days. A hard frost setting in just then, the wheat sown last did not appear above ground until spring. Half of the ground was harrowed in the spring. It was intended to sow fertilizer on the whole piece in March, but through a disobedient farmer it was not done, and that part of the experiment was lost. The piece harrowed showed a difference of from three to five degrees of heat above that which was not harrowed. The wheat grew a third faster, looked healthier and better in every way. It yielded twenty-four and a half bushels per acre, while the other gave us but seventeen bushels to the acre. Unfortunately the early and late sown wheat became mixed in threshing, so it was impossible to tell the difference in the yield of the respective pieces, but it looked on the field as though the early sown wheat was a little the best. The soil on which this wheat was raised is a light, sandy loam.

We have sown no wheat for this year, as we intend to make a series of experiments on corn this season.

DESTRUCTION OF CROPS BY INSECTS.*

BY J. G. KINGSBURY.

I might easily have found a more attractive subject. Worms and bugs are not pleasant to look at, nor think about, and now that winter has his icy hand upon them they seem to have but little interest to us. Out of sight is out of mind, so far as the bug family are concerned. But to speak in earnest, there are few subjects that farmers have a more vital interest in than that of insect depredations.

*Read before the State Board of Agriculture, at the January meeting.

The all engrossing subject of taxes is not more important. These little prowlers in their numerous clans and myriad hosts, attacking almost every variety of grain, fruit and vegetable, levy heavier tributes than the State and nation combined.

Prof. C. V. Riley, Entomologist to the Department of Agriculture, rates the amount of insect ravages to the nation, at hundreds of millions a year, and the President of the Missouri Horticultural Society said a few years ago that the loss of the fruit growers of that State alone, by insects, was not less than \$60,000,000 a year. What data he based his estimate upon we do not know, but it is easy to figure up several hundreds of thousands lost to our own State yearly by the curculio, codling moth, the borers, canker worms, and other tribes in our orchards, and the Hessian fly, the midge, joint worm, chinch bug, and other pests in our grain fields. It is not extravagant to say that fifty per cent. of our apples are rendered unsaleable and well nigh useless by that arch enemy of this most valuable of our fruits, the codling moth. The plum, one of the most productive of our orchard fruits, and once one of the most profitable, is scarcely grown in our State, and simply because of the destructive ravages of the curculio. Ten per cent. would not be an unreasonable estimate, one year with another, for the damage done to our wheat crops by the Hessian fly, the army worm, and a score of other enemies to this plant.

Putting the yield of the State at 40,000,000 bushels and the price at seventy-five cents per bushel, this item alone would show a loss of \$3,000,000. The loss to corn from chinch bugs, the grub worm, and the new pest, the corn root worm, do not yet reach such a figure, perhaps, though the damages from these and other insects are yearly increasing, while our meadows and clover fields suffer increasing losses by grubs and root worms. If we descend to less important crops we shall find that in the aggregate immense losses are suffered by the devouring hordes of potato bugs, cabbage worms, melon bugs, currant worms, squash bugs and vine borers, raspberry and strawberry leaf rollers, and other enemies, scale insects, plant lice, mealy bugs, slugs, canker worms, tent caterpillars, and many more such pestiferous tribes.

All these that have been named are regular standbys. We expect to see them every year, and are not disappointed, but occasionally—and at not very remote periods, usually—we are visited in different sections of the State with innumerable hosts of chinch bugs, and army worms that sweep whole townships, as a few years ago, in Iowa, where the meadows and fields of grain were laid bare by these pests, as though scorched by fire, over whole counties. We are liable to such incursions at any time, and in any section of the State. These hungry hordes of depredators make no announcement of their approach. They stand not upon the order of their coming. When they get ready, and all the recruits are in, they move right along double quick, and seldom fail to finish up whatever little job they have in hand, with neatness and dispatch.

Another unpleasant fact in regard to our insect plagues is that new and strange species are constantly appearing. It is not many years since the so-called Colorado potato beetle came an unheralded stranger among us. More recently the cabbage worm came over from the old country to show us what he could do. The maple bark louse has only lately cast in his lot with us, and his work on our shade trees will tell of his presence for years to come. In some localities this pest has ruined fruit trees as well as maples. Prof. Cook, of Michigan, describes two new insect enemies

that have attacked the wheat in that State. One hollows out the berry, and the other works in the straw just above the joint. The same gentleman, who is an accomplished entomologist, by the way, in the Michigan Agricultural College, gives some observations upon a new and very injurious enemy to the apple, which has received the disgusting name of apple maggot, that does its work mainly after the fruit is gathered in the fall. From past experience we are warranted in expecting other troublers of the kind in the years to come. Fruit growers are ready to accept as their motto, Eternal vigilance is the price of good fruit, and the sentiment is scarcely less appropriate as applied to grain-growing. But what is to be done about it? is the question that involuntarily arises when the subject of insect deprecations is presented. To many it seems a hopeless and useless task to fight these tiny foes. A few years ago it did appear useless indeed to enter the combat, but science, investigation and experiment have come to the rescue, and now we have effective weapons against nearly all the tribes that have been long enough among us to allow of studying their habits and learning their likes and dislikes. By means of lime, ashes, tobacco decoctions, Paris green, London purple, hellebore, pyrethrum, kerosene emulsions, sulphur, copperas, etc., we may keep most of the pests from swarming upon and overwhelming our crops of fruit and grain.

But the fight is a severe and expensive one where it must be carried on single handed, and especially when we fight in the dark, that is without knowing our enemy's strength and tactics. And here is the point and purpose of my essay :

Our farmers and fruit growers need information regarding the insect enemies that have been alluded to, and ought to be advised as to the best means of warding off their attacks. In other words they need the services of a competent entomologist to whom they may send any suspicious looking insects for name and remedy, if noxious. They need to be informed regarding the insect-eating birds, both native and imported. Many of our insectivorous birds, the swallows, for example, are supposed to be as fond of bees and other useful insects, as of those that are injurious. The English sparrow is believed by the President of our State Horticultural Society, who is usually good authority in horticultural matters, to be an insect-eating bird, while other authorities assert that this bird eats insects only when grain, buds and other vegetable food can not be found. Our farmers need to have this and similar questions solved, by the investigations of some person qualified and paid for the work. The best remedies for each insect and the best modes of application, amounts required, the descriptions of friendly insects, or those that destroy the injurious kinds, and much other information regarding the subject of insect economy can best be given by a competent entomologist under pay of the State.

It may be objected that the employment of an entomologist for Indiana involves an unnecessary expense, since we have such an officer in the Department of Agriculture at Washington, and neighboring States have men employed in studying up the same insects that are to be found in our State. A legislator of an economical turn of mind might ask why not buy the reports of these gentlemen and get all the information they have gained, at a merely nominal cost? It is true that the Illinois, Ohio, Michigan and Missouri entomological reports might be thus utilized, as well as those of the United States Agricultural Department, but we dislike to be

charged with such parsimony as this course would imply. But a stronger objection is in the fact that but little advantage would be gained from distributing such documents. But a very small proportion of the people would ever see them, and especially would this be true of the class most needing the information they contain. Farmers, as a rule, pay but little attention to insects or their depredations till they are upon their crops and are multiplying and feeding with rapidly increasing numbers. Then they want to know what the things are, and what to do to destroy or drive them away, and they want to know who to write to to give them this all-important information. It is too far to send to Washington. It may be a week before a reply would reach them, and in that time great and irreparable damage will have been done. They have no right to address the entomologists of Illinois or Ohio; so nothing remains but to write the editor of their agricultural paper. He may know what the insect is, and he may not. He will give the best advice in the shop, but he is not authority. What is wanted is a competent entomologist in the employ of the State, to whom any citizen is at liberty to send for any desired information regarding insects that may be depredating upon his crops. The State can employ such a man, with headquarters at Indianapolis, in the rooms of the State Board, at from \$2,000 to \$3,000 per year; or if the smaller of these sums seems too high, they may secure the services of the entomological professor at Purdue University, for perhaps one-half the amount, allowing him to receive partial pay as professor in the institution for a stipulated portion of his time.

It may be regarded as one of the duties of this body to recommend to the Legislature such laws as they deem important to the agricultural interests of the State.

At present there is no law on our statute book against insects of any kind. In view of such considerations as have been suggested it seems time that we should have provision made for appointing a State entomologist, and, in addition to this, that some such legislation as that adopted in California should be enacted. In that State an act has been passed appointing a State Board of Commissioners in the interest of the horticultural industry, with power to act in any proper way to prevent the importation and propagation of noxious insects. The law allows the people in any section to combine to destroy insect pests, and empowers the majority with the right to constrain the minority to join in the battle.

This Delegate and State Board would do an incalculable service to the agricultural interests of the State if, by their petitions to the Legislature and influence with that body, they should secure the passage of some such enactment against the insect enemies of our crops of fruit and grain.

THE VALUE OF BIRDS AS INSECT DESTROYERS.*

 BY FLETCHER M. NOE.

Probably few subjects have interested the agriculturist of late years as much as the ever important one, as to whether birds are a friend or foe to his growing crops and fruit. A great deal has been written both for and against the preservation of birds, some writers thinking that the amount of fruit destroyed by them more than overbalances any good they may do as insect destroyers, while others hold that the amount of fruit destroyed is comparatively small when compared with the amount of injurious insects destroyed.

My own investigations have proved that the latter view is substantially correct and especially so with the "robin," to whom my investigations have principally been directed. Perhaps no bird is better known to the farmer than he, being one of our first arrivals in spring, (many of them reaching here in the early part of March), he is the last to leave in the fall, often remaining until the ground is covered with snow before taking his flight southward. In early spring he can be seen hopping around over the freshly plowed ground, eagerly watching for any unwary angle worm who has been unfortunate enough to have been exposed to sight by the farmer's plow, and from the number of times the brownish black head pounces down into the earth it is reasonable to suppose that his breakfast is not a poor one. By actual experiment it has been shown that a young robin requires considerably more than his "own weight" of animal food every day, and during the season of rearing their young, the old birds forage almost exclusively on insects while it is true that the robin will feed upon seeds and berries when insect food is not well obtainable. The following list of insects which I obtained by the careful dissection of upwards of thirty robins during the past summer, will show what a benefit the robin is: The insects noticed were the Corn Worm (*Gortyra Zeal*), Apple Borer (*Printharia Pomella*), Corn Root Worm, *Diabrotica Longicornis* (Say), Ground Beetle, (*Lachnosteuna Quereina*), Measuring Worm (*Geometra Catenaria*), and also the larvæ of the well known Cabbage and Sulphur Butterflies.

The stomach of one adult robin, examined by Clarence M. Weed, of the Michigan Agricultural College, contained such a striking instance of the beneficial influence of the bird that I notice it here. The bird in question was shot between a row of cherry trees and raspberry bushes, both in bearing, and but a few rods apart. The stomach was almost wholly filled with the injurious larvæ of the family anthomyiide. This is the family to which belong the notorious cabbage and radish flies, which in many places have stopped the cabbage production, with a consequent loss of thousands of dollars annually. By actual count there were *sixty* of these anthomyian larvæ in the single stomach. Yet many a horticulturist asserts that robins eat no insect food in berry seasons. If any one doubts the assertion that robins do not subsist principally on insects, let them try the experiment of trying to raise a young

* Read before the Annual Agricultural Convention, January 8, 1885.

robin on other than animal food. The bird will usually die on the second or third day, but on the other hand, give him plenty of insects, such as moths, beetles, grubs, vine worms, chrysolids, and caterpillars, and he will soon grow healthy and strong.

Mr. Trouvelt, of Medford, Mass., one of the largest growers of silk worms in the United States, lost so many worms by the depredations of birds, principally robins, that he found it necessary to cover his entire patch (when the worms were fed), consisting of over eight acres, with netting to protect them, and even then it was only by constant watching that they were prevented from breaking through the netting. As an experiment, he placed a thousand silk worms on a scrub oak, just outside of his grounds, and caused it to be watched. In three days the worms were all gone. The robins, with the help of a few cat-birds, had eaten every one. Mr. Trouvelt, although a loser himself, gave the result of his experiment to show the love of the robin for insect food.

I may well add to the above a list of such birds as are known to be insect destroyers, in hopes that it may, to some extent, check the almost wholesale destruction of our birds, which is going on to such a great extent in our State. A few years ago robins, black birds, jays, yellow hammers, orioles, thrushes and cat-birds nested within our city in large numbers, but owing to the introduction of the English sparrow, and to largely increased numbers destroyed by city and farmer boys, since the introduction of cheap fire arms, which I might say are an invention of late years, these birds have almost entirely left us, only a few straggling robins and blue birds remaining. It may be of interest to note that I have made numerous inquiries amongst persons gardening in or near the city, and that they have all united in saying that their fruit and garden stuff has suffered more from the attacks of insects during the past summer than ever before. I am thoroughly convinced that this is largely due to the almost total extinction of our insectivorous birds in and near the city.

The law passed by our last Legislature prohibiting the killing of nearly all of our song birds was well timed and to the point, but it seems useless to have and make such a law unless it is enforced. I think that if there was a reward of say from \$1 to \$3 offered for each offender arrested and convicted under this law, it would have a summary effect upon the promiscuous shooting now indulged in by nearly everybody who has a gun. I know of a number of boys and young men in our city, who make it their boast of killing so many robins or so many blue birds on each hunting excursion. If such parties as these were made to pay one or two good fines they would stop this so-called sport and go into more legitimate pursuits.

The following is a list of birds known to be destroyers of injurious insects: Blue bird, robin, cat bird, chipping sparrow, field sparrow, clay-colored sparrow, black-throated bunting, indigo bird, ground robin (chewink), cardinal grosbeak, black bird (crow), black bird (cow), black bird (red-winged), bobolink, meadow lark, king bird, pewee, cuckoo, night hawk, chimney swallow, sparrow hawk, woodpeckers (all kinds), quail, large snipe, plover, prairie chicken, warblers (small warbling birds found in spring and summer, usually bright-colored) and martins.

INDIANAPOLIS, December, 1884.

ROAD PAVING MATERIAL.*

BY JOHN T. CAMPBELL, SURVEYOR AND CIVIL ENGINEER.

When we consider the great importance of good roads, and the many things that can be made available for paving them, we are almost struck dumb with wonder at the meagre use that is made of the fair to good material so lavishly furnished us by Nature. So many people have no conception of anything they have not seen done—so many people prefer to trudge along over the steep, winding and muddy road over which they have once successfully traveled, that it is too often much easier for those of broader conceptions and greater enterprise to follow the roads of their stupid neighbors than to make the effort and endure the vexation of leading them into better paths. Mankind, in the mass, progresses and moves forward much like the waters; crowding and jostling each other, moving only because those who are ahead are trying to keep out of the way of those who are following, and those who are following are trying to keep up with those who are ahead. Thus moving, they wander like the running water along the most roundabout courses, making their channels more crooked by erosion, until two bends are worn into each other, making a "cut off," and by pure, stupid luck, find a shorter road, while apparently trying to make a longer one.

How often have we labored and worried both our teams and ourselves, along a muddy road, when near by, and parallel with it, a clever stream had piled up gravel in tantalizing heaps.

Coal slack, coal ashes and coal cinders make fair to good roads. Yet, in many parts of the coal belt of the State, the people are pulling through the mud, in plain sight of great heaps of that material, sufficient to pave all the roads of their neighborhood, and are heard to lament the condition of the roads and the scarcity of gravel.

The best piece of road in Parke county is a section two miles long, going west from Rockville, which was the first we built under the present gravel road law. Owing to the supposed impossibility of getting gravel, I, as the engineer making the survey and estimate, and afterward superintending the construction, used coal slack for the under two-thirds of the paving material, which we obtained from the Sand Creek coal mines, two and a half miles northeast of Rockville, and covered this with the upper third of such gravel as we could get. Last winter and spring this piece of road was noticeably the least cut into slush by the travel during the frequent freezings and thawings, of any of the eight roads then leading from the town. The west end of this same road was made of excellent gravel, but with less travel than on the east, or coal slack, end, but it went all to slush and had to be re-graveled in the spring. I have forgotten the cost of the coal slack, but remember

* Read before the Indiana Association of Surveyors and Civil Engineers, at Indianapolis, January 21 and 22, 1885.

that it was much cheaper than the poor gravel which was hauled less than half the distance. The Coal Company donated the slack and the railroad gave favorable rates over their road from the mines to town, and from the cars it was re-hauled to the road. A team could haul a large wagon-bed heaping full, being two and a half or three times the bulk of a common gravel-bed would contain. In this the cheapness mainly consisted.

Charcoal will also make a fair paving material. I will not claim that it is as good as good gravel, but it is as good as average, and better than poor gravel. Timber is often plenty where good gravel, or any kind, is scarce. In large quantities it can be made and sold at the pit at three to three and a quarter cents per bushel. Five to seven yards can be hauled at a load, which about offsets the cost of cutting and burning. It absorbs and rapidly evaporates water and moisture, hence giving a dry road soon after the rains cease. It should be covered with a thin coat of good gravel, to hold it down, from blowing and washing away and from taking fire.

My experiments have been limited to short spaces, and at my own expense, for I could not persuade the Board of Commissioners to risk it as a paving material, and there is generally opposition enough to the road built strictly according to law, without risking the use of unusual material. As the law now reads, any good paving material may be used. But my experiments were very satisfactory. Gillespie's Manual of Roads and Railroads mentions three roads made entirely of charcoal, and pronounces them eminently successful.

A bushel of charcoal, when packed, is equal to about one and one-third cubic feet. To build a mile of road, one foot deep and twelve feet wide of charcoal will require about 48,000 bushels of charcoal which, at three cents per bushel at the pit, will cost about \$1,470. The average haul in Parke county would not exceed one mile. At three dollars per day for teams, it can be hauled one mile for twelve cents per cubic yard, including loading, or \$250 per mile. A cheaper, and quite good road might be built of charcoal nine inches deep by ten feet wide, covered with three inches of gravel.

The braize, or burnt dirt, which covers the coal pits, is a good paving material, and might be used instead of gravel to hold the charcoal down, as before mentioned.

Charcoal has one merit above all other paving material I know of, that of being as good after it is ground into a dust as when in lumps; it still maintains its compactness. It also has the merit of admitting more mud without becoming slushy than any other material.

Before closing I must mention a paving material which has recently come to my knowledge. It is the use of common straw to harden and make compact sandy roads. This knowledge may be old, but it is new to me. A sand road is as tiresome to a team, and as annoying to the traveler, out of sympathy for the team, as mud, except in the relative cleanness of the two.

Four inches of loose straw spread on a sandy road will, in a few days' travel, be ground into the sand, when it will become as firm and compact as a dry clay road. If this is *old* knowledge, I am quite sure it is not *general* knowledge, for I have never seen it used as a remedy for sandy roads. I first observed it last sum-

mer, where a woman had emptied a straw bed tick on one of the worst sand roads I ever saw. The straw was worn out for bedding purposes, but was just right for road purposes, as the finer it is broken up the better. Since that time I have observed every bunch of straw which I have seen drop on such a road, and have gone to some personal trouble myself to put straw on such roads, and have watched the effect, which has every time been as before stated. Straw has doubtless been dropping on sand roads for several hundred years, and it may be that more observing people than I, and the people I have always lived among, have been aware of its benefits; but if so, why is it not generally used?

This suggests that it might be used to advantage on new gravel roads where the gravel is much mixed with sand, and thereby pack slow. It would give instant relief, and would not at all hurt the quality of the gravel.

REPORTS
OF
County and District Agricultural Societies,
EMBRACING THE
CONDITION OF AGRICULTURE,
FOR THE YEAR 1884.

FOLLOWED BY A CONDENSED FINANCIAL EXHIBIT AND NUMBER OF ENTRIES AND
PREMIUMS PAID IN TABLE FORM OF ALL THE AGRICULTURAL SOCIETIES
REPORTED, WITH A LIST OF THE NAMES AND ADDRESSES
OF THE PRINCIPAL OFFICERS OF EACH.

The following reports are such as required by Statute Law and a Certificate from the Secretary of the Board of Agriculture, showing that such report has been made entitles such Agricultural Society to the license fund from shows, that may have accumulated in such County Treasury. See R. S., Secs. 2631, 5269 and 5270.

The general improvement in these reports from year to year is very gratifying, and in accord with the general prosperity and improved condition of the country. No failure in fairs reported, but a higher tone in morals as a standard of excellence.

It is noteworthy to observe the unanimity of opinion as to the immense benefits derived from drainage. The importance of laws to fence stock in, instead of out, and thereby save a large proportion of fencing. And that the present "dog laws," protect the dogs more than the sheep, being a great impediment to wool growing. A thorough description of each county is given in our last annual report, hence, we here avoid any such repetition.

SECRETARY.

ALLEN COUNTY.

The Northern Indiana Fair Association has existed, as at present constituted, just three years. The last annual exhibition, September 29, October 1, 2 and 3, 1884, was indicative of the growth of the society in popularity and wealth, until now the management find their association without entangling alliances, without a penny of indebtedness, with a surplus in the treasury, handsome exhibition grounds, and the confidence of their patrons.

The exhibitions of the Northern Indiana Fair Association have cultivated a taste or spirit for scientific agriculture, fine stock and blooded horses; not alone in Allen county, but throughout Northern Indiana, every portion of which Fort Wayne's seven great trunk line railroads permeate. In this county, within the past two or three years, six or seven extensive stock farms have been established, and citizens of this county can boast of Clydesdale and Norman horses, celebrated in this country and Great Britain, while the speed department includes a former winner of the Derby, and trotting horses of great promise. Our farmers can likewise boast of as fine herds of Short Horns, Jerseys and Galloways as roam any pasture. The same spirit has actuated farmers in rearing sheep and swine, while their agriculture has, in a like manner, advanced to a degree of excellence.

Wheat is the great crop in Allen county, and in fact in Northern Indiana, with corn, hay, oats, rye and buckwheat following in the order named.

Primitively a great portion of the land in this county was low and wet, but a thorough system of tile draining and ditching has entirely reclaimed and greatly enhanced the value of a vast tract of real estate, and even now an expenditure of a large sum of money, running into the thousands, has been ordered by the Circuit Court to reclaim and drain a section of low prairie land in this county, and west of the city of Fort Wayne. This work is promotive of the general welfare, and is destined to make Allen county the first in Indiana in health, wealth and resources.

The new gravel-road law has provided excellent public highways, and no county in Indiana can boast of finer bridges, neater farms, better crops, and greater fertility than can Allen county.

This advancement, as well as the establishment of the *American Farmer*, a monthly magazine, devoted to agriculture and stock raising, can be attributed to the spirit kindled at the recurring exhibitions of the Northern Indiana Fair Association.

W. W. ROCKHILL,
Secretary.

BARTHOLOMEW COUNTY.

The Bartholomew County Agricultural Society held no meeting in 1884, having, at the solicitation of the Bartholomew County Agricultural and Industrial Association, leased its grounds and surrendered its dates for that year to them. In doing this, however, we, by agreement with them, relinquished no rights we enjoy from the State Board.

Our society is well organized and fully equipped for business, and we are ready to give a good fair every year, with liberal premiums, and to guarantee the payment of premiums in full, whenever the opposing society shall disband or unite with us by taking a fair share of our stock.

RICHARD THOMAS,

Secretary Bartholomew County Agricultural Society.

BARTHOLOMEW COUNTY.

The quality of the crops in Bartholomew county the last year was much better than the year before. A prominent milling firm of Columbus estimates the increase in quality at 30 per cent. Though the quality is better prices have ranged lower, wheat going down to less than 70 cents and corn to 30 cents. Wheat is now firm at 70 cents and upward, while corn is advancing slowly. Most of the farmers who could afford it stored their wheat rather than take 80 cents at threshing time. Many have sold, taking much less than 80 cents. There is a home demand for more corn and wheat than the farmers of the county can spare.

There has been quite an improvement in the character of farm buildings in the past few years.

On nearly every road in the county may be seen fine large dwelling houses, in contrast with the little old log or frame houses standing near. Also, more convenient and capacious barns are taking the place of the old ones. Many farmers have buildings for the sole purpose of storing grain or tools, and every new barn is arranged for the use of the modern hay elevators.

The wire fence is gaining in favor. Those now put up are much more complete and substantial than those first constructed.

The farmers who live on the clay lands, and who are able to spare the money, do some draining each year. A more systematic method of drainage is pursued—many making it a point to sink lines of tile at stated distances in a certain field one year, and in another the next, thus making the work complete as they go. They favor the use of larger sizes of tile than formerly.

The question of timber culture is discussed with reference to the West rather than here. The rapid decrease of timber is beginning to be felt, however, and the land owner that goes to the forest for a stick of timber is more careful in his selection. The fine walnut trees of a few years ago are nearly all gone. The poplar is fast disappearing, and not one large ash in three is perfectly sound. There are over one hundred miles of gravel road in the county, the average rates of toll being about 2½ cents per mile for two-horse teams. There are only a few miles of free gravel roads.

The Bartholomew County Agricultural and Industrial Association held its second annual fair on the grounds of the Bartholomew County Agricultural Society, on September 16th to the 20th inclusive. In spite of politics the show was a creditable one. Show of horses was good, there being 18 entries for heavy draft; 55

general purpose, and 56 light harness; total 129. The show of Short Horns was not nearly so good as in 1883. The Jerseys were most numerous. The show of hogs and sheep was about the same. The display of grains, fruits and vegetables was excellent. A very useful and attractive feature of the fair was the Literary and Educational Department. The exhibit of school work was fine and varied, while the literary exercises created much enthusiasm. Friday was Literary and Educational day, and the attendance was immense. This is a feature that should not be overlooked by fair associations, for undoubtedly, the boys and girls should have a chance. If given a chance, and the educators of the locality look after the matter properly, they will make a good showing.

As last year's report included at least a partial description of the county, it will not be necessary to repeat it here. I shall close by saying that Bartholomew never retrogrades in any of her methods of procedure, and I can safely report a general advancement in all of her industries.

S. M. GLICK,

Secretary Bartholomew County Agricultural and Industrial Association.

BOONE COUNTY.

The twenty-fifth annual exhibition of the Boone County Stock Agricultural Society, was held on the grounds of the society one-half mile north of Lebanon, on the eighteenth, nineteenth, twentieth, twenty-first and twenty-second of August 1884.

While the number of entries was not so large as in some other years, still the quality of the exhibits compared favorably with those of any former year.

In the Horse Department, the demand for stalls was so great as to require the erection during the fair, of one-third more new ones than had ever been found necessary before. The exhibits of cattle, hogs and sheep were exceptionally good. The poultry exhibits were very small, almost a failure. The textile fabric department was all that could have been desired. The failure of the fruit crop caused a great falling off from former years in the number of exhibits in this line. Oats, corn, wheat, potatoes, cabbage and the various other farm and garden products were well represented.

The bee keepers of our county had exhibits which challenged competition.

The Mechanical Department was well filled, the Deering self-binder, with steam power, rather taking the lead.

While there was no effort made to secure an educational exhibit at our fair, our county must not be counted behind others on this account, as we have good schools, the average length of which is about six months in each year, and about five hundred specimens of school work were forwarded to the World's Fair, at New Orleans, through the earnest efforts of our worthy County Superintendent, H. M. Lafollette.

The management carefully excluded gambling devices, and had the attendance and support of the solid element of society.

The Hon. Robert Mitchell, President of the State Board, was in attendance one day, and gave us many words of encouragement.

The financial condition of the society is good, having about eleven hundred dollars in the treasury, after paying the premiums in full, and all other expenses.

JOHN W. KISE,

Secretary.

CASS COUNTY.

The twelfth annual fair of the Cass County Agricultural Association was held at the well-improved and finely-located Fair Grounds, at Logansport, Ind., Sept. 23 to 27, 1884. The weather, during a portion of the time was bad for fairs, it raining about half of the time, making it very uncomfortable for those compelled to attend, and cutting off the attendance nearly one-third. The result was, that the receipts were not sufficient to pay the expenditures, and the Association was only able to pay seventy-five per cent. of the premiums awarded, which was not taken by some of the exhibitors in the best humor, although the association had so advertised in their premium list, that in the event the receipts were not sufficient to pay the expenses and premiums, the amount over the expenses would be applied to the payment of the premiums in full. It having been the first year that the association had put such a provision in their list, makes the result the more perplexing, and furnishes exhibitors a further excuse for grumbling, but it must be said to the credit of a large majority, that while they regretted the inability of the Association to pay their premiums in full, were perfectly satisfied to stand their proportion of the loss.

It is a fact, not to be denied, that some persons become exhibitors at fairs, not so much to show the quality and excellency of their exhibits, but for the purpose of getting the premium offered, and resort to means that ought not to be resorted to for the purpose of accomplishing that end, and are some times very bitter in their denunciation of committees and members of the association for their failure to receive awards, but it is to be presumed that Cass county has no more of this class of persons than others.

The exhibition was fully up to former years, and the displays in all the departments were good, and in many excelled former exhibitions.

In the Horse, Cattle, Sheep, and Swine Departments the show was first-class, embracing many exhibits from other counties, and some from other States, and to the credit of Cass county, it can be truly said that her exhibits in the Live Stock Department was equal to those outside, showing conclusively that the stock raisers of this county occupy no second place, but have now taken a place in the front rank, which was not the case a few years ago, and this improvement is by general consent largely attributable and due to the Agricultural Association with her animal exhibitions.

The display in the Mechanical Department was far ahead of any previous year, and was pronounced first-class by machine men from abroad, who are good judges, for the reason they see many exhibitions every year.

In the Ladies' Department the display was large, not perhaps as large as former years, but was shown to a much better advantage, as the Association had provided additional cases for the display of ladies' work, and with several exhibitors from other counties with a large number of articles of fine workmanship, made the exhibition in that Department above the average, the lady exhibitors from abroad, by the large and fine display of their handiwork, created some ill-feeling among our home exhibitors, but, while they lost some of the awards they expected to get, they learned something new, and declare they will get even at the next fair.

The grain, vegetable and fruit display was excellent, and attracted the attention and admiration of persons attending, and as in this department the products were almost exclusively from this county, it shows that while we may be behind our neighbors in other respects, that in the products of the soil this county has no second place, and that whether it be wheat, corn, oats, potatoes, turnips, apples, pears, grapes, or any other grain, vegetable or root crop, the soil of this county under the care, skill and attention of its owners, can and does produce as good as any other county or locality, and it was the remark of many who examined the display, that the same would have been a credit to a State Fair.

In the Culinary Department the exhibition was good, fully equal to former years.

The condition of agriculture in Cass county has been steadily improving year by year with the clearing of wooded land and construction of numerous ditches and an immense amount of tile drainage. The number of acres now cultivated with good yield is fast making this county one of the best in the State. With its diversity of soil, very little if any that might be called poor, and with increased facilities for cultivation, and with more knowledge gained by reading and comparing notes with each other at the County Fair, our farmers are fast pushing Cass county to the front rank. The county is well watered by the Wabash and Eel rivers and by numerous beautiful creeks and rivulets, and the scarcity of water is unknown. With the rapid progress made in ditching and tile drainage, it will be but a few years until there will be but little land that will not be susceptible of cultivation, and that will not produce good crops when cleared of timber.

A marked improvement is noticeable throughout the county in the improvement of farm property, the erection of new dwellings, many of which would be a credit to our towns and cities; the large and commodious barns, the board and wire fences, in place of rail fences, log barns and houses, make the farm attractive, and show that our farmers are making more than a living.

In the question of good roads this county has been behind other counties, but during the last few years considerable advance has been made, and many miles of good turnpikes have been built, and much more will be built in the next few years. Farmers living away from a good road to market are beginning to realize the fact that the farmer with a good road has a decided advantage.

The crops of last year were good throughout the county, fully up to the average.

D. W. TOMLINSON, *Secretary.*

CLARK COUNTY.

The twenty-sixth annual fair of the Clark County Agricultural Society was held at Charlestown, on September 9th, 10th and 11th. The exhibition was unusually good in nearly every department. Horses were fully up to the times in general purpose and draft classes. A very singular feature of the present fair, in the Horse Department, was, that there were no fast rings made up. The premiums offered for speed were liberal, but were not taken. Usually a large per cent. of the premiums paid by the Society is for fast horses. This year was an exception, and the indications here are that fast horses can be put in the background at fairs and not at all interfere with the success of the exhibition. Fast horses are not the most useful thing to the average farmer, and should not be encouraged by large premiums.

The exhibition of cattle was much better than former years, and showed an increase of interest in the production of better cattle of all breeds. The Hol-stein cattle, lately introduced in this county, are giving fair satisfaction as a milk and beef stock combined. The show of hogs and sheep was creditable, and showed that they had been bred with care and skill.

Agricultural products were very fine, and show that our farmers fully understand how to grow corn, wheat, oats, potatoes, etc., to perfection.

In the Horticultural Department the exhibit was not large, but the specimens were good.

The display of textile fabrics shows that our ladies have attained a high degree of skill. Some of the quilts on exhibition showed not only skill in their makers but a great deal of patience and perseverance. Some of our ladies have not forgotten the use of the spinning-wheel and hand-loom, as was shown by the display of hand-made fabrics. Our women are equal to the very best, too, in their knowledge of the culinary art, for the fine samples of bread, cake, preserves, jellies, canned fruits, etc., could not have been prepared with more practical skill. On the whole, the fair was a success, giving pleasure and profit to those who attended.

The condition of agriculture in this county is fairly prosperous; some complaint of dull times and low prices, but there is no abatement in effort on the part of farmers; they seem to be doing more thorough and systematic work in the cultivation of the soil. Nearly every variety of soil may be found in this county. Cattle raising seems to be receiving more attention in the last few years, and in consequence more land is sown to grass, and less corn is being cultivated, a course which, if it had been adopted forty years ago, would have been much better for the preservation of the soil, than raising corn and hogs. Farm buildings in this county are of the most substantial character, both dwellings and barns, so that farming here is a fixed business.

Agriculture is the leading business of the county, though dairying is carried on to a considerable extent. There are numerous manufactories in the county, such as boat building, glass works, cement mills, cooper shops, car works, etc., which give employment to several thousand men. We have three railroads through the county, and the Ohio river along the southeast border. The great cities of the

falls lie at our door, affording market for all our products. Also the best fruit locations in the State are found here, especially for peaches, strawberries and raspberries. The climate is as mild as any in this latitude, and crops are as certain as in any location in the State. From the varied quality of our soil, and the range in prices, our near proximity to good markets, the healthfulness of location, and our manufactories, there is no reason why Clark county should not be the best for agriculture in Southern Indiana. So we say to any who wish to come among us that they need not fear; if they come with industrious hands and a good stock of perseverance, they will be successful.

DENNIS F. WILLEY,
Secretary.

CLAY COUNTY.

Owing to the destruction of our buildings and fences, by a storm, we were unable to hold our annual fair last year. Our old officers were continued over. (See table of officers following reports.)

Our next fair will be held August 31 to September 5, 1885. Every effort will be made to have a successful exhibition.

Our farmers have done well the past year compared with other industries. Wheat averaged two-thirds of a crop, corn above an average, oats much above an average, small fruits a full crop, large fruits almost an entire failure. A steady improvement in the farms of this county is noticeable. New and better breeds of hogs, sheep and cattle are being introduced.

An interest has at last been awakened among our people on the subject of good roads—they are now most wretchedly bad—and we hope to be able in our next report to chronicle the building of one or more gravel roads.

The bane of our agricultural interests in the past has been the fact of our county being underlaid with valuable fields of coal. Nearly every other farmer contented himself with eking out an existence in the expectation of realizing a fortune from the royalty on his coal. These expectations were only realized by a very small number, and the majority at least awakened to the fact that their real interests lay in the development of the surface, and this has been made apparent by the improvement of farms, land being cleared up, swamps drained, buildings erected, and the hum of improved agricultural machinery has been heard in all parts of the county.

D. W. BRATTIN,
Secretary.

CLINTON COUNTY.

The twelfth exhibition was held on the fair grounds about one-half mile south of the city of Frankfort, August 25 to 29, 1884.

The grounds are admirably adapted to the purpose for which they are used, there being an abundance of shade, plenty of water, and ample buildings, since the erection of the new power hall the past summer. There was a very full display in of the finest specimens of imported Clydesdale and Norman horses exhibited that the nearly all departments, there being a total of over 2,000 entries. There were some State affords; also, some of the high steppers from the famous Bluegrass region of Kentucky, some very fine animals of each breed being owned in this county. The exhibition of cattle was all that could be desired so far as quality goes. The only breeds shown in the ring, with the exception of a lone individual, were Shorthorns and Jerseys. The latter is not a favorite with the general farmer, who wants something more than butter; yet there is generally a lurking fancy manifested by the lady visitors at our fairs for the mild-eyed, frail-looking pets. The Shorthorn breeders should show more milking animals at our fairs, and try to disabuse the public mind of the idea that the Shorthorn is good for nothing but beef, and that it generally takes two cows to raise one calf decently.

In the sheep show many fine animals were exhibited, representing most of the improved breeds. The sheep is sadly neglected in this section, farmers generally paying so little attention to this meek, unobtrusive inhabitant of the farm yard as to scarcely know of the existence of many of the improved breeds. To what extent this is to be attributed to the dog law, or want of a dog law, I am not prepared to say. It seems to make little difference what the nature of the law, the dog remains a fixed quantity. Every house in the country villages can boast of one or more, and generally the owners pay little tax on dog or anything else.

Of hogs, the Poland Chinas largely predominate with the Berkshires a good second. The Jersey Reds, with their pendulous ears and razor backs, adorn an occasional homestead, adding perhaps more of the picturesque than the beautiful to the landscape; but "comparisons are odious."

The mechanical display was by far the best ever on the grounds. The new power hall, with shaft for running machinery, added very materially to the attraction in that department.

Our fair is held too early to furnish as fine a display of agricultural and kindred products as could be desired, but do not infer from this that empty shelves and bare walls prevailed in Agricultural Hall. All the leading cereals were out in force, though the corn looked as though it had laid aside its jacket a few days too soon. I think, as far as possible, these shows should be held when farm crops are more fully matured—

"When the frost is on the pumpkin
And the fodder's is in the shock,"

we could all be in readiness to enjoy more fully our coming together.

Floral Hall was crowded to its full capacity, with every thing that goes to make up the conveniences and attractions of home. I think, in many instances, the awards in this department are far less than they should be, considering the important bearing the culture and taste thus encouraged exerts over the home life.

Financially we have no complaint to make. The premiums were all paid in full; the improvements, though quite extensive, are all paid for, and a small balance left over. The attendance on Thursday was not near what it would have been, but for the rain in the morning and forenoon. Friday, also, was wet and threatening until midday; otherwise nothing transpired to militate against a complete success for the exhibition.

Our farmers have achieved a reasonable degree of success the past year. Our soil being admirably adapted to general agriculture and stock raising, farmers who combine the two systems are generally the most successful.

Wheat, corn, and grass are the staple crops, oats being grown in small quantities and only as a change of stock food. Corn is the sole reliance for the grain ration for all stock. Rye and barley are almost unknown, and a flax crop the exception.

As a large part of the wooded district of the county was heavily timbered with white oak, a heavy clay soil predominates, and yields good crops of grain and grass if well treated, but is very jealous of any neglect.

Farm methods have undergone a radical change during the last fifteen years. At that time scarcely a farm had a field that could be cultivated as a whole. Swales, branches, and swamps of elder brush adorned the landscape in disagreeable profusion. But with the help of the drainage law, and the introduction of tile making machinery, the channels of some of the principal sloughs have been deepened and put in shape to perform the office nature designed they should; and while like all innovations such improvements were sometimes met by stubborn opposition, the example was contagious, and now to see an undrained pond, even in the uncultivated lands is the exception, and the uplands, our fathers never dreamed of ditching, are being rapidly honey-combed with drain tile.

Stating it generally, men who have the necessary industry and pluck, can succeed possibly as well in Clinton county as any portion of the State.

Of fruits, the apple seems destined to be one of the products of the past, for in spite of the very best efforts of owners, orchards are rapidly failing. There is not one healthy, thrifty apple orchard in the circuit of my acquaintance. It matters not what the nature of the soil or the location.

“The trail of the serpent is over them all.”

We formerly thought dry gravelly locations best adapted to fruit. But in those locations where the elevations rise almost to the dignity of hills, and where formerly the finest specimens of apples, pears, etc., grew to perfection, now decaying trunks, broken branches, and other unmistakable indications of speedy death are visible on every hand. To sum up, a majority of the orchards of Clinton county are in a bad way. The culture of small fruits affords a more inviting field, all varieties succeeding admirably.

The timber question and tree planting does not cut much of a figure in the cal-

culations of land owners in this locality. We have spent the best part of our lives, many of us, in battling with trees and stumps for the possession of enough of Nature's domain, from which to wrest a livelihood, consequently trees are generally looked upon as an unmitigated nuisance, unless they can be sold for the cash, and the stump treated to a charge of dynamite. The fence question is attracting considerable attention, and the old worm fence "must go." Hedging is not looked upon with much favor, the preference being mostly in favor of barbed wire in some of its various forms.

The great cost of fencing out a few head of scrub cattle and hogs is forcing the importance of a practical stock law on the attention of farmers generally. The cost of maintaining the necessary fences to restrain these animals would more than pay for them annually. Lands being generally enclosed there is very little pasturage on the highways. The "poor widow's cow" we have heard so much about is no longer a factor in this question, it being the stock of the small land owner, who attempts to keep more animals than he cares to provide suitable pasturage for at home, so turns them out to forage on the highway and his neighbors' crops, if opportunity offers. It certainly is an evil that should no longer be tolerated, for farmers to pay burdensome taxes for grading and graveling our public roads and, having incurred the expense of constructing costly open drains to facilitate the drainage of their wet lands, to have these improvements marred, injured, and even ruined by the tramping and rooting of stock whose owners bear little or none of these expenses.

Our public schools are in a flourishing condition; neat, comfortable school houses are the rule, and are presided over by a corps of competent, intelligent teachers.

Our railroad facilities are excellent, furnishing ample transportation, and enabling dealers to pay the top price for all the products offered for sale.

In conclusion I extend to your honorable Board and the entire family of farmers of the State an invitation to attend our next exhibition.

MYRON H. BELKNAP,
Secretary.

DECATUR COUNTY.

Our county fair was held the last week in August. We had the largest attendance we ever had, and the fair was regarded as the best since its organization.

There has been constant progress in the science of agriculture in Decatur county; the land is well drained with tile ditches, and the best agricultural implements are used, so that our farmers are the most prosperous of any class of people in the county.

The principal products are wheat, cattle and hogs.

There is but little manufacturing in the county. A revolving hay rake is made at Greensburg, that is the best for the price in the market, and is rapidly coming into use all over the West.

WILL CUMBACK,
President.

DELAWARE COUNTY.

The Delaware County Agricultural and Mechanical Society held their thirty-first annual fair at their beautiful and commodious grounds, one-half mile north of the city of Muncie, on August 12th to 16th inclusive.

While the time for holding the fair is early in the season, there are some advantages that overbalance the disadvantages. Being the first fair held in this portion of the State, a larger attendance, we think, is secured, and there is no conflict of dates with any other society. The stock and all other articles intended for exhibition has by this time in the year been put in condition, and is ready to start out to other fairs; and no more central point and one from which good shipping rates can be secured, can be found than Muncie, hence many of them come here to distribute their stock from this point.

Farm products are not as well represented so early in the season, yet we have always had a very creditable display in that department.

The last exhibition was eminently successful in all the departments, the entries being more numerous and exhibits of a finer class than ever before. In fact, the exhibits of cattle, sheep, horses and hogs was more in the nature of a State fair than that of a single county. The speed ring was well represented, and was free from the hippodrome that so frequently destroys interest in races.

The attendance was large, and the receipts ample to pay all premiums in full, the expenses of the society, and considerable improvement that became necessary to accommodate exhibitors, and also leave \$500 to apply on an old indebtedness, which is now reduced to such small proportions as to leave no fears for the future of the society.

Improvements to the grounds and buildings for the better accommodation of spectators and visitors have been made and others are contemplated, as it is now a fixed fact that the Delaware County Association is one of the established institutions of the county; is worthy the support of her people, which has been and we have no doubt will in the future be liberally given.

The county is a purely agricultural county, and as such is second to none in the State. For a few years past much attention has been given to raising and breeding fine stock. Many of our citizens are taking special pride therein, and we can truthfully boast of having some of the finest and best blooded stock in the country.

JOHN T. WILDMAN,
Secretary.

ELKHART COUNTY.

The year 1884 completes the thirty-third year since the organization of the Elkhart County Agricultural Society. Fairs have been held regularly, save about seven years of an interruption caused by the War of the Rebellion.

We commenced this year with apprehensions that on account of the absorbing topic of the Presidential election we would be less successful than usual. To counterbalance this more than the usual effort was made, by advertisement and otherwise, so that we might, at least, have the success of ordinary years.

The weather, that has so much to do with out-door entertainments, was against us for two days out of the four, and one of these unfavorable days was the third of the fair, which is always that of our greatest attendance and consequent receipts. It was expected that those who were prevented from attending that day, would be present the last day, but we were disappointed; the attendance the last day was no more than the same day of other fairs.

While the numbers present were not equal to our wish, the exhibit in several essential departments was better than in any previous year, notably the Live Stock, the Farm, and Vegetable Departments, and also that of ladies' fancy and handiwork were better than ever shown before.

Live Stock. Cattle.—In addition to the herds of Durhams and Jerseys usually exhibited we had this year a very fine herd of Holsteins, which the growers claim to be better than any other breed of horned cattle, as they unite the two desirable properties of beef and milk. Those on exhibition were indeed good specimens, and awakened a great deal of interest. The Durhams exhibit was very good, so too the Jerseys were numerously represented and found admirers.

Sheep.—These were in greater number and better quality than ever before. The grades of fine, coarse and medium wool were all represented. A change has come over the sheep-growing interest making almost a revolution. The market has turned away from long wools and gone back in favor of the Spanish merinos, with even the medium wools being in request before the combing wool. The fine large growth of coarse wool flocks will, for its meat product, if not for the wool, continue to induce the growth of the coarse, large sheep.

Hogs.—The Poland Chinas seemed to be in the lead, but close following these the Berkshire have many admirers, and both breeds were numerously exhibited and received many commendations.

Horses.—With every farmer and many specialists this branch of stock growing has a great interest. The exhibits were, in number, kind and quality, entirely satisfactory. The heavy Normans and Clydesdales, the general purpose horse, the light stepping roadsters, and the special, standard-bred, fast movers, all were represented, each having their special admirers. The want of sufficient stabling has been and is a serious drawback to this department, although twenty new stables were added this season the accommodations are yet quite inadequate to the needs of the Society, but we hope, with our surplus, to add new stables next year.

Wagons and Carriages. This department gave a large show of work from the various shops of our county. The workmanship and finish, including neat upholstery, was very commendable, convincing our people that they need not go out of our county to supply any need in this line.

Farm Machinery and Implements. This department, with machinery in motion, was a place of great interest to our farmers, and showed the marked advance made by inventors and manufacturers.

The Floral Hall in its combined exhibit of plants, ladies' fancy articles, and show of wares and nice merchandise, with good exhibits of amateur artistic paintings and pencil drawings, was quite attractive, as shown by the large number of people crowding the hall at all times during the fair.

The balloon ascensions, given on the second and fourth days, were very satisfactory, and a pleasing thing to witness—given by the society in addition to the promised amusements, and acceptably appreciated.

The crops of the year 1884, of wheat, oats, corn, clover and timothy hay, indeed, all kinds of farm and garden products, was more than an average yield. Corn, that for the years 1882 and 1883 had proved failures, in consequence of cold summers and early fall frosts, this year grew well and fully matured, giving abundant yield of this substantial staple. Hay, and, indeed, grasses of all kinds, by reason of the wetness of the spring, warm and seasonable rains, was never more abundant, and the clear days for curing same was exceedingly fortunate. Add to this the genial rains of October, which brought out anew the grass as in June, and gave the best of pasturage until snowfall at middle of December. The season, in all of its conditions, was never so good. The large products, and the unfavorable conditions of money matters, reduced prices of all the cereals. Meats brought a better remuneration, thus showing farmers they must not rely on grain raising alone, but must mix in the production of live stock.

The progress made in better farming, in all its branches, is plainly shown to those who attend our fairs from year to year. There is no line of agricultural product but what has made marked advance. Particularly is it observable in the improved live stock of the whole country. Scarcely a herd of cattle is to be seen in our fields but what it is easy to see that there is a decided toning up by the cross of Shorthorn, Holstein, or other good breeds. The general horse is also much improved by the infusion of Norman, Clydesdale, Hambletonian, or other good breeds. That this good work may go on, let the agricultural societies be helped and encouraged by the influence of good men and their money help—not grudgingly withheld.

Ticket of Admission. At the organization of our society a commutation ticket, commonly called a family ticket, was adopted, admitting the heads of a family and all children thereof under fifteen years old, for the whole fair, at the price of one dollar. Although the managers of the society have long since seen that this, while it brings to the fair great numbers, puts into the treasury but little money wherewith to make improvements, pay premiums, and defray other necessary expenses of holding fairs; yet we have not been able to break away from this unfortunate rule and in lieu of it adopt a single admission ticket, because of the threatening remonstrances of farmers that we can only have their presence and help if the family ticket be continued.

The financial condition of the society—although the receipts were less than they should have been—is entirely sound. All liabilities are paid, and a surplus of \$1,380 left to commence a new year with.

FULTON COUNTY.

Our annual fair was held on September 22d to 27th, without any outside attractions and two rainy days. The receipts and entries exceeded those of 1883. The property of our society is owned by 310 different stockholders, and is valued at \$4,000. Each holder of a share is furnished with a stockholder's ticket which admits all females of the family and all males under sixteen years of age. Were it not for improvements being demanded each year, we would now be out of debt with a balance in treasury. To the surprise of all, the campaign had but little effect on our fair. Crops of all kinds were good, the principal ones raised in this county being wheat and corn. Extensive ditches are being constructed in this county, and the tax for that purpose proves a hardship just at this time on account of the low price of farm products.

Uninclosed commons are becoming very scarce. It is generally conceded that it would now be cheaper to fence stock in than to fence it out.

A great deal of interest is being manifested in the construction of free gravel roads. Any legislation that would assist our people in the construction of free roads would be more satisfactory than granting to corporations the right to construct toll roads.

JOHN M. DAVIS,
Secretary.

GIBSON COUNTY.

The Gibson County Agricultural and Horticultural Society held its thirtieth annual fair on the grounds near Princeton, Indiana, September 15th to 20th, inclusive. To say our exhibition was a success this year would be putting it very mild.

The people have become fully convinced that there is "none other" than the Gibson county fair, and, all things considered, it is "one of the finest" in this part of the State. Our exhibitions have been continually improving for the past few years, and so long as you can interest the farmer, mechanic, and all others on whom the success or failure of such institutions depends, just so long county fairs will be a success, and no longer. In this we have succeeded to a marked degree; hence we never give the least thought to "failure," or poor attendance at our exhibitions. As we have stated, the success of these fairs is no longer a question. Energetic and individual work, together with a thorough system of advertising, has placed the exhibitions of Gibson county at the head of like enterprises in Southern Indiana, where it will ever remain. This year's exhibition was a most successful one, both financially and as regards competition in all classes. The weather was very favorable, and the attendance very large. The display in all departments was fully 25 per cent. larger than ever before. Never in the history of the society has there been such a display in the floral hall, art gallery, agricultural implements or in stock, and never before has there been such a crowd in

attendance, the result of which is due largely to the fact that our society allows no gambling, immoral shows or intoxicating liquors on the grounds. The result of which is a quiet, peaceable and very instructive gathering, which, of course is better calculated to promote the interests of all industrial pursuits, good morals, and humanity generally.

The principal crops raised in this county are wheat and corn. The manner of preparing the soil for wheat shows great improvement over former years, and the yield is correspondingly improved. Thorough cultivation of corn by our improved machinery has about expelled all fear of failure to produce a good crop during a dry season, for as the warm air frequently comes in contact with the fresh-plowed earth, causing the vapor in the atmosphere to solidify as it does on the outside of a pitcher of cold water, so will the frequent stirring of the soil produce natural irrigation.

Personal liberty, to the detriment of progression in many respects, appears to reign supreme in Gibson county. No attention is given to timber culture. The value of our forest trees (like our mothers) will only be appreciated when they are gone. The board and barbed wire fences are about to be superseded by slats or pickets interwoven in smooth wire, the same being considered cheaper and less barbarous.

To show that our society stands at the top, the Louisville Southern Exposition offered a bronze medal and diploma to the society or State making the best display of agricultural and mineral products. Not wishing to be selfish, the Gibson County Society competed for the above, and was awarded both prizes by the Exposition over the States of Kentucky, Alabama and Tennessee, and various county societies in our own State. This speaks well for Gibson county.

S. VET. STRAIN,

Secretary.

GRANT COUNTY.

The Grant County Agricultural and Stock Association held its annual fair on its grounds, one mile east of Marion, the county-seat, from the 16th to the 20th of September last. The show, in the aggregate, was better than usual. The live stock department was unusually well filled. The attendance was not as large as on some former occasions, owing to the Presidential campaign and the establishing of a fair at Fairmount, in the south side of our county.

Our crop the past season was a full average. Notwithstanding the dry season we had a good corn crop, especially on our black lands, which prevail in this county.

The road system in our county is reasonably good. We have about fifty miles of toll gravel roads, about ninety miles of free gravel roads completed, and about fifty miles laid off and in process of construction. A fair quality of gravel can be obtained within reasonable distance for constructing roads.

As timber becomes scarce and of more value, the old rail fence is giving way

to board and wire fences. Not a great amount of hedge fence in our county. The tendency is towards the wire fence. Formerly fences were built to keep stock out of the farm, but now the object, as a general rule, is to keep the stock in. A large per cent. of stock is not permitted to run at large.

Ditching is extensively done, and underdraining extensively practiced in our county. As we become more experienced in this branch of drainage, we are deepening the drains and using larger tiling. As a drain four feet deep will carry twice the water of one a foot deep and cost the same for tile, it is economy to construct deep underdrains.

The condition of agriculture in our county is good. The old and erroneous idea that the farmer must necessarily be an "understrapper" and ignorant, is fast disappearing, and the farmer is regarded as an important factor by all classes.

Rapid improvements have been made in building the last few years in both town and county.

D. S. HOGIN,
Secretary.

HAMILTON COUNTY.

It becomes my province under the provisions of law to submit the following as the annual report of the Hamilton County Agricultural and Fair Association for the year 1884.

The sixth annual exhibition was held on our grounds, one-half mile west of Noblesville, Ind., August 25 to 29, 1884, inclusive. Our fair was a success in every particular. The departments were all well filled, the weather was fine, and our beautiful grounds were filled to overflowing with our happy and prosperous people.

Such was the interest manifested by the ladies of our county that our new and commodious Fine Art Hall was filled to overflowing with specimens that will be a lasting tribute to the art and industry of the ladies of Hamilton county.

The display of horses and cattle was very fine, especially so was the show of Norman and Clydesdale horses.

The Hog and Sheep Departments were well filled with as fine specimens as are to be found anywhere in the State. The poultry show was very good, showing quite a number of varieties. The total number of entries in the Live Stock Department was the largest ever had in a single year.

The Agricultural Department was well represented, showing that our farmers are taking a lively interest in procuring the first and finest varieties, and vying with each other in the production of the same.

The horticultural display was very creditable, but not so good as last year.

Altogether the fair was a good one, and, so far as came to my knowledge, has given universal satisfaction; and we desire to express our thanks to the good people of Hamilton and adjoining counties for that generous patronage which enabled us to pay our premiums in full, the running expenses, and also for our new hall.

Hamilton county is situated in central Indiana, and is fast becoming the peer of any county in the State. For richness of soil it is one of the leading counties. White river courses through it from north to south, throwing out her rich alluvial bottoms, thus giving thousands of acres of fine corn land, upon which our farmers produce annually a large amount of corn, and the adjacent warm, sandy uplands furnish a much larger acreage for wheat. Almost all the swamp lands of our county have a thorough system of underdrainage, thus leaving but a very small per cent. of waste or worthless lands. Our farmers are fully up to the times in the way of improved farm machinery, and all other improvements as well. As evidence of the prosperity of our people one need but look about him and see fine residences, many of them slate-roofed, large and commodious barns, good fencing, and a happy and contented people. Our county is developing in stock raising rapidly, and to-day can be seen grazing contentedly upon our fertile soil many fine herds of cattle. When we look back to twenty years ago and contemplate the steady and rapid growth of our county in material wealth, we can but predict a bright future for our people.

We have at present sixty miles of railroad, 140 miles of free pikes, and still a larger amount of toll roads in our county. We have quite a number of tile mills running, the proprietors of which are able to sell even more than they can manufacture. The worm fence still lingers as a reminder of the past, but it must soon go (having served its time of usefulness) with the log cabin and the duck pond, and in its stead will come plank and wire, thus saving to the farmer the very great annoyance of keeping the old fence row clean. We have at present quite a large amount of plank and wire fencing, perhaps twenty per cent. Our farmers are beginning to learn the very important fact that they can not afford to waste their timber, by making it into rails, when plank and wire are so much cheaper.

GEORGE M. YOUNG,

Secretary.

HARRISON COUNTY.

The twenty-fifth annual fair commenced on the 1st day of September, 1884, and continued five days. It was the most successful fair the county ever held. The exhibition, in every department, was very fine, and the attendance unprecedented. For information in regard to the number of entries, amount of premiums paid, attendance, and amount of receipts and disbursements, I would refer to the tabular statement presented herewith. And without referring to each industry individually, I would say that the progress in every industry, with the exception of sheep husbandry, has been entirely satisfactory; and were our sheep properly protected from the ravages of the useless dogs that are kept and harbored by a class that manifest no interest in anything that tends to build up a community, it would receive its share of attention. Give us back the law, tag or shoot the dogs, and then we can raise sheep at a profit.

Harrison county is well adapted to cereals, stock and fruit. The wide bottoms along the Ohio river, on our southern border, and on the various streams that traverse the county, are among the finest corn lands of the State, and on which this year grew one of the finest crops of that cereal that we have ever produced, the most of which has already found its way into market at a fair price.

Our uplands, or table-lands, are among the best wheat-producing lands in the State, our best farmers frequently raising on them as much as forty bushels per acre of the very best quality of grain.

Fruits, especially apples and peaches are extensively grown, and so far have been very remunerative; also small fruits are grown with considerable profit. But our farmers are paying more attention to stock, especially horses, cattle and hogs. In horses their attention is turned mostly to heavy draft, the Percheron and Clydesdale, of which we have some very fine animals, the diffusion of whose blood is making a marked difference in the appearance and value of the horse product of the county. In cattle, we have Shorthorns, Jerseys and common stock, the latter, or a mixture, mostly prevailing, yet we have some very nice cattle and some fine milkers. One farmer I know who has three cows of common origin from which he made forty-eight pounds of butter per week, and averaged thirty-six pounds per week for the entire year, but then, these were extra good common cows. The improvement in hogs has been greater than in any other industry. Berkshire and Poland China are the principal breeds; in fact, there is scarcely a hog in the county but what it is one or the other or a cross from them.

Sheep. As I before said, there is not much interest manifested in them, although this is one of the best counties in the State for the rearing of sheep. On our cheap hill lands along and back from our water courses they ought to be raised very profitably, water and grass both being plenty.

Although Harrison county is one of the oldest settled counties in the State, the average production of grain to the acre is much more than it was twenty years ago, and with the building up of manufactories and the opening up of our stone quarries, thus creating a better market for our products, we expect to see the farmer stimulated to still greater efforts. After we have said all that we may in regard to the improvement in stock and the advancement in farming, there is yet one thing in which Harrison county takes the lead, and that is in furnishing population for the vast unsettled domain of the West. Go where you will you will rub against a Harrison county man. The roads leading to the West carry them away fall and spring by the wagon load; the railroads carry them away by the hundreds; the Ohio river, with its line of packets, carry them away daily, without in the least diminishing the visible supply, and the hills and the hollows seem to be as full of life as ever.

JOHN Q. A. SIEG,
President.

HENRY COUNTY.

Henry county may not be the best, but it is certainly one among the best counties in the State. It is about 20 miles square, and contains over 250,000 acres, most of which is a very fertile soil. There is but little land in the county not susceptible of tillage. From this fact, perhaps, as much as because of its value in the markets, has the disappearance of the once heavy growth of timber been so rapidly brought about, until the present timber area is less than one-fifth of the county. Black rich loam susceptible of a high cultivation largely predominates.

There are no large streams, but several of medium size and numerous smaller ones, and, with perhaps two exceptions, the land along these streams is tillable almost to the water's edge. Some of these streams afford excellent water power, especially in the southern part of the county. Many of these sites could be profitably used for manufacturing.

There are over 100 miles of railway so traversing the county that no town or village, community or neighborhood is to exceed four or six miles from a railway station or a grain market.

No county in the State, perhaps, can boast of better roads, the principal ones being toll roads. Gravel is plenty in most parts of the county. Our people like the present road law. The improved machinery for grading highways so much facilitates road working that almost miles of pike are now made with the same labor, time and expense formerly required and expended in filling a few "mud holes."

New Castle, the county seat, is beautifully located on the east bank of Blue river, at the crossing of the Indiana, Bloomington & Western, the Panhandle, and the Fort Wayne, Cincinnati & Louisville railroads, 44 miles east of Indianapolis. It has a population of 3,000 or more, and is furnished with excellent public buildings, and good churches and schools. Its location is high, and its drainage excellent. In the character of its mercantile buildings it is not excelled and is seldom equaled by any of the towns of its class, while many of its private residences would do honor to any. In its superior railroad facilities it offers special inducements to manufacturers and to shippers, and is destined to become a considerable manufacturing center. As a distributing point it is not excelled.

The products of the county consist of corn, wheat and oats principally, with sufficient of the other staples to supply the local demand.

This part of the State suffered, this year, in many respects, because of the extremely dry summer and fall. Wheat was not an average yield, yet the quality was excellent. The drouth reduced the corn yield fully 50 per cent.; and for the same cause the summer and fall pastures were cut short. The oldest inhabitants do not recall a much dryer season.

Grazing in this county is limited, yet there are good sales of cattle.

There are some half dozen tile manufacturers in the county, and all report an increased demand for tile. Farmers are now draining lands which, a few years ago, they did not class or consider as wet, or as needing draining, and farmers are learning the value of putting tile deep in the ground.

There is no *timber culture*. The treatment of timber is more nearly that of *timber destruction*.

The question, "What is the best farm fence?" is yet unsettled, and remains a problem to our people. There is considerable hedge fence, but none put out during the last year. Some barbed wire fencing put up still, but this is growing less in favor each year.

This year has witnessed the erection of many new buildings throughout the county. Quite a number of conveniently arranged and substantial farm-houses have been built; also, a number of barns. The growing tendency among farmers to properly care for and house their stock is noticeable.

From the statistics on file I append the following table, to show the per cent. of increase or decrease in the products or articles mentioned, comparing the two fiscal years 1883-'84, ending June 1st of each year:

TABLE OF STATISTICS.

	1884.	Increase over 1883.	Decrease from 1883.	Per Cent. Gain.	Per Cent. Loss.
Acres wheat	46,075	950		2	
Acres corn	52,166	1,527		3	
Acres oats	4,583	728		18	
Acres timothy	8,000		3,380		29
Acres clover	20,299	422		2	
Acres blue and other wild grasses	14,173		1,203		7
Acres plow land not cultivated	2,542		1,648		39
Acres new lands, first cultivated	1,075				
Rods tile-drainage in operation	429,919	61,555		16	
Bushels clover seed	4,166	1,955		88	
Pounds butter produced	450,843	58,046		14	
Number fattened hogs, (light decrease in average weight).	46,726	2,558		5	
Acres timber land (about same as 1883)	49,056				

The packing firm of Baldwin, Roberts & Co., doing business at Newcastle, have killed during the season just ended, 22,995 hogs; average weight, 283 pounds. In 1883 they killed 17,499; average weight, 267 pounds. They paid out for labor this season about \$8,400, and for hogs, \$256,290.57.

The twenty-third annual fair of the Henry County Joint Stock Agricultural Society was held at New Castle, September 16 to 22, 1884, inclusive. In many respects the fair was the best it has ever been.

The show of horses, consisting of imported or full-blooded draft horses, heavy draft, general purpose horses, farm and match teams, was the best it has been.

The show of thoroughbred cattle, Shorthorns—recorded, Alderneys and Jerseys,

was excellent. The quality of Henry county's horses and cattle was well attested the following week, by her exhibitors securing a liberal share of the premiums awarded on this class of stock at the State Fair.

There was a creditable show of hogs, sheep and other live stock. The hogs were Poland China and Berkshire mostly; sheep—Long wools and Downs.

The display of poultry was not so large as usual, but quality was as good. There was a noticeable absence of farming implements and machinery.

The home manufacturers' display was excellent, and the competition strong. The three manufacturers of wagons and buggies of New Castle each deserve special notice for their creditable display.

Fruits and vegetables were not up to their usual standard of exhibit in quantity; neither was that of farm products, though both were good for this season.

The Floral Department, needle work, etc., was quite creditable. Not so many articles exhibited, perhaps, but of a finer quality; especially was this true of the needle work.

We think a report from Henry county would not be complete without a notice of the exhibit made by the pauper children under the care and direction of the Misses Fussell, at Spiceland. Their models in clay, of fruits, animals and buildings, were gems of art and ingenuity. Their specimens of needle work, and card-board, canvas and cloth work would compare favorably with those of maturer years. Their garments, of hand and machine work, were neatly executed. On their rugs the cats and dogs seemed to thrive without much effort. Their landscape and other paintings were beautiful.

All of this work was done by girls and boys ranging in age from four to twelve years. In the Home of the Pauper Children of Henry County we find thirty to forty children from two to sixteen years receiving such home care, training and discipline, as but few homes can or do give.

Our Society has made but few improvements this year; however, we have increased the stall capacity twenty per cent., built two stands after modern style and put the fencing in good condition. The grounds contain only about fifteen acres but is pleasantly and comfortably arranged, plenty of shade and good water, not far from center of town and convenient to the railroads. We pay no salaries, except small compensation to Secretary.

You ask about the dog and stock law. Nine-tenths of our people desire a rigid stock law, one that will "keep stock in." Such a law will be duly appreciated. However, we are not troubled here as in some localities with stock running at large.

The present dog law is again cheating the revenue, and fast increasing the death rate among sheep. The Township Trustee is the special custodian of all township revenues, including dog revenue. He is interested in obtaining as much revenue from as small a levy as possible; therefore I would suggest (since you ask suggestions) that such a modification of the law be asked as will make it the duty of the Township Trustee, when he enumerates the school children, to register all dogs as to age, sex, breed and color, name of owner or person harboring, etc., (these were features of the tax law which enabled distinguishing the dogs), compare this register with assessor's list and returns to get all on duplicate. Make it

legal to put these dogs on tax duplicate at any time before delivery to Treasurer for collection. Require Treasurer to make report, on demand of Trustee, each month of the dogs returned delinquent in any township, and of the tax on which Treasurer has made demand for payment and payment not made. After such demand and neglect to pay, make it the duty of the Township Trustee, under penalty for failure, to direct the constable or such person as he may appoint to make further demand, and on failure to secure said delinquent tax, to then and there kill such delinquent dog. You would get the tax or rid the nuisance. This would annoy only such people as fail to pay, and who have to be visited anyhow. It might also be well to empower Treasurer with authority to kill on refusal to pay. There should be a small compensation paid for killing all such dogs.

FRANK M. MILLIKAN,

Secretary.

HOWARD COUNTY.

The Howard County Agriculture Society held its annual fair on its grounds, one mile southwest of the city of Kokomo, commencing on the 26th day of August, and continued four days. The first two days were very rainy, and we had a small attendance, but the other two days our people took the usual interest, and the fair was a success.

The entries were up to former years, numbering near 500. We paid our premiums, which amounted to \$1,096 85.

The Live Stock Department was especially full. The stalls and pens were all occupied with stock, not only of our own citizens, but from quite a number of other counties.

This county may be classed among the level counties, and as to fertility and arableness will compare favorably with any of the surrounding counties, being composed of a black rich loam and easy of cultivation. Notwithstanding the dry season, we had an excellent corn crop, and while the crop was a very fair and remunerative one, it was especially so with the corn crop. Fruit is also an important crop with us, and a fair yield this season for home consumption and for shipping.

For the past few years this county and city has had a marked spirit of improvement. The log house has almost disappeared, and the frame and brick has taken its place. The drainage of our lands has not been neglected. Many public ditches have been constructed under the drainage laws of the State. Tile or under drainage has claimed the attention of the thrifty farmer, and a large per cent. of our lands are brought into a high state of cultivation through this and other means. We have been taught by experience that our first efforts in underdraining were not thorough. Large tile and deeper drains are found to be necessary and far more remunerative.

We have three railroads passing through our county and through the city of Kokomo, which furnish us with outlets in almost every direction. We also have

gravel roads extending in almost every direction and tapping all parts of our county. We have an abundance of good gravel and of easy access for the construction of roads.

The condition of agriculture is healthy. The old idea, and one which was far too prevalent, that the farmer was necessarily an ignorant necessity, has been out-lived, and he is no longer kept in the background.

JOHN R. CURLEE,
Secretary

HUNTINGTON COUNTY.

The sixteenth annual exhibition of the Huntington County Agricultural Association was held on the grounds of the society, near the city limits of the city of Huntington, September 16th to 19th, inclusive, and the success of the last fair was even more phenomenal than that of any of its predecessors. The association has passed that point when there is the least doubt as to the success of its fairs, the only object being to make each succeeding one excel the one of the last year. This, we are glad to say without the least desire to boast, has been the spirit which has actuated the officers of the organization, and to-day, we boast of as fine exhibitions as are given at any county fair in the State.

We believe in well-defined efforts to secure the coöperation of all the farmers and manufacturers of the county, and having them with us, we are perfectly willing to advertise thoroughly our exhibitions, and we find the plan successful.

We allow no intoxicating liquors to be sold on our grounds; no "fakirs" or "snaps" are there to "gull" those who come, and in this manner we secure the attendance and hearty coöperation of the most desirable class of people.

The last exhibition surpassed the most sanguine expectations of even the officers themselves. The attendance was extraordinary; every premium was promptly paid, and paid in full, as is our invariably custom, and notwithstanding this, we have had for the past few years at the close of each exhibition a handsome surplus of money.

The displays in every department were never excelled, and in some instances were larger than heretofore. Floral Hall was filled to overflowing, and it was found necessary to call into requisition other buildings for the use of this department. The live stock show was large, and demonstrates the fact that our people are thoroughly in earnest in their endeavors to obtain good stock of every kind; while in agricultural and farming implements of all kinds the display was never so large.

Our crops during the past year were not as good as they have been in former years, yet they averaged well. Wheat was nearly an average crop the county through, while corn fell somewhat short—the quality was excellent. The severe drouth is what damaged the latter named crop. In apples and the smaller fruits the yield was abundant.

Our county is fast becoming one of the most prosperous in the State, and is peopled by an enterprising, intelligent class of inhabitants. We have splendid

roads, almost every leading one in the county being a free gravel road, and many of the cross-roads are also graveled. Out of twelve gravel roads leading into the city of Huntington but four are toll roads, and efforts are now being made looking to the conversion of two of these into free roads.

It is the industrious nature of our people, coupled with good roads and systematic drainage throughout the county, that is making ours one of the most prosperous and important in the State.

LEON T. BAGLEY,
Secretary.

JACKSON COUNTY.

The Jackson County Agricultural Society held its ninth annual fair at Brownstown, July 28 to August 1, 1884, inclusive, being nearly one month earlier than any previous fairs, and the season being later than usual the exhibit of agricultural articles were small. The show of live stock, mechanical articles and fine arts was equal to previous years. The live stock show was the leading feature of the fair, especially the Shorthorn cattle and sheep, there being in both departments a much larger number and of better quality than ever before exhibited.

The fair was a success financially, the receipts being sufficient to pay premiums and expenses, with a small surplus to apply on indebtedness, which leaves the Society in debt less than one hundred dollars.

No county in the State has better agricultural resources than this one. The bottom land along the Driftwood fork of White river and the many smaller streams produces large crops of corn, wheat, oats, clover, and grass, corn being the leading article.

Nearly one-fourth of the farming land is a sandy soil, which is the very best for the growth of watermelons, nutmegs, potatoes, and all the varieties of early vegetables.

There has been a great amount of draining done in this county in the past year, both by open ditches and tiling. The most of the open ditches have been made by order of the Board of County Commissioners, under the law approved April 21, 1881. The only objection urged against that mode of ditching, or rather against the law, is that there is too much expense in getting ready to do the work and receiving it after completion. The tile put down has given satisfaction, and the demand for tile is increasing.

The barbed wire fence is fast taking the place of the old rail and plank fences, as it is considered more durable and cheaper.

This county was once heavily timbered with wood of fine quality, which has been, and is yet being rapidly worked into lumber, staves and spokes.

The present dog law is satisfactory. The statistical reports are sought by our best citizens, and are considered useful, but more care should be taken by the officers in gathering statistics.

J. H. MATLOCK,
Secretary.

JAY COUNTY.

The thirteenth annual fair of the Jay County Agricultural, Horticultural and Industrial Joint Stock Company was held on the company's grounds near Portland, September 30 and October 1, 2 and 3, 1884; and while the exhibits and attendance were not quite as large as last year, yet the fair was a decided success financially and in interest. It has always been the custom of our society to hold its fairs late in the season, and our experience is that we do not have as large an attendance in presidential campaign years as in other years. The people get worn out attending rallies before fair time. In addition to this, the two opening days of the fair this year were very rainy and disagreeable, which was the worst drawback of all. The company has a beautiful fair grounds of 40 acres located just outside the corporation limits of the city of Portland. Twenty acres are cleared, and the race track is located thereon; twenty acres are covered with a beautiful grove, in which are located the halls, stalls, pens, etc. We are justly proud of our grounds, and think there are none finer in the State. We have some good buildings, and some that are old. We have a surplus in cash of \$1,290.64, and expect to spend about \$1,000 of it in building new stalls and pens before our next fair. In the thirteen years of the company's existence it has never paid a dividend to the stockholders, although its fairs have been uniformly successful, and, with one exception, have left a surplus over expenses. It has been the policy of the company to expend all the earnings above expenses in additional improvements on the grounds. The only return that the stockholders have on their investment is a pass for themselves and their families to the fair.

The exhibits this year were all good in their respective classes. Many of our people exhibit regularly every year, and they are gradually improving the quality of their exhibits. Animals and articles that would have ranked well some years ago, would hardly pass now. In this way our people are being educated up to a higher standard of excellence. The show of horses this year was good, several imported ones being among the number. The feeling here seems to be in favor of the Clydesdales for draft, as no other imported draft horses are yet owned in the county. Of horses for light harness and general uses there was a very creditable number. In the Cattle Department there was a fine exhibition. Wm. Sharp, of Richmond, Ind., and Wm. T. Bartlett, of Albany, Ind., each had an excellent herd of Shorthorns on exhibition, but the sweepstakes on Shorthorn bull was carried by C. C. Watson, a local exhibitor. There was a fair show of Jerseys. The fancy with our people seems to be for Shorthorns and Jerseys, but within the past year the Holsteins have begun to appear among us, and promise to divide the honors. Of sheep there was a fair number of entries and a very good display. Our society requires a pen of three ewes to show for each premium offered on ewes, in all the ages and classes, and this brings out a large number of sheep.

The show of hogs was good, being confined to the Poland China, Berkshire, and Suffolk breeds.

The display of poultry was very fair, and was divided among a large number of exhibitors. The Mechanical Department was well filled.

While the agricultural and horticultural exhibits were good, they were hardly up to former years in some things, the long drought during the summer and fall, having retarded the growth of many vegetables. Of fancy articles and culinary preparations there was seemingly no end, the competition being very spirited. Floral Hall was filled to overflowing. The trotting and pacing races were up to the average, and seemed to be very attractive to a large portion of the crowd. The best of order prevailed, and it was frequently remarked that we never had so civil a crowd before. Not a single arrest was made. Games of chance were admitted, but the feeling of our people generally is that they should be kept out, and we expect to honor that feeling next year.

The year 1884 has been a prosperous one for the farmers of Jay county in so far as the crops raised were concerned, but the depression in prices has made it discouraging to those who depended upon the sale of their crops to raise money to meet obligations and expenses. The wheat crop was good, and of excellent quality. The corn was good, except on high ground, and was well ripened. Oats were short on account of the extremely dry weather. Potatoes not over two-thirds of a crop, for same reason, but what were raised were of good size and of excellent quality. Hay was up to the average and was saved in fine condition, there being but little rain during the haying season.

Our lands in this county are specially adapted to grass, and hay and cattle are among our ranking interests. Sheep would be largely raised, if the dogs were all dead. The dog law does not bring enough revenue to pay for the sheep killed, and in this township alone the fund is over fifteen hundred dollars behind the claims for losses.

Corn is our next best crop after grass, and consequently many hogs are raised. Wheat comes next, and in addition to home consumption we export large quantities of it. But few oats are raised for shipment, about all being fed at home. Barley and rye do well, but are not much raised.

Potatoes generally do well, and some years many car loads are shipped out to find a market. Flax has formerly been largely raised in this county, but for the last two or three years it has not been profitable, and farmers are giving it up. Apples and pears do well, but peaches and cherries are not profitable with us. The cold winter, a few years ago, greatly injured our orchards, many being killed outright, and trees planted since have not yet come into bearing. Among the small fruits, strawberries, raspberries and blackberries do well, but currants and gooseberries have been a failure for some years, on account of the worms. Our farmers are rapidly replacing their old buildings with new and stylish ones, and the old log houses are rapidly becoming a thing of the past. The lands are being speedily drained under the present ditch law. A majority of the streams of the county are being straightened out and opened up, making good outlets for the tile ditches, and before many years all the streams will be so ditched. Tile ditches are booming. There are twenty-two tile factories in the county, and they are unable to supply the demand for drain tiles.

No attention is paid to timber culture, as nearly fifty per cent. of our lands are yet covered with a heavy growth of forest timber. Nearly all of this timber land is fenced and a great deal of it under-brushed and sown to grass.

There is yet plenty of room in Jay county for more than double her present number of inhabitants. The majority of our fences are yet of the old style rails. Many are building of boards, some of wire and some of boards and wire combined. Hedges are few, and are not very satisfactory to their owners. The farmers are discussing the fence problem, and I notice that the feeling is growing in favor of fencing stock in.

Our roads are being graveled as fast as the law will allow. We now have 87 miles of free gravel road, and 15 miles of toll gravel road in the county, with more in preparation for next year. Every road leading into Portland, the county seat, is now a turnpike.

The majority of our farmers are fully keeping pace with the times in the use of improved implements and machinery. They are also awaking to the value of manures, and the importance of clover, and proper rotation of crops. Taking all in all, the future outlook for the farming interests of Jay county is encouraging. With three railroads through the county, insuring good markets, and with the numerous turnpikes, enabling the farmers to reach those markets at all seasons of the year in spite of rain or mud, there is good reason for us to be encouraged.

L. L. GILPIN,

Secretary.

JEFFERSON COUNTY.

Jefferson County Grange Jubilee Agricultural and Mechanical Association held their eighth annual meeting and fair on the Driving Park Ground, near Madison, September 2, 3, 4 and 5. The fair was one of the most successful ever held in the county in the way of exhibits. Almost every department was well represented, but financially it was a failure to some extent as the proceeds were not sufficient to pay the premiums in full, therefore we had to *pro rata*.

The cause of the light attendance being the existence of two conflicting elements, which we hoped to unite, but it appears that the chasm widens, therefore the Association finds it hard to work against those elements, but we believe that a straight forward course in the right will finally triumph, therefore we propose to work for the building up of the agricultural class by using all the means that we can without resorting to anything that we believe a detriment to society, and tends to detract from the interest that should be built up among the farmers.

We therefore do not give any premiums on speed, and will not admit any games or catch-penny institutions, for we firmly believe that these things absorb the interest, and the true object of our meetings would be lost. We hope that we may educate ourselves as farmers to realize that all meetings of this kind should be elevating to us as a class as well as to community at large. Therefore, rather than to succeed financially by introducing things that would detract and lead the mind from what we wish to foster, we propose to leave them off, and hope to succeed in elevating ourselves to a position worthy of our calling.

Jefferson county is steadily increasing in its agricultural products; mixed farming is almost universally practiced. The stock law is gradually coming into

force; every year finds the bounds widening. Improvement in farm buildings is very perceptible. The farmers generally are practicing a more thorough system of cultivation.

The Horse Department was well represented, especially in general purpose and heavy draft, there being quite a number of imported horses in these rings.

The cattle show was good, and of the finest blood ever exhibited at our meetings.

The Hog and Sheep Department was well filled, and superior to any previous fair.

Floral Hall was not so well filled perhaps as in former years, but the articles on exhibition were far superior to any heretofore shown.

The Flower Department was splendid. The greenhouse erected for that purpose was filled with choice collections of pot plants and cut flowers.

The Mechanical Department was better represented than in former years, but still room for improvement, which we hope for in the future.

The Lecture Department was a failure, as those who had been selected to lecture were so situated that they could not be with us. We will try and have that part well supplied with able lecturers in the future.

Our next meeting will be held on September 1 to 4, 1885, inclusive.

We heartily thank those that helped to make this exhibit what it was, and are sorry that we were not able to pay the premiums in full, and do cordially invite them to meet with us in the future, and will promise them to do all we can consistently to make it a success.

THOS. H. WATLINGTON,

Secretary.

JOHNSON COUNTY.

Owing to delay in selecting a suitable tract of land on which to hold a fair, the Johnson County Fair Association did not hold a fair this year, but we expect to get our grounds in shape so as to hold a fair in the autumn of 1885.

This county is largely an agricultural district, and our crops are principally corn and wheat, with good markets for both. There are two large starch works in this county, which consume large quantities of corn annually; and we have a number of the very best flouring mills which afford an excellent market for the wheat. The corn and wheat crops for this year were up to the usual average, and the now growing crop of wheat promises well, but as to the number of acres sown last fall, I think it will fall short of previous years.

Our farmers are in a prosperous condition, with their farms in a high state of cultivation. Most of them have fine houses, good fencing, careful drainage, with an excellent quality of all kinds of live stock, all of which is conducive to their health and prosperity.

Our cities, towns and villages are steadily going forward, with good morals, increase in population, and substantial improvements; so we think, summing it all up, we have no great reason to complain.

D. H. MILLER,

Secretary.

KNOX COUNTY.

The Knox County Agricultural and Mechanical Society held its fourteenth annual fair, near Vincennes, from October 13 to 18, during most auspicious weather.

The directors, having found by past experience that the building devoted to the exhibition of fine arts was totally inadequate, have erected a new and commodious structure well suited to that use, and we were all gratified to find it amply filled with substantial evidence of the culture and progress toward comfort and elegance enjoyed by our people.

The exhibition was, in all respects, a most gratifying success. The receipts aggregated \$10,425.70; expenditures, \$9,430.52.

In the item of expenditures is included the cost of constructing improvements, \$3,960.27. Total entries, 2,340. Premiums paid, \$3,143.50.

An analysis of the entries shows that the exhibition of horses was especially large, there being 323 entries, and in this department over \$1,200 was paid out in premiums. There were 114 entries in the Cattle Department, to which were paid \$657 in premiums. As an instance of how small industries may grow to take the place of former leading interests, it is curious to trace the rise of the poultry business in our county. A few years ago \$50 was considered by our managers a large amount to appropriate for premiums in this department, while \$250 was hardly sufficient. At our last fair there were 51 entries of hogs, and they received \$126 in premiums, while there were 181 entries of poultry, to which were paid \$216 in the way of premiums.

There seems to exist a marked tendency among our exhibitors to show the best of well-known varieties in stock, and agricultural and horticultural products rather than to display novelties in blood or species. This tendency crowds our exhibition with the finest specimens produced, but does not as thoroughly as could be wished, show the advantages of new introductions.

The necessity for heavier horses, so universally recognized a few years ago, has been fully met by the introduction of various strains of Percheron. But an equally existing defect in cattle has been only partially remedied. Our cattle are still too distinctly marked into but two classes; the unsightly scrub, and the too high priced Shorthorn.

In cereals and other products of the field, there will always appear the great variety rendered essential by the diversity of soil, between sandy loam and clay, which marks our county, some portions of which require early and others late varieties of the same staple; and hence our exhibitions are marked by specimens with such adaptability.

Taken as a whole the year has been one of unusual success to the agriculturist, although the low prices prevailing have not made it of such great financial profit. Its success has been rather one of improved quality in its products than of pecuniary gain.

A courage born of success in battling with floods and droughts, has strengthened our farmers, and to that extent has enriched them with an energy not heretofore felt, and which in the future will assuredly secure a most abundant reward.

GERARD REITER,

Secretary.

LAGRANGE COUNTY.

The Lagrange County Agricultural Society held its thirty-second annual exhibition on the fair grounds at Lagrange, on September 24 to 27, 1884, inclusive. The number of entries were larger than usual, and the exhibition of stock and articles competing for premiums was unusually good, especially of horses, cattle, sheep and hogs.

Wool growing is one of the specialties of the farmers of this county. Quite a number make a business of raising, buying and feeding sheep for the eastern markets, and some of our best farmers are now feeding flocks of five hundred each. Thousands of sheep are annually shipped from this county to the eastern markets.

The exhibition of poultry at our last fair deserves special mention. The entries in this department were large, and the fowls presented were of the finest and best breeds.

Owing to the drought during the summer the exhibition of agricultural products was not large, but the specimens were very good. Wheat, corn, oats and grass are the leading products of the soil in this county. The wheat crop of 1884 was a fair average crop, the yield being about eighteen bushels per acre, as estimated by our best farmers. The corn crop, in consequence of the drought during the months of July, August and September, was below the average. The yield of oats was good. There was also a very good yield of grass, and, the weather being very fair, an unusual amount of good hay was made, undoubtedly, the greatest number of tons ever produced in one year by the county.

The exhibition in Floral Hall, consisting of textile fabrics, fine arts, etc., was very good. In the Horticultural Department the exhibition was small—the fruit crop being a partial failure. The usual amount of agricultural implements was on exhibition.

Financially, the exhibition of the Society was a partial failure, as it was not attended by many people aside from the exhibitors. It seems that the people had spent their surplus change attending the grand rallies during the political campaign, and had none to spare for the fair. The weather was very unfavorable during the exhibition.

ISAIAH PIATT,

Secretary.

LAKE COUNTY.

The twenty-sixth annual fair was held at the fair grounds in Crown Point on the 7th, 8th, 9th, 10th and 11th days of October, 1884. The first day was so wet and unfavorable that few entries were made, but the days following were fine, and our people, from all parts of the county, patronized the fair so liberally that the attendance exceeded any previous fair. The total receipts were \$1,887.54. Premiums paid, \$1,261.00. Total expenses, \$396.74, leaving a balance on hand of over \$300. Financially it has been a success, but we think that it is a great risk

to hold our fair so late in the season. The social features of a fair are more important than many think. The meeting of friends and neighbors, and a social holiday is one of the chief attractions. To induce this, the fair must be kept free from all vicious influences, and made a place for agreeable recreation and amusement, and above all it must be an exposition of all the industries of the country, especially pertaining to progressive agriculture.

Horses formed a prominent feature in our entries, and a lucrative source of income on many of our farms. The show of horses with us is always good. Normans, Clydesdales, Cleveland Bays, trotters and roadsters, all being well represented.

Of cattle, we had Jerseys, Shorthorns, Herefords and a few Holsteins. The show of sheep was not as good as usual. Our pens were well filled with hogs—Chester Whites, Poland Chinas and Berkshires.

The Woman's Department, in the Floral Hall, was quite an attraction, and one of the best features of the fair.

The display of agricultural products, both of the farm (with a few exceptions) and garden was very poor for a county capable as it is of fine varieties and a full collection, and this requires more than a passing notice. The premiums for farm products should be more liberal. An improved variety of corn, wheat or oats suitable to our climate and conditions, introduced by this agency and brought to the notice of our farmers, might be worth thousands of dollars to the great producing interest. In the different varieties of grapes and clover, in a county whose chief element of wealth is in our rich pastures and meadow lands, there should be every inducement to a full display of all the valuable species known for their great value, both for pasture and hay, and in this report, from past experience, we would urge the great importance of these matters suggested, and which form the business side of all our fairs.

Poultry is receiving the attention it deserves, and the display was a credit to that branch of domestic industry.

Corn.—We shared with the Northwest in a poor crop in 1883; this year it is at least 50 per cent. better, having fully matured with a fair yield.

Oats.—This year's crop will exceed all former years. We shall go up this year, we think, to one million bushels.

Wheat.—What wheat lands we have are excellent and productive; this year's crop was very good.

Rye.—More rye is being sown with a view to stock feed rather than for sale.

Pastures.—The drouth in summer shortened the grass, but early fall rains made it abundant.

Hay.—The area in grass for hay, we think, is increasing; large crops are raised.

Stock at Large.—Every one takes care of his own stock; this is common law and common sense.

Flour.—Not wheat enough raised in the county for home demand; tons of flour imported and sold here.

Milk.—Being so near Chicago, this trade is increasing. On some of our lines of railroad milk trains are run, and we shall soon in this industry, in some localities, rival the famous Fox river region of Illinois.

The mechanical department was not as fully represented as formerly, but agents have lately relied more on trials of excellence in the field, and less at our local fairs. The aid given by the inventive genius of the age in increasing the productive power on the farm is one of the marvels of this century, and it is a great problem whether this increased production shall be freely distributed among the great family of nations, or whether we shall reduce production to our own nation's wants, and live within ourselves, isolated from the commerce of the world. The latter seems impossible: It is restriction; it is retrograding; it is fighting the nineteenth century, and the sooner we recognize these facts, the sooner we recognize that we are part of the great brotherhood of man scattered all over the world, and adjust ourselves to these conditions, the better it will be, not only for us, but for all those who share with us on the vast commercial activity of the world.

Fences.—Barbed wire is used more than ever, and any legislation that tends to make it dearer is a tax on our industry, and an increased cost to every rod of fence on our farms.

Dogs.—Tax the dogs and save the sheep.

Road Laws.—Let us have a rest.

Statistics.—Must have them. Our assessors will learn better how to get them, and our people will in time better appreciate their value.

Tile Draining.—Tiles are made at Hobart and at Crown Point, and their use is increasing every year.

Silos.—We are watching the result of experiments in ensilage, and this being a beef and milk producing county, we expect this system will come into use here.

Our grounds are owned by the county. A lake of twelve acres forming nearly the center of a natural amphitheater, makes it naturally fitted for an agricultural fair. The trotting track forming a circle around this little lake, and kept as it is in good order, makes our trials of speed quite showy and interesting. Many things can be improved on, and some things objectionable thrown aside, and we feel confident that the interest can be kept up for a good fair in 1885.

HARRY P. HEWGILL,

Secretary.

LAPORTE COUNTY.

In accordance with custom, and in compliance with the statute of the State, it becomes my duty and privilege as Secretary of the Laporte County Agricultural Association, to submit our report of the thirty-third annual fair held in this county.

This exhibition was held at the County Fair Grounds, near Laporte, September 23d to 26th, inclusive, and notwithstanding the rain the first two days, the fair was a complete success in every respect, and one of the most satisfactory ever held in the county. More interest than usual was manifested by the people generally, and an increased feeling of confidence and appreciation of the utility and benefits of these annual exhibitions is observed by all, and especially by the business men of Laporte.

The third day of the fair the Circuit Court adjourned, our manufacturing establishments, banks, stores, and nearly all places of business closed, giving proprietors and employes an opportunity to spend the day upon the fair grounds.

The display in all departments was very good. The improved condition and number of thoroughbred horses in this county in past few years is marvelous. Some of our horses took premiums in four different State fairs during the season of 1884.

Until recently but little attention has been paid to the improvement of the breeds of cattle. Now our county contains a number of choice herds.

During the past year William O. Orr, one of our most prosperous farmers, imported one of the choicest herds of Hereford cattle ever brought to the State, which has been verified by the fact of their taking the first prizes in every county, district and State fair where their owner placed them on exhibition.

Sheep and hogs are not by any means being neglected, and the bee industry or bee culture is receiving considerable attention. An exhibit of silk worms or silk cocoons, by Mrs. Allison of this county, created considerable interest, and was quite an attraction.

The display in the Ladies' Department was grand, and beyond the power of the secretary to describe or to give any adequate idea of the many choice and magnificent specimens of handiwork placed on exhibition by the cultured ladies of LaPorte county. This display was made more attractive by the taste and skill displayed in the arrangement of the articles on exhibition in Fine Art Hall by the ladies, and much credit is due them for the interest they have taken to make our annual fairs a success.

The display of the products of the farm, garden and orchard was not quite as good as it has been in years past, but was much better than our last exhibition.

Crops the past season were very good, the condition of agriculture is prosperous, the most approved kind of implements are in demand, while elegant and commodious residences and barns are taking the place of the old buildings, thereby adding to the comfort and convenience of our prosperous farmers.

The old rail fence is being replaced by board, barbed wire and hedge fences; rail timber is becoming scarce; hedges and wire will become the fence of the future.

A marked improvement has been made in our wagon roads, and could the broad tire be substituted on all wagons used for conveying heavy loads, less labor and money would be necessary to keep our roads in good condition.

During the past year the Association has erected a number of good and substantial buildings upon the fair grounds, including a wing to Floral Hall 24x50 feet; a stable for the accommodation of cattle, 28x100 feet, and a building for sheep and hogs, 20x100 feet; these buildings being substantially built, placed on stone foundations, with good shingle roofs. Our receipts this year were sufficient to pay for all these improvements, pay all expenses of the fair, including premiums in full.

Our grounds and buildings are in good condition, and the Association is in good shape for future exhibitions.

GEO. C. DORLAND,

Secretary.

MADISON COUNTY.

The seventeenth annual fair of the Madison County Joint Stock Agricultural Society was held on the 1st day of September, 1884, and continued for four days.

The showing in horses was good, both as to numbers and quality, being the largest and best ever on the fair grounds. Among the exhibitors worthy of mention are D. W. Kemp and Silas Jones, Madison county; Powell & Peed, New Castle, Ind., each having a very fine showing of thoroughbred imported horses. The cattle exhibit was grand, consisting of Shorthorns and Jerseys. All the cattle stalls were taken. The sheep display was very fine, as large as usual, and of finer quality. All the sheep pens were taken. Among the large exhibitors were C. L. Henry, Anderson; A. W. Groves, New Castle, Ind.; Cook & Morse, Raymonds, Ohio. The swine exhibit was fair, but not up to the average of past years; the quality very good. The poultry display not as large as past years, but a very fair show.

The fine art display was not up to last year's exhibit, but larger than past years, with the exception noted, quite a number of exhibitors from a distance being here with exhibits.

The Agricultural and Horticultural Departments were full to overflowing, being the largest display ever had.

The Speed Department full, and all races passed off in good style.

All in all, the fair of 1884 was the largest in every sense of the word ever held here.

Our farmers are beginning to take interest in our exhibitions, vieing with each other as to who can best cultivate his grounds and improve his stock.

The condition of agriculture in this county will compare favorably with any county in the State. There is a great diversity of soil, and all susceptible of a high state of cultivation, and all crops known in the State, it is believed can be grown here.

There has been an immense amount of ditching done and tile put down in this county in the last few years, which has made land that has been worthless for agricultural purposes, the best producing land in the county.

In the matter of roads much interest is now being taken, and quite a number of "free pikes" were finished last year.

Grain growing predominates, the crops of last year being all fair. Grass growing and grazing is on the increase, and is encroaching on the grain growing branch. The amount of timothy and clover raised last year was fully up to the average, and of the very best quality.

Fruit and vegetable crop good.

Our supply of fine timber is fast disappearing. Saw-mills and shipping the cause.

Our supply of stone for building purposes is inexhaustible.

The next Madison County Fair will be held on September 7, 1885, and continue for four days, at the old stand.

C. K. McCULLOUGH,

Secretary.

MARION COUNTY.

The Marion County Agricultural and Horticultural Society has continued to hold monthly meetings with very gratifying and encouraging results. The attendance and general interest manifested has very largely increased during the year just closing. During six months of the year these meetings are held in the open air at the residence of different members in the several townships, so that every community may be reached. In November, December, January, February, March and April the meetings are held at the State Agricultural Rooms. The out-door meetings are held on the picnic plan—the forenoon spent in social intercourse and viewing the premises of the host; at noon a luncheon is spread (the united contribution of the members); afternoon is devoted to the regular business. The October meeting is set apart for a mutual exchange of seeds among the members. Cash premiums are awarded on products of agriculture, horticulture, the dairy, farm stock, etc., in their appropriate seasons.

The programme is made up—

First. Of Reports of Standing Committees on Farm Buildings, Farm Crops, Farm Stock, Farm Machinery, Orchards, Small Fruits, Gardens, Flowers, the Household, Bee Culture, Fish Culture, Entomology, Ornithology, Statistics, etc. These committees are required to report as to the comparative condition; to suggest improvements to be made; to give information as to items of general interest connected with their respective subjects.

Second. Lectures, address, papers, etc.

The arrangement of this part of the programme is put into the hands of a committee, who, we must say, deserves commendation for the very valuable papers and entertaining lectures read and delivered to the Society. Among those given may be mentioned: Why Boys Leave the Farm, by Rev. O. C. McCulloch; The Seed and Its Germination, by Prof. Coulter; Bread Making, by Mrs. Dr. Swain; Birds, and their Usefulness to Horticulture, by M. C. Hobbs; Mistakes of Marion County Farmers, by Chas. Howland and I. N. Cotton; Better Modes of Wheat Culture, by J. W. Apple and Benj. Tyner; Duties of Women as Mistresses of the Household, by Mrs. J. G. Adams; What Good may be Done for a Neighborhood, by Miss Richardson; How to Make Home Attractive, by Mrs. M. E. Berger; What to do With Five Acres, by Dr. Johnson; How to Best Employ Winter Evenings on the Farm, by Prof. W. A. Bell; Wheat Rust—Its Nature and Origin, by Miss L. J. Martin; A Course of Reading for Farmers' Families, by Prof. A. C. Shortridge; Glimpses on the Rhine, by Mrs. Bolton.

Third. Discussion of subjects, and miscellaneous business.

The Society held a joint meeting with the Hendricks County Society in July, at the residence of Daniel Cox, near Cartersburg, which was largely attended by the people of that community and a respectable number from this Society. The meeting was entertaining and profitable, and we came away with the feeling that it was "good for us to be there." I will close with an extract from the annual report of the former Secretary of this Society, being in accord with his remarks:

"While this Society holds no general fair like those held in other counties, yet I still maintain that its monthly meetings, discussions, reports, papers, lectures, exhibits, and experimental work, are a means of disseminating among the agricultural masses of the county as much practical and useful knowledge, without mixture of evil, as any County Society in the State."

W. B. FLICK,
Secretary.

MONTGOMERY COUNTY.

The fifth annual exhibition of the Montgomery County Agricultural Association was nothing but a repetition of former years. The weather, our best friend, was all that could have been asked for, and taken in connection with the immense exhibit, we had everything to induce a very liberal patronage.

In speaking of our patronage, let me say that perhaps in no other county in the State does the public in general bestow as much interest on their county fair as do the people of Montgomery county. You may ask, Why is it so? There is apparently no other solution to the mystery beyond the fact that they are sure to see the best fair in the State. No doubt the reader may think I am placing a very high estimate upon it. So I am, but not beyond what it justly deserves.

We always offer liberal premiums and pay them in full (the only guarantee to a long lived fair), and as a fact the public have not only confidence but a desire to patronize.

Of our exhibit nothing need be said, as all who are in the habit of reading these reports will have gleaned from those of former years the fact that the word success applies fully to every department; nor was this behind any of former years, but rather more complete.

I feel that a statement of what showing we have made financially would be in order, hence the following:

For our grounds (sixty-three acres) we paid \$12,572, upon which improvements have been placed at a cost of \$20,000; thus making a total outlay of over \$32,000, with a capital stock of \$14,675. The reader can readily see that \$18,000 more than the capital stock has been expended. From the success of five exhibitions this debt, together with interest, has been almost wiped out, the indebtedness of the association being to-day a little less than \$900. Had not the association suffered a loss of over \$1,000 by fire to stalls on which there was no insurance, we would not have an indebtedness to-day of one dollar, but, to the contrary, would have money in the treasury.

With the coming spring our board intend placing some very substantial improvements on the ground in the shape of a fine grand stand, secretary and treasurer's office, with directors' room attached, and a large agricultural hall. The ground will also be laid off with fine graveled drives.

Vast improvement in the county has been accomplished in the last few years in the way of drainage, making what used to be our non-productive land the most

valuable and productive. The county has almost three hundred miles of gravel roads, the greater part of which are free.

My last report failed to find its way into the Agricultural Report of 1883, and fearing this may meet a like fate, I will stop here.

F. L. SNYDER,
Secretary.

NOBLE COUNTY.

The Noble County Agricultural Society held its twenty-ninth annual fair on the grounds of the Society, at Ligonier, Sept. 30, Oct. 1, 2 and 3, 1884. This exhibition was a complete success and has encouraged the management to put forth greater efforts in order that the purpose for which these exhibitions are held may be accomplished.

The exhibits in all departments compare favorably with other years; some, however, deserve special mention. The first is that of horses, which was full to overflowing, there being one hundred and fifty entries, among which were a number of imported Clydesdales and Normans; a splendid exhibit of Hambletonians, and many fine farm and road horses, owned by our thrifty farmers throughout the county. It is generally conceded that Noble is second to no county in the State in number and value of fine horses.

The Cattle Department was represented by splendid specimens of Shortorns, Jerseys and Holsteins, and some excellent grades with about an average number of entries. Hogs and sheep were fairly represented. Agricultural Hall and Mechanical Department were less than former years, but moderately well represented.

The Horticultural Department showed a marked improvement.

The Ladies' Department was exceedingly fine, as it always is. This department has become one of the most interesting features of our fairs, and shows much improvement from year to year. The ladies deserve much credit for the interest taken. Taking everything into consideration, this was one of the most satisfactory fairs ever held by this Society. The attendance was a little below the average, caused by the abolishing of the "family ticket," and the adoption of the single admission ticket. The finances, however, were all right. Premiums and expenses were paid in full, and a portion of last year's deficiency liquidated. The amount of premiums paid was \$1,947; repairs and running expenses, \$580.56, leaving us a balance of \$235 in the treasury.

The Society is in excellent working condition. The grounds and improvements are owned by the organization, and the entire indebtedness is \$245.

The growing of wheat and corn occupies a large share of the farmer's attention, although the raising of improved stock is gaining steadily. There is a marked improvement in the manner of farming. The care of the soil is receiving more attention, seed selected more carefully, and the planting and cultivation executed with greater care. In the way of improvements, the march has been steady and sure. Comfortable, and in many instances, commodious residences have been or

are being erected, while those who are provided for in that respect, are building great barns or otherwise adding to the comfort and utility of their surroundings.

Underdraining is receiving more attention each year, and large tracts of low lands have been redeemed and made to grow golden grain instead of willows and cat-tails. Our roads are moderately good, but are capable of being made much better.

The opinion of our best farmers is that stock should be fenced in. The traditional rail fence still encircles a large number of our farms, yet in many instances it has given way to the board and wire.

The next exhibition of this Society will be held Sept. 29, 30, and Oct. 1 and 2, 1885. The work is already under way, and many new improvements will be made in the way of stalls for horses, cattle, sheep, etc., as well as a new Agricultural Hall and other buildings, which will add much to the pleasure and comfort of exhibitors and visitors.

J. H. HOFFMAN,
Secretary.

PARKE COUNTY.

The Parke County Agricultural Society held its fifth annual fair at Rockville, commencing on the 18th day of August, and ending on the 23d. The attendance was fair, and the exhibition good, especially in the live stock departments. The entries were: Horses, 192; jacks and mules, 10; cattle, 37; sheep, 23; hogs, 89.

Crops past season: Corn, average crop, quality fine; wheat, average crop, quality poor; oats, average crop; potatoes, average crop; hay, large yield and well secured.

Our society, although not quite out of debt, is in a prosperous condition, having discharged an old debt of long standing last year, and will, with reasonable patronage at the coming fair, be able to pay all debts.

A. J. WHITE.
Secretary.

PERRY COUNTY.

The thirteenth annual fair of the Perry County Agricultural and Mechanical Association was held on the Society's grounds near Rome, Ind., on October 6, 7, 8, 9 and 10, 1884. We have three acres of land that cost \$100 per acre. It is a beautiful place.

In the spring of '75 the Floral Hall was blown down. The society built another two stories high, 30x60 feet. This year the Floral Hall was well filled, especially the Ladies' Department. Their department was equal to any county fair in the State. But the other was not up to some other years past, but still it was tolerably good.

Peaches in this county were an entire failure. Potatoes light, 80 to 90 bushels to the acre. Wheat was a small yield, but good quality. Rye and barley but little raised here. Oats good. Corn suffered from a storm about the time corn was full, and later it suffered more. It would be hard to make an average of Perry county crops. The bottoms yielded well, but hilly land scarcely anything. Apples—Some orchards were full, others again had no apples. As to the roads, they are passable, and that is all. The rivers and creeks are all well bridged. There has been more improvements this year than for several years past. Hay—Timothy, redtop and clover grows splendid here, and makes large yields, as well as every other product of the soil.

Perry county would be one of the best grazing counties in the State; plenty of water furnished by springs and creeks. As to the timber, there is an abundance. Oak—black, red and white; hickory—black and white; walnut—black and white; locust, etc., and most any kind of timber that is wanted. The timber is being wasted fast here by the stove men, and in a short time all the oak will be gone.

This county has fine sandstone, and several quarries are opened; also plenty of limestone.

Fencing—Some neighborhoods have no fences, but where farmers have fences so as to pasture, their oats, wheat and meadow fields are all doing well.

For financial statement and list of officers see tables appended.

WALTON WHEELER,

Secretary.

PIKE COUNTY.

The fourteenth annual fair of the Pike County Agricultural Society was held on the society's grounds, adjoining Petersburg. It commenced on Monday, September 1st, and concluded on Saturday, the 6th. The fair was a decided success, financially and in every other respect. The entries were largely increased in every department, but more especially in the live stock classes, and there was also a marked improvement in the quality of the stock on exhibition. The displays in the horticultural and agricultural classes were exceptionally good, which speaks well for the farmers of our county, showing that they appreciate the fair as an agent in promoting the agricultural interests. Our Floral and Art Hall was, as usual, the center of attraction, on account of the great variety and beauty of the articles on exhibition, produced by the skill and taste of the ladies of Pike. The farm crops in our county of every description, this year, were abundant, being much above the average for many years. Our wheat crop was unusually large, the grain of excellent quality, and was saved in good condition, yet on account of the unusual low price realized by the producer, there has been no profit realized by any one, and in many cases it has not paid for the labor and expense of raising and delivering it to market. Of course this state of things is very unsatisfactory to the farmer. It is very clear that the present low price of wheat is caused by over-production, not only in the United States, but in India, Egypt, Russia, Australia, and every

other wheat-producing country in the world, and as a matter of fact, there is now on hand a much larger supply than will be required, or will be consumed, until the next harvest is secured. It is not probable, under these circumstances, that there will be any advance in the price, at least for some time, and perhaps not for years, for the reason that wheat can be raised in Russia and India much cheaper than in the United States, on account of the low price of labor in these countries. Under these circumstances, would it not be sound policy for farmers in this country to materially reduce the acreage of wheat? It appears by the reports from the Agricultural Bureau at Washington City, that the area in wheat for this year was 38,500,000 acres. The product of over 13,000,000 acres are in excess of the wants of this country, and will have to be sold mainly in Liverpool, in competition with the wheat raised by the cheap labor of India and Russia, and this is being done now, and the result is a loss to the farmer on every bushel exported. And further, the foreign market brings down the home market in the same ratio. Now, if the area sown in wheat for 1885 was cut down in the United States to, say 26,000,000 acres, the home demand would consume the entire crop, and the prices realized would be satisfactory to the farmer, and this 13,000,000 acres, which was formerly in wheat, could be cultivated in other grain crops or grasses.

For instance, we import one-seventh of all the barley used in the United States from foreign countries, and further, we pay annually \$100,000,000 for foreign sugars, and \$45,000,000 in duties on the same. Now, as it is no longer a question as to the practicability of making sugar profitably from the sorghum cane, there is no doubt that in the near future this will be an important crop in the North and West, and very profitable to the producer.

Again, the statistics of England, France, Germany, and many other European nations show that the increase of cattle, sheep, and hogs does not keep pace with the increase in population in those nations, and the result is a constantly increasing demand, which is mainly supplied by this country. This market for meats and live stock in the foreign countries named, and the home consumption, which is large and constantly increasing, will not likely be glutted by an over supply for many years, and the present prices, which pay the stock raisers a fair profit, in all probability will be maintained. From these facts, I arrive at the conclusion that stock raising will be found much more profitable than wheat.

But the object I had in view in directing attention to the wheat situation, is to impress upon our farmers the necessity of producing a greater variety of farm products for market, and also the importance of studying the statistics as to the amount raised and consumed, and the usual market price of all articles that could be successfully cultivated or produced in our State. Then we might to some extent regulate production so as to prevent an over supply of any particular article, and by these means avoid heavy losses to the producers, without any injury to the consumer.

There has been less improvements made this year than last, in this county, in the item of buildings by the farmers. The cause of this, I think, is the low price of grain and other farm products. There has been decidedly more tile draining done than in any year previous to this, and the results are very satisfactory. Nothing has been done in timber culture in this county, except for shade or ornamental purposes. The fencing in of stock does not seem to gain popular favor to any

extent, and the result is that many of our farmers are growing osage orange hedge fences, while others are using wire. This is made necessary on account of rail timber being very scarce.

The dog law as it now stands seems to be rather popular, at least with the class who have generally the greatest number of them, for, as a rule, they neither pay taxes on their dogs or anything else. I am still of the same opinion that the only law that will protect the sheep raiser is something similar to the law that was repealed, which required every dog to be registered and a tax paid in advance, and a tag on him showing that fact; all dogs to be killed whose owners failed to comply with this law.

The agricultural statistics that are furnished to the township assessors are totally unreliable. Correct statistics would be very valuable, not only to the producer but also to the consumer. I regret that I can not report any improvement in the condition of our roads, nor is there any probability of any change for the better until there is a radical change in the present system of working them. The first change that I would suggest would be to have all road improvement done by an *ad valorem* tax on all property, and this tax to be collected by the county treasurers in cash, and all work and improvements on roads should be, when at all practicable, sold to the lowest bidder, plans and specifications being furnished to the proper agent or agents to execute the law. That would be a matter for future consideration. Further, roads should be changed to run on lines, whenever possible. Roads will never be permanent that run through lands so as to injure them, which is usually the case. Again, grades should be established on all permanent roads. This, with a thorough system by tile and open ditches, with proper outlets, will make much better roads than we now have, and perhaps it is all that we can do for years, as we have no gravel and very little stone in our county.

Since my last report there has been considerable immigration into this county, and that of a very desirable character. I think we will gain more rapidly each succeeding year both in population and in wealth, when our great natural advantages, both of soil and mineral wealth, are more generally known.

GOODLET MORGAN,

Secretary.

PORTER COUNTY.

The fourteenth annual exhibition of the Porter County Agricultural Society was held on their fair ground, adjoining the limits of the city of Valparaiso, September 16 to 19, 1884, and in all respects was a grand success.

The weather was very fine, all departments were well represented, and every one seemed pleased and satisfied. Each succeeding day added to the numbers, until on the last day the ground was crowded with visitors, fully demonstrating the necessity of more ground, which has since been purchased.

The most popular feature of the fair—the horse—had a good representation in all classes, from the heavy imported draft, with their grades, down to all purpose, and the fine-limbed trotters and runners.

Talk about pumpkins and potatoes, as much as we love them, and would gladly give them the first place if possible, but are compelled to yield. They will not draw like the horse.

In cattle, the Durhams, Holsteins, Polled Angus, Herefords, Jerseys, and grades, were represented.

In the sheep pens were but two classes, the fine wools and downs, showing good breeding.

The hog pens were full of pure bred Poland Chinas and Suffolks, good representatives for a State Fair.

The poultry was not what it should have been in number of entries.

The most of the stock on exhibition being owned by farmers of our own county is evidence of the enterprise of the people.

Of farm and garden products the number of entries was second only to the horse, and the exhibits were very fine.

The show of fruit was fair, but not quite as large samples as usual. The drought during July and August lessened the size somewhat.

The Art Hall was attractive, being completely filled with specimens of womens' handiwork and collections and displays of art.

The speed ring, that feature of the fair so difficult to harmonize to the satisfaction of lovers of the turf (and they are many), plainly showed by their actions that they thought it was good for them to be there. They seemed to be filled to overflowing with pleasure. Even the good, sturdy old farmer stepped more lightly, his eyes sparkled; in fact it was as a shock of electricity to him, starting the very blood in his veins to rushing as in youth, and the vast multitude seemingly lost to all else around them, their eyes being steadily fixed on the test of speed.

After all this demonstration of pleasure, talk of leaving out the horse! Can we do it? I fear not, until you change human nature.

Our agricultural interests are principally corn, oats, wheat, grasses, potatoes and millet, in acreage of each in order named

Farmers are learning that it is far better to have less acres in crops well farmed, than to hog over large fields for the same number of bushels, alternating their crops, using all manure available, and seeding often to clover as a fertilizer.

Quite an improvement is noticed in our roads since the introduction of graders, as they leave the roads in a better condition after working for proper draining.

Osage hedge, wire, and board fences are mostly used for enclosures. The old rail fence is gradually passing away, and will soon be a thing of the past.

In some sections farmers have learned that it is cheaper to fence stock in, than out, and have made such a law, but as yet it is not universal.

In sections where needed, the laying of tiling is being done as fast as circumstances will admit of it.

The past season the yield per acre has been better and the quality more perfect than for several seasons past, and all that now hinders farmers from being the most independent class of laboring men is the exceedingly low price of grain. Notwithstanding the reduction in prices the taxes are greater than usual, consequently,

with many, greater economy has been practiced—a little curtailing of expenses from luxuries to mere necessities. Perhaps in the end this may be all for the best, as it will teach us to estimate the true value of our money.

E. S. BEACH,
Secretary.

PUTNAM COUNTY.

Formerly we had the heaviest timber of the State, and the marketable quality of our oak and walnut places us at the head of the list in this respect. Stone of first quality for building and lime is abundant, and quarried extensively at Oakalla, Putnamville and Limedale.

Wheat and corn are the leading crops, though timothy is profitably grown. Clover is widely sown, but valued chiefly as a fertilizer.

Attention is being turned to tiling, and the results are, increase in quantity and quality of grains.

Our blue grass is unsurpassed, hence cattle raising is one of the leading industries, and success crowns the labor.

Not so many hogs, as in former years, are found in this county, owing to cholera.

Sheep, once so favorable with our farmers, have fallen into disrepute on account of the dogs. If the law made each dog, when off his owner's premises, an outlaw, and justified any one in killing him, good would result therefrom.

The south and east part of the county seems best adapted to fruit, but the severe winters, together with the unrelenting borer, has sadly depleted our older orchards.

With the scarcity of gravel our roads have not kept pace with the times, but under the free gravel road act the abundance of stone is being utilized in building macadamized roads, and we have now some one hundred miles of free pike roads; also, some sixty miles of toll roads.

Our county is well provided with schools and churches. Farmers are taking great interest in beautifying their homes; also, the large number of comfortable and, in many instances, elegant residences which have been built within the last two years speak louder than words the profitableness of our farming. Their intelligence is witnessed by the use of the best improved machinery, thus acquiring leisure for mental improvement, better fitting them for the higher plane on which the agriculturalist stands to-day; also, removing much of the drudgery which burdened the life of the primitive farmer boy.

Facilities for transportation are exceptionally good, having three railroads crossing from east to west, and one from north to south.

The rail or worm fence still predominates, hedge and wire generally meeting with disapproval.

There was harvested the past year about 42,000 acres of wheat, but the quality was not up to the standard nor the yield so large as common. About the same number of acres of corn planted, which made a very good yield. Oats was a

splendid crop, though only about 6,000 acres sown. Of grasses, there is 22,000 acres of timothy, 1,200 acres of clover, and nearly 100,000 acres of blue-grass. The timber has dwindled to less than 30 per cent. of the acreage of the county. About 30,000 head of hogs fattened the past year. We begun the year 1884, with 8,000 head of colts and horses, 700 head of mules, 22,000 head of cattle, and about the same number of sheep. Putnam county's youthful farmers may take encouragement from the history of the past, as most of our wealthy as well as our leading men were and are farmers.

W. S. Cox,
Secretary.

RUSH COUNTY.

I herewith present my report of entries, receipts, expenditures, etc., of our annual operations for the year 1884.

And each year of our organization the President of the State Board requests for general information, the spirit of our progress, as well as the popular will of the farming community on several subjects that now seem to demand legislative action.

In my report for your tabular statement it will readily be seen that our progress is upward and onward, and when looking at our receipts and learning that three hundred stockholders, with their families, enter our gates free of charge, it is plain that our attendance was all that could be desired, and as to exhibition of stock, it also shows in all classes a good supply. In horses, there is a growing demand for the various strains of heavy draft, whilst general purpose and flyers have each their zealous advocates.

This being the home of the old Blue Bull—and a marble slab honors his memory—his progeny having made noble records on many tracks, then may we not with honest pride see our boys gracefully hold the ribbons?

There is a place for all strains, and all were well represented. The entries of cattle show brisk competition. The quality of Shorthorns, and Alderney, and Jerseys showing no retrogression.

In hogs, Poland Chinas and Berkshires still have their friends, whilst the Chester White come in increased numbers, and the finest of specimens, and are unquestionably gaining ground in popularity.

In sheep all breeds were well represented. The low price of wool is forcing a tendency to popularize the mutton breeds, and the Downs are taking the lead, particularly the Shropshire, many of which were here directly imported, the finest in the class, and many selling at a high range of prices.

The Poultry Department was full, and the specimens were fine. The Mechanical Department was not so good as formerly. This being my fourteenth year as Secretary, I can congratulate the society in its onward progress by the books, and hope it will not be out of place, as I feel it my duty in my retirement to heartily thank the different Boards for their support and kindness throughout all these years.

A few words on the topics suggested by President Mitchell, of the State Board : The fence question is now upon the farmers of Indiana with feeling force, and when looking at his surroundings can not but inquire, why is it that our Legislatures do not take lessons from our neighboring States, and remove more than half the burden when nine-tenths of the agriculturists ask it at their hands? I fear the true answer is, that farmers are an unorganized body, busied by the cares of home, not besieging legislative halls to be protected in their God-given rights; whilst the idler and city votes command in boisterous tones a negative action to known duties. Farmers say this is humiliating; yes, and until you speak as one man, you may suffer and bear not only in this but in many ways, and your keen reminder is twice a year—your tax duplicate tells the tale. Year by year, from every available standpoint, the farmer importunes the Legislature for a better protection to his sheep. The present dog law is insufficient, and legislators know it. In my position I speak the sentiments known to me of the farmer, whose interest I am placed to represent, in my humble manner. I in each annual report repeat some of their pressing and fair demands, until I am weary of not seeing some fruits from those many appeals that go to the Legislature from all parts of State. And now I say a word to the farmers: Organize in some shape; make your wants known through petition; speak in thunder tones, and you will be heard—without, I fear you will ever bear and wait.

Comparative Progress.—I give you this in an inferential way. Highly improved farms here bring from \$80 to \$100 per acre. Tile drainage is pushed and appreciated in every locality. Turnpike roads cover every highway that enters Rushville. All cross-roads are being cared for by being graveled. Three railroads pass Rushville. Convenient stations in all directions accommodate the outposts. All land fenced, and blue-grass sods the woodlands. Grain mostly corn and wheat. An increase in hay annually. Improved stock of all kinds largely enter the combination, or I may say mixed husbandry. From this picture I trust correct conclusions may be drawn.

LON LINK,

Secretary.

SHELBY COUNTY.

The annual exhibit for 1884 of the Shelby County Joint Stock Agricultural Association was, all things considered, the most propitious in the history of Shelby county. The people were in an unusual political agitation, there was a general financial depression, and the weather, as the exhibition approached, was unfavorable, yet in every department there was a full display. During the fair week we were required to add to our stabling forty new stalls, having added forty the year previous. The Live Stock Department was never so largely represented, and in the Department of Agricultural Products it was found that our building capacity was quite insufficient. Strong evidences were offered that our farmers are improving the breed of their live stock, particularly cattle, hogs and sheep, and are devoting mental labor, with extra manual force, to the selection of seeds and the tilling of crops. The county is purely agricultural, and grazing is not pursued in any portion of it beyond the pasturage of the farm stock.

The turnpike corporations have made Shelby county famous for its good highways, and recently valuable improvements have been added in the way of free gravel roads. The construction of drainage has been unprecedented, the greater portion of it having been done under the act creating Circuit Court Commissioners of Drainage.

Excepting in a few instances in the city of Shelbyville, the disposition is to accept such a fence law as will require stock to be fenced in, and not require a larger investment by the people generally in fencing than in live stock. The rapid disappearance of timber and the growing pride of the farmer and the city home owner have been important factors in securing this impression. The only opposition to the full acceptance of the doctrine comes from a few warm political friends of the poor man's cow or hog. The County Commissioners have not, by order, designated what stock shall be permitted to run at large; so we have a local law requiring stock to be fenced in, but, having no penal clause, it has no enforcement, except for occasional trespasses.

The wheat crop of Shelby county can be safely estimated at ten per cent. in advance of the yield of 1883, while the corn crop is much better in quality and probably twenty-five per cent. better in quantity.

I have had an opportunity recently to observe in abstract form the progress of agriculture in this county since the 25th day of October, 1851, when "the citizens friendly to agricultural improvement" met at the court house and selected Rev. David Whitcomb to preside over the meeting, and David Thacher, then editing and publishing the *Volunteer*, was chosen secretary. A society was formed, and November 1, 1851, the venerable Judge J. M. Sleeth, for a committee, reported a constitution, and Thomas A. Hendricks, Martin M. Ray and James Elliott reported by-laws. A librarian was one of the officers of the society, and it was made his duty to subscribe for all such books and periodicals for the use of members as might be ordered, and to keep a register of the receipt and the return of the same by members. A committee was required to furnish two columns of agricultural matter weekly to the *Volunteer*, and the librarian ordered to subscribe for *The Cultivator*, \$1; *The Horticulturalist*, \$3; *The Plow*, 50 cents; *The Prairie Farmer*, \$1; *The Plow, the Loom and the Anvil*, \$2; *Western Horticultural Review*, \$3; *Ohio Agriculturalist*, \$1; *Journal of Agriculture*, \$2; *Pennsylvania Farm Journal*, \$1; *American Farmer*, \$1; *Indiana Farmer*, \$1; *The Ohio Cultivator*, \$1.

On the first Saturday in February, 1852, Governor Wright and W. T. Dennis addressed the society. In the musty old volumes where this record is found is a list of the premiums offered at the first fair of the pioneer society, and it covers less than five and a half pages, written, in the book, eight by ten inches, and comprising farms, crops, horses, jacks and mules, cattle, hogs, sheep, fowls, fruits, farming implements, flour and domestic manufactures. In the first is a sensible award, though abandoned by modern management: "The best arranged and cultivated farm, a silver cup worth \$10; for second best, Stephen's Farm Book, and a diploma." The *Farmers' Encyclopædia*, Coleman's *European Agriculture*, *American Farm Book*, silver cups, spoons and butter knives, etc., constituted the premiums. In 1852 and 1853 these pages show that much annoyance was experienced by "huckstering in the vicinity of the fair grounds." The progress of the society

during 1853 was reported to the State Board, showing great advancement by the "offering of 188 premiums, of which 120 were awarded, their cost being about \$400, of which \$220 is silverware, and the remainder in books and bound volumes of periodicals on agriculture and kindred topics." The score and a half of years since these remarkable manifestations of agricultural interest have brought us much of which to be proud. We have a ground upon which there are permanent improvements of more than \$10,000 in value, and the fair of the past season paid in cash premiums fully \$5,000, and received in entry fees, privileges, at the gates, amphitheater, and from stalls, \$6,288.66, having paid more money for building forty new stalls than all the awards of our brethren of 1853 amounted to. Their efforts were laudable and probably more productive of good results than ours of this day, considering and comparing the circumstances affecting both. Certain it is that we are reaping the harvests of prosperity that have grown from the seeds of industry and hardships sown by them.

L. J. HACKNEY,
Secretary.

STEUBEN COUNTY.

The Steuben County Agricultural Association can boast of as fine grounds, buildings, stables, pens, and sheds for stock as can be found in the State owned by a like association. An Agricultural and Floral Hall of large capacity, a Mechanics' and Machinery Hall eighty feet in length, with a line shaft the entire length, with width to operate machinery the entire distance, thirty-five acres of even, level land, shaded with hickory and oak trees.

Liberal premiums have at all times been paid, and the association is free from debt, with a surplus of near \$500 in the treasury.

Our last fair was held on the grounds at Angola, October 6th, 7th, 8th, 9th and 10th—five days—the first two being devoted to preparations.

Our horses, as usual, took the lead, and were represented by the best Norman, Percherons, Cleveland Bays, and a number of other breeds. Our horsemen devote more attention to raising heavy draft horses than others, as they command better prices and a readier sale.

The speed ring was not neglected. The races were warmly contested and excited much interest.

Our Cattle Department was fully up to that of former years, the Shorthorns, Herefords, Holsteins, and Jerseys, with a high order of grades, in all degrees of perfection.

Sheep were represented by the Merinos, Leicestershires, Southdowns, and grades in great variety, showing that our flock masters are using extra efforts to keep up their well-earned reputation in this department.

No better display of hogs was ever seen in the county, Poland Chinas taking the lead, followed by Chester Whites and Jersey Reds.

Our show of poultry was good, though not as full as heretofore.

Agricultural Hall was filled to overflowing with grain, potatoes, cabbages, turnips, pumpkins, tomatoes, honey, apples, pears, quinces, grapes, bread, butter, cheese, canned fruits, pickles, preserves and jellies.

A traction engine, from the works of Nichols & Shepherd, of Battle Creek, Mich., demonstrated that the farmer would soon be able to dispense with the horse as a beast of burden, and attach the engine to his plow and harvester.

Our Floral Hall was one profusion of flowers, and needlework of the daintiest styles, reflecting the highest credit on the fair hands that executed and the heads that planned such delicate work.

It may truthfully be said that Steuben county is better adapted to the growing of grain and grazing than many other sections of the State. Occupying the highest land between Toledo and Chicago, the water from its many lakes and streams flowing both into lakes Erie and Michigan. The surface is quite rolling.

The soil of the northern and western portions of the county is a dark sand and gravel, while the eastern and southern portions are a heavier clay loam; the surface is so rolling that any surplus water goes at once to the valleys, creeks and lakes.

Apples, pears and grapes do well, also peaches, when the winters are not too cold. The smaller fruits are grown in great variety, and of excellent quality.

Our farmers manifest a laudable ambition to erect convenient houses of the more modern style—many of wood and brick, and a few of stone. And the farmers' barn is incomplete without a basement, and sheds and stables for the protection of stock.

Tile draining is receiving a large share of attention. Besides two tile works in the county, large numbers are shipped here by railroad.

The culture of timber at present is limited to the care of that not already wasted and destroyed. The great demand and liberal prices offered by lumbermen for oak, walnut, ash and hickory have denuded very many farms of timber now sadly needed by them, and has enhanced the price of well-timbered land above that which is improved.

The cheapest and best fencing material for the farm that has rail timber is the old rail fence; posts and boards come next. Wire possesses neither the quality of cheapness nor efficiency to recommend it. These facts are attested by all farmers who adjoin the railroad where wire is used. Neither sheep nor hogs are stopped by it. The lives and usefulness of horses are always endangered by it, and it forms only an indifferent enclosure for cattle—so much so that the Legislature of Michigan has come to the rescue of the farmer, and forbidden its use along all its lines of railroad.

Our best roads are now constructed of gravel. They are first well drained and covered with gravel from four to eight and ten inches in depth. Our roads are all free public highways.

The vexed question of a dog law is an important one, and the last one passed by the Legislature possesses such a bundle of crudities that neither the sheep breeder nor the dog owner is satisfied with it. Every point in it, if it has any, is aimed at the sheep breeder. So much so that he is compelled, in self-defense, to adopt the shotgun policy or abandon his flocks. The construction given the law by

the Courts compels the owner of sheep destroyed by dogs to go for, say often, into some other township, and in some cases into a different county from that in which his sheep were killed, thus making the dog-tax collector, in one county or township, perform duties in another, and then making the sheep owner liable to fine and imprisonment for shooting the worthless cur that loiters about his yards and fields, and feeds on his slaughtered flocks, because he lacks the proof that he is a sheep-killing dog.

The subject of fish culture is beginning to attract from our farmers a share of the attention its importance demands. Located as our county is, on the summit or highest land between the two lakes, Erie and Michigan, there are within its boundaries over seventy-five lakes and ponds of clear, beautiful, soft water, most of them bordered by sandy and gravelly banks, many of them flowing in clear, pebbly brooks from one lake into another.

These lakes and ponds vary in extent from one quarter to six miles, with ever varying widths and depths; are supplied by springs, affording to the agriculturist an abundant supply of pure water during the greatest droughts. These bodies of water abound with great quantities of excellent fish, the pickerel or pike, black bass, perch, speckled bass, red eye bass, blue gills, sunfish, sucker or lump fish, herring, catfish. Whitefish, German carp and eels are successfully propagated. The laws for the protection of fish are rigidly enforced by those interested, and they hope by care and attention in the near future to have access to a great variety of excellent fish, to say nothing of the sport and pleasant pastime in securing them.

At the urgent request of our many farmers interested in fish culture, there is herewith appended a very correct map of Steuben county, representing the townships, section lines, the lakes and ponds, with their names, and the streams forming their connections, the names of our villages and the course of the Fort Wayne branch of the Lake Shore railroad, which will give to parties interested a better representation of the location and comparative size of our lakes than can otherwise be given. If the same can be published in your forthcoming Agricultural Report a cut of the same will be furnished by the undersigned.

A. W. HENDRY,
President.

We take pleasure in producing the following map of Steuben county, in the extreme northeast portion of the State, and will, no doubt, prove of much interest in showing the remarkable lake surface of that portion of the State. In no other way can the geography of a county be so well described, and we hope that this will lead to a map of each county in the future agricultural reports, although in a more condensed form.

SECRETARY.



JAMES TOWN

J A M E S

M I L L G A R D E N

J A C K S O N

J A C K S O N

J A C K S O N

A N G O L A

S A L E M C E N T R E P O

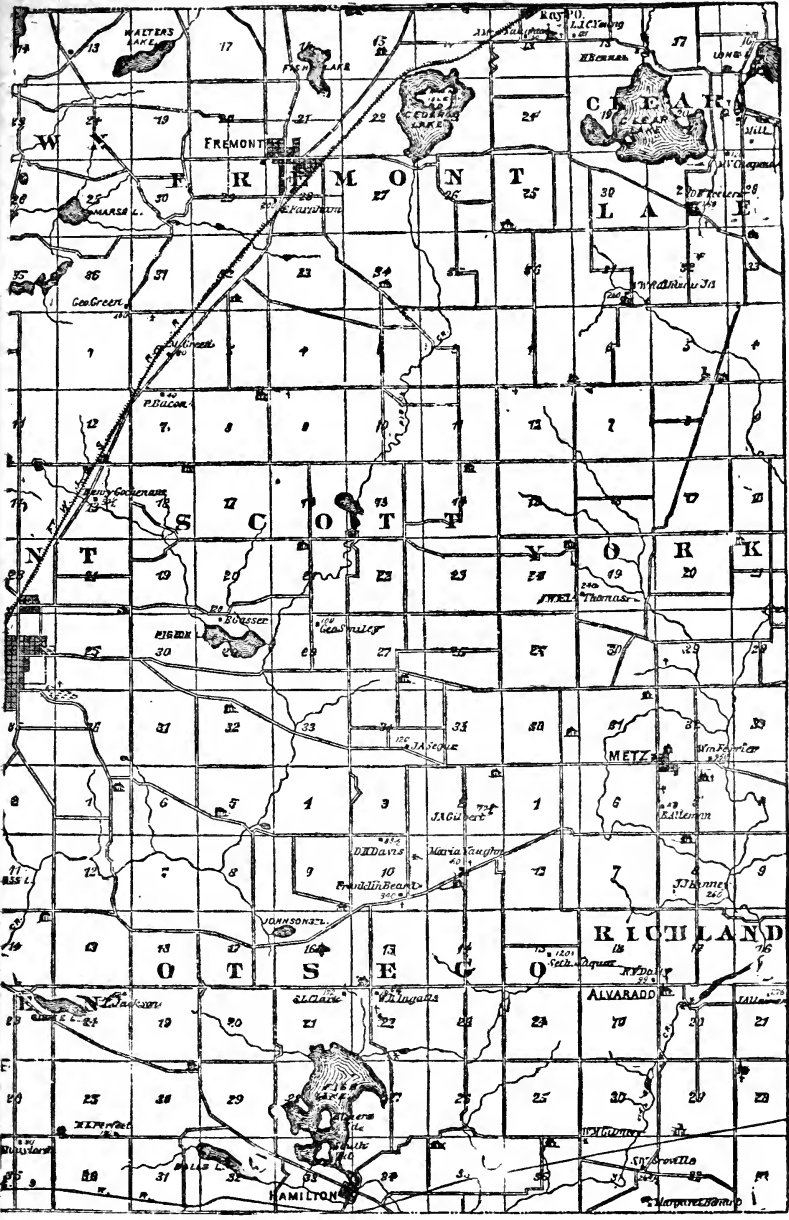
P L E A S A N T L A K E

T U R K E Y C E N T R E P O

L I T T L E T U R K E Y L A K E

S T E U B E N V I L L E

B E N T O N



WALTERS LAKE

FRESH LAKE

CLEAR LAKE

CLEAR LAKE

FREMONT

FREMONT

LAKE

Gea Green

P. B. COM

Gea Green

BIRKEN

Gea Green

JAG Lambert

METZ

DE Davis

Maria Vaughn

B. Addin Beam

JOHNSON

RICHLAND

Gea Green

W. G. Galt

W. G. Galt

ALVARADO

Gea Green

HAMILTON

ALVARADO

ST. JOSEPH COUNTY.

The Northern Indiana and Southern Michigan Agricultural Society held its third annual fair on the fair grounds between South Bend and Mishawaka, September 22d to 26th, inclusive. Our association is now a member of the Ohio, Michigan and Indiana Tri-State Fair Circuit, which was of great advantage to us in securing a large list of exhibits, both in the Stock and Machinery Departments. Our attendance, with the exception of one rainy day, was larger than last year. The list of entries exceeded that of the fair of 1883. In the Horse and Cattle Departments our show was very fine. Hogs and sheep were well represented. Take it altogether we had good reason to be proud of our last fair. The condition of agriculture in our county is good. Crops were fully up to the average.

C. G. TOWLE,
Secretary.

TIPPECANOE COUNTY.

The Tippecanoe County Agricultural Association, having for the last sixteen years held successful fairs, deemed it expedient to take a rest for one year, therefore, have no report to offer for 1883, except that the organization has been kept up, and that we are in working order and expect to hold our fair at the usual time this year, viz.: the first week in September. For list of officers see table appended.

J. M. DRESSER,
Secretary.

TIPTON COUNTY.

The past year has added materially to the prosperity of the industrial interests of this thriving county. Its geographical position and general lay of land unite to make this a point of interest, and bespeak for it a meritorious history. Its past record has been one of continuous growth, but not until of late years has the condition of the county been such as to show what could be accomplished in the way of agriculture and horticulture.

Our present advantage of drainage has inspired our farmers to a more intelligent system of culture than ever undertaken before, and has developed the fact that farming is not the dull and unprofitable business that it has been held to be hitherto, but to the reverse, the rich black loam studded with the beautiful forest trees—ash, walnut, poplar, oak, hickory, beech and sugar—and underlain with a porous strata of productive clay, has become a source of great pleasure to the honest and industrious tiller of the soil.

At the early opening of spring the different nationalities, Irish, German and American, were seen busily preparing the soil for the coming crop, and the pride

of each was noticed in the deep and straight furrows, the building of fences and the clearing and breaking up of waste places in old fields, all of which showed the faith of the tiller in the soil and season and his hopeful prospects of being ble-sed with abundance. Seeding came and the gentle rains and penetrating rays of the sun soon developed his labors into living green, and the mild and pleasant summer crowned his earnest efforts with a golden harvest, and as fall made herself apparent, the people vied with each other in their exhibits at the county fair. Never was their a finer display since the organization of the county. Competition brought trade from various parts of the State; so great was the interest that every place was occupied before the time had expired for making entries. System was fully exemplified and showed the true spirit of the husbandman.

The stock all showed an increase of interest and was a good index of the steady growth of the wealth and general prosperity of an energetic and thrifty people. The Ladies' Department displayed great taste and skill in the way it was managed and work done. Everything was artistically arranged, and their efforts were crowned with success.

Among the many other interesting features is an association known as the "Franklin County Association," this being organized especially for emigrants from that county, and its increase in numbers over the past year has a marked significance on the development of our industrial interests. Our commercial relations and facilities are among the best, having an east and west and a north and south railroad, each leading directly to points of commercial note; these, together with twenty-seven and one-half miles of free gravel roads, and contracts having been let for the construction of several miles more during the coming year. The discoveries in the county have been of a most interesting character; among these relics are the tooth of the ma-todon and the unveiling of the cemetery of the red man, in which was found the remains of nineteen distinct personages, together with many of his implements of war and pleasure.

The ensuing year has many promises in store—her winter crops bid fair to yield a large increase; there is energy and activity in all branches of business, notwithstanding the immediate pressure of hard times, and as we lay down the quill for the present we hope to be able to take it up again and graphically portray the present year's progress to the gateway of a garner well filled.

WILLIAM BARLOW,
Secretary.

VIGO COUNTY.

The past year has been the most successful in nearly every respect which the Vigo Agricultural Society has experienced since its organization. When the Board of Directors for 1884 took charge of its affairs they found it in debt about twenty-five hundred dollars, in addition to which there were quite a number of small bills remaining unpaid from the fair of 1883. The lease to the fair grounds, granted by the county on September 7, 1867, for a term of twenty years, rent free, had but three more years to run, while the failure of the fair for several years had

almost discouraged citizens generally from taking the least interest in it. In the face of these obstacles the board congratulates itself on its success. The fair commenced on September 8, 1884, and continued throughout the remainder of the week. As an exhibition it was the largest ever held in Vigo county, and the stock was better than that at any previous fair. It is true the receipts fell short of the expenditures, but the deficit will be made up in a very short time, and, with the exception of the State Fair, Vigo county expects next year to hold the largest and most successful fair in Indiana. During the year we have sold ninety-one shares of new stock, at twenty-five dollars each, of which sixty have thus far been paid in. By this means the society has reduced its debt to fourteen hundred dollars, and has secured the extension of its lease for another term of twenty years.

The county is rich in its agricultural resources, its soil being adapted to the cultivation of all kinds of crops. From the statistical reports of the various Township Assessors the following facts are gleaned as to the division of the acreage for the year 1884:

Acres of winter wheat, 44,755; acres of spring wheat, 90; acres of upland corn, 36,848; acres of bottom land corn, 12,246; acres of oats, 8,515; acres of barley, 79; acres of rye, 673; acres of buckwheat, 20; acres of Irish potatoes, 1,120; acres of sweet potatoes, 118; acres of melons, 554; acres of tobacco, 6; acres of cabbage, 50; acres of beans, 50; acres of onions, 10; acres of strawberries, 142; acres of timothy, 14,451; acres of clover, 7,420; acres of blue-grass, 10,292; acres of plow-land not cultivated in 1884, 5,280; acres cultivated for first time, 1,116; acres of timber, 37,230.

There are also in operation in the county 23,380 rods of drain tile, and the work of laying now is steadily progressing, and becoming more popular as its value becomes better known. The farmers are, generally speaking, in good financial circumstances.

A number of years ago Eastern capitalists held mortgages here amounting to nearly \$1,000,000, but these have been reduced to a sum which is comparatively insignificant. During the year 1884, however, there has been a general complaint of poor crops. The wheat yield was poor, and the quality inferior. Some parties reported a yield of from six to ten bushels per acre; others did not cut at all, while a few reported twenty-five bushels per acre. The yield of oats was the best ever known in this locality, and the corn was fully up to the average. The fencing is in good condition. The roads are improving rapidly. The people recognize the value of good gravel roads, and the prospects are that in the near future we will be supplied in distance and quality equal to any county in the State. The present dog law gives pretty general satisfaction. As to stock running at large there is a difference of opinion. In the city of Terre Haute, with a population of nearly 40,000, cattle have the freedom of the city, and are allowed to roam at large when and where they will. In some townships they are allowed to run at large, while in others they are fenced in.

Of course every person interested in agriculture favors full statistical reports, and fully recognizes their value; but under the existing law it is the next thing to an impossibility to gather them. Such work requires care and patient work. It also requires time. At present the Township Assessors have the task assigned

them. They are allowed no compensation for it, and are required to complete all their work within two months—something which can not be done and done properly. The State could, with advantage to its citizens, afford to make a liberal appropriation annually in this direction.

With four other counties we have formed the Western Indiana Fair Circuit this year. Our dates will harmonize, and each will work for the success of all. In this manner we expect to increase the number of exhibitors largely, and thereby secure a larger number of visitors.

It is the opinion of this Society that our Legislature should change the law in regard to the amount to be paid over as show license. The present one is too loose in its provisions, and gives show proprietors an unfair advantage. In a county like this a circus will often take away from us \$5,000 or \$6,000 in a single day, on a license of not more than \$50, and even with such a small sum to pay will threaten to return during fair week at a future time and break the Society. This was done recently in one county, and its prevention should be looked after. Circuses are no benefit to any community, and where they exhibit they should pay reasonably for it.

W. H. DUNCAN,
Secretary.

WABASH COUNTY.

The Wabash County Agricultural Society held its annual fair on its grounds, in the city limits of the city of Wabash, from the 8th to the 11th of September.

Our show was good, especially in the Live Stock Department, the entries numbering 2,030. Our receipts were \$5,068.05. After paying all expenses, including \$300 for improvements, we had on hand \$363.

The crops of our county were over the average. Corn was unusually good, especially on the black grounds, which predominate. Taking the entire crop and fruits, we have seldom realized a more generous yield.

Our road system is worthy of mention. Some half dozen gravel roads centering from all parts of our county in the city of Wabash afford good trading facilities to our citizens for transacting their business. Gravel in abundance and easy of access very much facilitates the construction of these roads.

Our county is blessed with inexhaustible quantities of stone suitable for building purposes.

As timber becomes scarce and increases in value, the attention of our farmers is directed to other methods of fencing than the original rail fence. Hedging as a fence is beginning to take the place of the old rails.

Public ditching has brought most of the level portions of our county into cultivation. Tiling has been successfully carried on in the greater portions of our county.

We have three railroads through our county, giving an outlet in almost any direction.

Agriculture is in a prosperous condition, the diversity of our soil affording opportunities for a diversity in cultivation. Our rolling lands produce wheat, and our low lands corn and grass.

FREDERICH J. SNAVELLY,
Secretary.

WARRICK COUNTY.

I take pleasure in making my annual report of one of the oldest organized counties in the State. Warrick county was organized in 1813, containing about 390 square miles, and is bounded on the north by Gibson and Pike, on the east by Spencer, south by the Ohio river, and west by Gibson and Vanderburg. The organization of the Warrick County Agricultural Society was the result of a meeting held at Boonville in December, 1856. The first fair was held in 1857, with a membership of 117. Since that time the annual fair has been looked forward to with great interest by all classes.

The advantages that have been made manifest by this organization are numerous, better stock of all kinds being introduced, promotion and encouragement of mechanical arts, the diffusion of improved methods in every branch pertaining to the farm, orchard and garden.

Our society held its annual fair September 23d to 27th, under very unfavorable circumstances, bad weather being the principal hindrance. Notwithstanding, there was a large list of entries in all departments. Never were our halls better filled by the finest of articles from this and adjoining counties.

Our fair financially, as well as socially was a success. Our grounds are needing some repairs, but as our lease is of short duration, they will not be made.

The organization of a stock company is contemplated in the near future.

Warrick county has many advantages by reason of the geological, as well as geographical position. We venture to say there is not another locality in the State where a county is so diversified and adapted to the growth and development of the different agricultural products as this.

Millions of pounds of tobacco are annually raised here and sold to eastern and foreign markets.

Wheat is another of the main supports, and is a great pillar in our tower of wealth, and is a source from which thousands of dollars are annually poured into the pockets of the farmers.

Corn is raised less extensively, and the greatest profit is gained by feeding to stock, which of late years has claimed the attention of some of our best farmers.

The mineral resources are of many kinds.

The coal fields, which underlie all parts of our county, are a great source of wealth, and along our railroad many mines of profit are being worked.

Some of the finest timbered land in the State is to be found in this county. Yellow poplar, walnut and white oak are of the finest varieties.

In the grand display of timber at the Louisville Exposition, Warrick stood first, in the lead of any of her sister counties. And we can well say that this exhibit placed the State on an equality with any of her sister States.

The county is well drained by three or four creeks, which empty their waters into the Ohio. Hundreds of acres of these low creek bottoms have been drained by tileage, which has proved of great wealth to the county.

Much more might be said in regard to the improvements throughout the county in the way of farm buildings, school houses, churches, bridges, etc., which speak loudly for the intelligence and prosperity of our farmers.

S. W. TAYLOR, *Secretary.*

WASHINGTON COUNTY.

The Washington County Agricultural, Horticultural, Mechanical and Industrial Association held its fourth annual fair on its grounds at Salem, September 8 to 12, 1884, inclusive; and, as in the preceding year, an adjoining county held its fair the same week, presumably affecting ours to some extent; yet we had, all things considered, an improvement in exhibition over all our preceding fairs. After paying the premiums, \$1,862.50, and expenses of fair, we had a surplus of over \$600 to apply to old claims, improvements, etc., something of a gain over last year.

Our exhibit in green fruit was very indifferent, both in number of entries and quality, owing to the almost failure of that crop in the county. Our show of poultry was not quite so good as the preceding one, especially in number of entries. There seems to be a lack of interest this year in this class, which we hope to be able to correct in the future. Our exhibition of sheep and cattle was quite creditable indeed, and would compare favorably with any county in Southern Indiana; while in the exhibit of horses and hogs our show excelled all our previous fairs, and would compare favorably with any county fair in the State. Their superiority in breed and general good qualities challenged the admiration of all who saw them, while the number was greatly in excess of all former exhibits.

Our classes for draft, light harness and general purpose horses were each about equally well represented. The judgment expressed by all observers was that Washington county breeds and shows first rate horses in all classes.

Our speed rings were fairly well represented, and gave general satisfaction. Our free-for-all pace deserves special mention, it being a close contest, taking five heats to settle it; finally won by "Daisy D." in 2:22, the best time ever made on our track.

In this connection I deem it but fair to say that, in my opinion, based upon both experience and observation, good speed rings are a necessity as an incident of a good fair. There must be some amusements coupled with our shows of stock and general farm products to relieve its monotony. "All work and no play makes Jack a dull boy" can well be applied to management of fairs. And what more innocent amusement can be adopted than the trials of speed of the noble animal, horse, and what more entertaining to the average audience at our fairs? Besides, if we provide them our people spend their money at home to see what otherwise they would go away from home to see, at a greater cost.

Our general agricultural products bear evidence of a continued improvement from year to year. The continued and intelligent use of well selected fertilizers demonstrates that our farmers and gardeners are becoming educated up to their own interests, their increased use becoming greater from year to year. A good farmer now will hardly think of sowing a meadow without its use, having realized that with it he can count on a set of grass the first year with reasonable certainty, while under the old mode it was generally a question of doubt as to success, and always as to time.

I forbear a discussion on the general topics suggested in the annual circular of the State Board at this time, for the reason that two years ago, in our annual re-

port, I discussed them at some length, and my successor, Mr. W. W. Stevens, in the report for last year, entered into a very intelligent, comprehensive and well-arranged discussion of the principal topics. I think I may, without egotism, commend both these reports to consideration.

FRED L. PROW,
Secretary.

WAYNE COUNTY.

The Wayne County Agricultural and Horticultural Society, in making its exhibit in September last, was surrounded by very discouraging circumstances, which operated against its success. The excessive drouth, the political campaign, and the length of time since the last exhibition were the principal ones. However, we succeeded beyond our expectations in the number and character of the articles competing for premiums, which seems to have established a fact to the satisfaction of a number of our enterprising farmers, which I consider of great importance, namely, that the effect of the drouth was to a large extent overcome by the extensive underdraining, not only of wet lands, but of the clay lands of our county. There were but few fields of wheat or corn that approximated an average crop, except where they were underdrained. From the experience and observation of the past season, many of our farmers have come to the conclusion that to counteract the effect of wet weather, or of dry weather, they must underdrain their land. Timber growing in Wayne county is becoming an object of importance among her farmers and horticulturists. Hundreds of acres of land that have had the timber cut off, slaughtered I might say, and located in such a way that it can not be conveniently cultivated, is now in fine condition for being planted to timber that within the limits of the present generation will become very valuable. A few farmers have planted groves of catalpa and other valuable kinds of timber, and are protecting them by inclosures.

JOS. C. RATLIFF,
Secretary.

DISTRICT AGRICULTURAL SOCIETIES.

LAWS CONCERNING LICENSE FUND.

In counties throughout this State that have no county agricultural society, and where they compose a part of some district agricultural society, the money arising from exhibitions mentioned in section 5269 shall be paid over by the county treasurers of their respective counties to the district agricultural society in which said county is a part: *Provided*, That in counties that compose a part of more than one district agricultural society, said money so referred to above, shall be paid equally to said district agricultural societies; and that in counties that have money on hand from exhibitions mentioned in the act to which this is a supplement, and there has been application made by the district agricultural societies entitled under this act to said money, and refused by the county treasurers, they are required to pay the same to said district agricultural societies. (R. S. Sec. 5271.)

ACTON DISTRICT ASSOCIATION.

In connection with our statistical report, I submit a report of our last fair, together with a crop report of 1884.

The Acton District Fair Association is composed of the eastern part of Marion, northern part of Johnson and north-western part of Shelby counties. Our grounds are commodious for stock and a fine half-mile race track adjoining Acton only two squares from the depot. Our fair for 1884, was billed for the week of the autumnal equinox, and as the summer was very dry we had an abundance of rain that week and of course our fair suffered thereby. But in view of this, all departments were running over with exhibits. Live Stock Department was good both in quantity and quality. Agriculture fine, especially the display of corn which would be hard to excel at any fair, State Fair not excepted. Horticulture slim, on account of failure in fruit crop.

Ladies' Department was well filled with the choicest canned fruit, preserves, jellies, bread, cakes, etc, and all the luxuries that farmers' wives make their tables fit for any one to enjoy a feast. The fancy work in their hall was a credit to any

fair. Mechanical hall was well filled with a fair representation of the labor-saving machinery of the day. But the people could not come through the rain to see our exhibits and we had gone to a great expense in fitting up our grounds, and believing that the future success of a fair is to pay all premiums in full, we came out badly in debt; but we are going to make an effort to come out successful in 1885, believing agricultural fairs are of great benefit to the farming community in the way of improving agriculture, live stock, etc.

The crops in our district are composed chiefly of corn, wheat, oats, potatoes timothy and clover. On account of the dry season corn on the upland was short; black ground up to an average; those that followed a clover crop with corn received a good yield of number one corn. The farmers are turning their attention more to clover as a fertilizer than they did some years ago; they find it pays a large per cent. Wheat crop averaged about eighteen bushel per acre with the grain good. Our principal varieties are the Fultz and Hedges' Prolific; our section is not bothered with the fly to a very great extent; timothy good; clover good and those that cut their crop for feed harvested it in good shape. Potatoes an average. Oats good. Stock raising consists mostly of hogs, farmers believing it pays better to make pork out of their corn than to haul it to market. Very few beef cattle raised in this section. Not many sheep; our ground is too level for them to do well on. Stock running at large is almost abolished, which to my opinion is a great improvement over the way of every one's stock running on the common pasture. In the way of fencing, the farmers are beginning to economize; in way of saving their timber, some are using barbed wire and some are growing hedges.

Our public roads are most all graveled, but a great many of our county roads are in the springtime almost impassable. There is considerable underdraining in our district, some have their farms thoroughly underdrained and find that it pays a large per cent. on the capital invested.

Improvements in the way of buildings are up to an average. We feel that the time is not far distant when ours will be one of the finest farming districts in the State.

G. A. STANTON,

Secretary.

BRIDGETON UNION.

The Bridgeton Union Agricultural Society held their twenty-third annual fair at Bridgeton, Parke county, commencing August the 25th, and closing the 30th. The show in all of the departments was good, with the exception of Shorthorn cattle, which was not what it ought to have been. The show of Jerseys was good. The weather the first of the week was very unfavorable. From that cause, and there being a large circus show on each side of us on Thursday and Friday, the main days of our fair, the receipts were not as large as they would otherwise have been. The society paid all expenses and 75 per cent on a liberal premium list. The condition of the agricultural and live stock interest of the district is

good, there being quite an interest taken in introducing fine stock and also in tile draining.

Receipts from all sources, \$1,537.03; general expenses, \$416.85; paid on premiums, \$1,033.65; leaving a balance, \$86.53.

DEMPSEY SEYBOLD,
Secretary.

CAMBRIDGE CITY.

I herewith have the pleasure of submitting to you my fourteenth annual report. Our fair this year was held on the 2d, 3d, 4th, 5th and 6th of September. Taking all the surroundings into consideration, the fair was a success. Our crops were cut short by the drouth, combined with the fact that this was campaign year, served to detract the minds of the people from fairs and other matters of less importance than the election of a President.

The wheat crop was a large one, above the average in both quantity and quality.

Oats an average yield, while the acreage was short of former years.

Corn, owing to the drouth, was a short yield, being far below the average, so much so in fact, that instead of having a surplus, farmers and others are compelled to have corn shipped to them from other points, something unusual for us.

Potatoes were about a half crop.

A number of farmers are turning their attention to the cultivation of tobacco, with a success that promises, in the near future, to become one among the first crops of this section, the soil here being eminently adapted for a large yield and the production of a superior quality of tobacco, and the price realized making it one of the most paying crops for the farmer.

Our small fruit farmers were the most fortunate, realizing more profits from their few acres than many farmers who cultivate large tracts of land, and who *disregard* the cultivation of small fruit.

The show of cattle was large, the "Shorthorn" being the favorite.

We had the finest display of horses ever had at any fair in Indiana, each and every class being well represented.

The display of hogs was good, the Poland China being the leaders.

Sheep were not so well represented, as sheep raising is being neglected, for the farmer does not care to invest his money and risk the loss of it by having his flocks destroyed by the many worthless dogs, whose use is not to be compared to the value of sheep destroyed by them.

A fine display of poultry was made, over seventy classes being represented.

The exhibit in the Floral Department was above the average of other years, many of the merchants and citizens exhibiting articles of use, beauty and ornament.

Ditching, fertilizing and scientific farming are each year receiving more attention.

Fencing is receiving considerable attention, large quantities of barbed-wire being used, as the farmer finds he must in some manner protect himself against the pernicious habit that many have of allowing their stock to roam at large along the highways.

A statistical report of the crops can be obtained from the report of the State Bureau of Statistics.

This is quite a shipping point for grain and cattle. Mr. Samuel Frazier has shipped over 7,000 hogs and over 2,000 head of cattle, and other shippers have had their proportion. M. L. Bowmaster has shipped 125 cars of wheat, and others in the grain business an equal amount.

This is the home of the inventor and owners of the Kimmel Steam Gang Plow, the *first successful* steam plow ever made, and is attracting the attention of owners of large farms, not only of this country but of the Old World. We feel justly proud in claiming all this for our county.

We will hold our fifteenth annual fair during the first week in September, 1885, and, with proper encouragement, we see no reason why it should not be one of the most successful ever held here.

G. W. SHULTS,

Secretary.

DUNKIRK UNION.

The Dunkirk Union Fair Association held their fifth annual fair on their grounds, at Dunkirk, Jay county, August 19, 20, 21 and 22, 1884. The fair was a success financially, the receipts being sufficient to pay our premiums in full. The weather was fine and we had a large crowd on Thursday. Our horse show was splendid; cattle, hog and sheep show good; poultry show a little above an average. Floral Hall presented a very fine appearance. The Mechanical and Agricultural Department was not quite as good as other years. Our speed ring was the best we ever had. The races were all full and gave entire satisfaction to all concerned. In fact, our fair was a success.

Dunkirk is an enterprising little town of about one thousand inhabitants, situated on the Chicago, St. Louis & Pittsburgh Railroad, near the southwest corner of Jay county, and near the lines of Blackford, Randolph and Delaware counties. The people of the town and vicinity are full of enterprise, as the improvements in the way of gravel roads, tile drainage, and improvement in farm stock will show. We have in our town and in a radius of two miles, seven tile factories, all well supported. All of the main roads running into the town are graveled—a continuous gravel road from Portland, the county seat, through Dunkirk, to Indianapolis, a distance of ninety miles. The wheat and corn crops last year were an average; other crops in proportion. Our farmers have no specialties, but all are engaged in mixed farming, our soil being adapted to all the cereals of the northwest. This part of Indiana used to be known as that part of the State that used no other kind of currency as a representative of value but hoop-poles and coon skins, but we defy any other part of the State to make a better showing in the way of improvements, for the last twenty years, than we can. Taking it all in all, the hoop-pole county has come out of the kinks.

J. J. STEWART,

Secretary.

EDINBURG UNION.

The Edinburg Union Agricultural Society held their twenty-fifth annual fair on their grounds, August 26th to 30th.

Our fair was a success. The attendance was much larger than any previous fair for years. Under the new management the Directors are confident of success, and think by two or three years more to be able to pay off the entire debt on the grounds.

Our crops on the low land this year are somewhat light, while the uplands are up to their usual standard, wheat weighing on an average of 58 pounds; corn this year was somewhat light. The low prices for wheat and corn make it a very close year for the farmers.

Stock raising is on the increase in this district. Our largest feeder, Mr. Samuel Cutsinger, feeds from four to six car loads every winter. Sheep raising is also carried on quite extensively.

Our manufactures are not very extensive. They are principally flour, lumber, furniture and spoke factories. Our county is improving every year, and our farmers are building neat, substantial houses and barns. The wire fence is being used more every year. As our timber is being lessened, we suppose it is only a question of time until the wire fence will take the place of board and rail fences.

Our fruit crop was nearly an entire failure in this county, and will be small for a number of years to come, on account of the trees being so badly winter-killed, and the young trees are set back by severe cold spells. A great many new orchards are planted each year, but the winter seems to kill a large number of the young trees.

J. A. THOMPSON, JR.,
Secretary.

THE EASTERN INDIANA AGRICULTURAL ASSOCIATION.

The second annual fair of the Eastern Indiana Agricultural Association was held on the grounds of the association at Kendallville, Ind., during the week commencing October 6th, and continuing five days. The weather was very fine, with the exception of Wednesday, which was a very wet and disagreeable day. The exhibition was very fine in all departments. The Horse Department was very fine, with several excellent imported Norman and Clydesdale horses. The display of cattle was very good, the favorites being among the Shorthorns and Jerseys. The Sheep and Swine Departments also made excellent showings. The display of machinery was all that could be desired. A line shaft 150 feet in length was fully occupied with agricultural implements, and made a very attractive feature of the exhibition.

Agricultural Hall, a new building 60x60, was filled to overflowing with products of the farm and garden, and was densely packed with admiring visitors. Floral Hall, a building 90x90, was filled with a magnificent array of articles prop-

erly belonging in this department, and presented a scene of dazzling beauty, which the vast throng of visitors viewed with much satisfaction. The track, which was in fine order, did not fail to attract the attention of lovers of sport. Hotly contested trials of speed took place each afternoon.

Everything considered, the fair of 1884 was a success. Other improvements are needed, and will no doubt engage the attention of the management of the coming year.

The association, although only two years old, is in a prosperous condition. Surrounded as we are by one of the most fertile and productive sections of country to be found anywhere, we feel that, with prudent management, no fears need be apprehended of our future success. The association is composed of nearly two hundred stockholders, among whom are farmers, mechanics, and business men of all kinds. All premiums have been paid in full. No games of chance were allowed on the grounds, and no intoxicating beverages were sold on or near the grounds. Little or no drunkenness was observed, no arrests made and no occasion for any. At the yearly meeting, December 1st, the old officers were re-elected by acclamation.

J. S. CONLOGUE,

Secretary.

THE FAIRMOUNT UNION.

The Fairmount Union Joint Stock Agricultural Association held its first annual fair, on their grounds adjacent to the town of Fairmount, on the 9th, 10th, 11th and 12th of September, 1884, and was, in nearly all respects, a complete success. In fact, no one went away dissatisfied, and the remark was frequently heard, "that this is a young State fair." The organizing of the society was of quick growth, commencing early in the spring of 1884. The necessary amount of stock (\$8,000), was assured, and preparations were at once made to push the matter, that nothing should be undone when the time should come for the annual fair. The grounds comprise thirty acres, alongside the Cincinnati, Wabash & Michigan Railroad, particularly suited for the purpose, enough shade for all purposes, and excellent water in abundance from three 50 feet wells.

Our improvements, in part, consists in one hundred and fifty box and open stalls for horses and cattle; sheep and hog pens sufficient, with covers and floors. A large Floral Hall, Agricultural Hall and poultry-house. All these improvements were thought by some to be excessive, but the display at the fair decided the case contrary to their views. All deficiencies will be remedied by the time of the next exhibition. The track was in fine condition and commented on by old drivers as being the best new track within their knowledge. No horses went away lame or damaged.

The fence surrounding the grounds is an open one, the pickets being of pine fencing boards, seven and one-half feet long, set three inches apart. This is thought to be an improvement over the old tight fence, as it admits free circulation of air, stands the wind better, has a neat appearance, and costs much less money.

Interested parties all have their notion in regard to making a fair a "financial success," so far as relates to all games of chance, and things of that kind. This matter was disposed of at the commencement by an article of agreement between the association and parties of whom the grounds were obtained, making them revert back in case these things are allowed at any time. The good order that prevailed, together with the handsome dividend that resulted, made all satisfied with the agreement.

The object of the association is to advance—not stand still or go backward.

The show of live stock was particularly fine. Those obtaining premiums had something to work for.

Floral Hall was full to overflowing, and presented a fine appearance.

Agricultural Hall was not extensive in its line, but creditable.

The poultry made a fine showing, and attracted a great deal of attention.

Our farmers turn their attention principally to the raising of corn and wheat, and all are more or less interested in the growing of stock, and there appears to be an increasing interest in the improvement of the same. Imported and thoroughbred animals are getting to be common, and the preceivable advancement made within a few years past in the quality is noticed. Hay is now being grown considerably, with a view of finding a market by shipment. The growing of flax, at one time quite extensive in this section, is almost entirely abandoned, but the relative prices offered for that product in comparison to other grain may, if continued, result in a revival in its growth. The wheat and corn crop this season was above an average in amount as well as quality.

A large amount of land is being reclaimed through a system of drainage. The large number of tile factories scattered through this region find ready sale for their products, and is the means of making our most productive lands susceptible of cultivation; and as to health, where ague and malaria once held sway, is known no more. Ours is a healthy country. A great amount of dissatisfaction exists in regard to the ditch laws. The prevailing opinion is that it takes too much money to get under way and complete a ditch under the present state of affairs, what a smaller amount in a different manner would accomplish.

As to fencing, we have all kinds. The old-fashioned rail fence predominates, but is gradually disappearing. Timber is too valuable to keep them up, and are giving way to the hedge, barb-wire and plank. There seems to be a great deal of thought and experiment in regard to fencing—a cheap fence, to answer all purposes, is the object. As a fence is a costly improvement any way they can be constructed, it will eventually result in a "fencing-in-law," as they have in the Western States where prairies abound.

The free turn-pike system works only tolerably satisfactory here; the opinion prevails, better make your roads toll, as the free system virtually means the same.

As to the future of our county, we look forward with hope. We have the foundation to build upon—an inexhaustible soil—and the substantial improvements being made, in way of buildings, go to show the citizens are generally satisfied and fixing to stay. The season so far indicates a repetition of our good fortune the past year.

WM. C. WINSLOW,

Secretary.

FOUNTAIN, WARREN AND VERMILLION.

The Fountain, Warren and Vermillion Agricultural Association held its twenty-fifth annual fair at Covington, September 16th to 19th, inclusive, 1884. The attendance was larger than ever before, the receipts being \$2,700 and the expenses the same, leaving the society about even. The badge system (we charge \$1.00 for a family badge) is ruinous, as it is abused to such an extent that we have learned of fifty persons getting admittance on a single badge.

Our fair is run on strictly temperance principles, and no gambling is allowed on the grounds. Our show of stock this year was extra fine—we had four herds of fine cattle and some very fine horses. Our farmers were in good spirits, as the corn crop was larger than it has been for years, in many places uplands producing as high as seventy-five bushels to the acre. The wheat crop was excellent, the crop on the river bottoms, for a wonder, being a success. This always means abundance for this section, as the Wabash is the western boundary of this (Fountain) county, and the eastern boundary of Warren and Vermillion. The lower or southern portion of this county is rather wet, but the tile industry is booming, and it would be safe to say that there has been more ditching done within the last two years in this section of the State than in any other of equal area. The result is wonderful, and the farmers claim that they can plow corn in an hour or two after a rain, where they formerly waited from two to three days.

I am also happy to say that the sheep industry is looking up; the dogs were so bad formerly that it was almost impossible to raise sheep with any degree of success. The hog crop for 1884 was extra large, immense numbers being shipped to Chicago and Indianapolis.

Farmers are buying less land, and paying more attention to getting out of debt and making substantial improvements in the shape of good houses and barns.

Under the new gravel road law we are building gravel roads, the counties comprising this district being favorably located for a fine article of gravel. Barbed wire fencing is coming into general use, as the scarcity of timber makes the old reliable rail fence too expensive. New orchards are being set out, and our apple crop last fall was good. New coal fields are being opened at Yeddo and Silverwood, in the southern part of this county, and very lately a mine has been opened at Covington. The vein is not thick, ranging from twenty-seven to thirty-two inches, but the coal is fine block. We have had no hog or chicken cholera this season, and, taken all in all, this has been a bountiful year indeed, the only drawback being the extremely low prices for grain.

O. P. LEWIS,

Secretary.

HENRY, MADISON AND DELAWARE.

The Henry, Madison and Delaware Agricultural Society held their annual fair August the 19th, 20th, 21st and 22d, it being one of the most successful fairs ever held at this place. The receipts were largely in excess to any previous fair, as

also the number of entries. The total reduction of our indebtedness approximated \$600, leaving a debt still standing of \$160. Arrangements are being made to improve and beautify our grounds, and we think we can say that soon we will have one of the nicest and best fair grounds in the State.

E. L. ELLIOTT,
Secretary.

KNIGHTSTOWN UNION AGRICULTURAL ASSOCIATION.

The fair was one of the most successful ever held here, and was only second to the one held in 1883, which was the best ever held by the society. The live stock shows were particularly good, and some of the animals very valuable. It is estimated that the total value of the horses exhibited would alone amount to \$50,000. The cattle show was deficient, owing, it is believed, to the extra premiums offered, which had the contrary effect to the one desired. Other live stock about the same as last year.

The Ladies Department was most excellent, and better than ever.

Of course the counties of Henry, Rush and Hancock being among the most fertile and well cultivated in the State, the very best results are expected at these fairs, and at this one the people in attendance were not disappointed. We can not close without mentioning the fact that this part of the State is eminently fitted for textile manufacturing on account of the abundant water power afforded, yet, strange to say, these advantages are not improved.

T. B. DEEM,
Secretary.

LAWRENCE DISTRICT.

The fourth annual fair was held as usual on the third Tuesday of September and the remainder of the week. The weather was all that could be desired. The show in the stock and all other departments was an improvement over any previous exhibition. This was especially so with regard to points of excellence, the quality of the exhibits ranking high. There appears to be a gradual improvement on every hand: better bred stock, better varieties of grains, fruits, vegetables, etc., better machinery, better cultivation, better appliances for home, health and comfort. The outlook for the future is very encouraging.

No detailed account of the exhibition will be attempted; suffice it to say that some new features were included this year, among which may be mentioned the securing of a natural history collection during the fair. This proved so satisfactory that it will be continued. The managers have procured for next year one of the largest and best exhibits of this kind in the West. Experts were used in the Sheep and also in the Poultry Departments with satisfactory results. Exhibitors' tickets were sold entitling the person named to pass at pleasure during the fair. This met with much approval, and will be continued for trial.

On account of the increase of the premiums, extra improvements and decreased attendance the society fell a trifle behind financially this year. Some heavy bank failures in the city, together with a deluge of old settlers' meetings, were the principal causes of the decreased attendance. As to the condition of agriculture, it can be said that it is in much better condition than formerly during financial depressions. Farmers are not so much in debt, and if prices are low, they can hold for better. The march of improvement seems to go steadily on.

W. B. FLICK,
Secretary.

LOGOOTEETEE DISTRICT.

The eleventh annual fair was held August 19 to 23, 1884. It was a success in every particular. Our ground is situated one mile west of Logoootee, in Daviess county, on the Ohio and Mississippi Railroad, in a beautiful grove, with plenty of water, and a good half mile track. Our fair is composed of the counties of Daviess, Dubois, Martin and Green. The counties are in the south and west part of the State.

We had many entries of horses, and the display was very fine. We have some of the finest horses in the country, mostly imported from France, of the Norman stock, and their grades. We have some native horses that are very fine. All classes of horses were fully represented, and the show extra good—much better than former years.

The show of cattle was excellent. The best we have are the Shorthorn, though we have some very good native grades. We have the Jerseys, but they are only good as milkers, and not the best for general purposes.

We have some very fine sheep in the country, though, as a general thing, the farmers do not pay much attention to them, as the wool market has been unsettled for years, therefore, farmers pay more attention to other stock.

The hog show was only fair. Not much attention is paid to hogs the last few years on account of the cholera, which was so destructive a few years ago.

There has not been much improvement in poultry during the last few years. We have some fine turkeys.

The speed ring was well represented, every race being filled, and good time made.

Agricultural Hall was well filled with improved implements. Floral Hall was well filled, and the ladies may feel proud of their exhibition, as it was an improvement on former years. The horticultural display was not so good as usual, on account of the fair being held so early.

Taking all into consideration, we had a very successful fair. During the last three years we have paid all premiums in full, and have now over \$1,200 in the treasury. One-sixth of our district is level bottom land, one-sixth level table land, one-third rolling, one-third hilly. The bottom land is generally sandy loam and very productive; often produces 80 bushels of corn to the acre, and as high as 120 bushels. The greatest objection to this land is, it overflows, and has at times destroyed full crops. The level table land is rich and very productive. The crop is

divided between wheat and corn. The average of corn to the acre is 38 bushels; the average of wheat is 14. On the rolling land good crops are raised. Wheat predominates. Corn, oats, rye, clover, timothy and potatoes all do well. These rolling lands are best for the general farmer. The hilly land is well supplied with timber, which, when taken off and the land left undisturbed, makes fine grazing lands, though it is not fit for cultivation, and would not support a large population. We have fine coal fields in this district, many mines being in operation, employing over one thousand miners at good wages. We have very fine canal coal, which is shipped extensively.

GEORGE M. SHARUM,
Secretary.

MIAMI AND FULTON.

The Miami and Fulton County District Fair Society held their second annual exhibition on their grounds, near Macy, Miami county, Ind., on October 1, 2, 3 and 4, 1884. Our fair, all things considered, was a grand success.

In horses our show was quite an improvement over last year.

Our cattle show was good.

Sheep and hogs not very extensive in numbers, but the quality was excellent.

The exhibits in farm products and fruits were remarkably good, considering the very dry season we have had.

The Ladies' Department was more than expected.

Poultry was very good, but there is not the attention given to it that should be.

Our wheat crop for this year was very good, making an average of about fifteen bushels to the acre of good quality.

Corn good quality, but crop short, caused by drouth; yield perhaps not more than thirty bushels.

Oats, quality fair; yield light.

Potatoes below an average crop.

Fruit crop, half crop.

Our farmers are not very well satisfied with present prices of wheat and corn, and the acreage of the farmer sown this fall is considerably below the average, partly on account of low prices and partly on account of dry weather. Much of the wheat sown was very late; some as late as the 10th or 11th of October.

Feed is plenty, and stock are wintering well.

Wheat, corn, and hogs have been the farmers' special crops in this district, but a change is taking place. More horses, cattle, and sheep are being raised; more pasture and hay, and less plowing being the order of the day.

No commercial fertilizers are being used here yet. Our farmers think that clover sod and barn-yard manure are good enough, with tile drainage and good cultivation.

J. COFFING,
Secretary.

NEW ROSS UNION.

The New Ross Union Agricultural Association closed its sixth annual fair August 15, 1884, and again we record success. For six consecutive years we have held a fair at our grounds, and have never failed to pay our premiums in full, make permanent improvements, and decrease our indebtedness from two to three hundred dollars each year. We attribute our success mainly to the facts, first, we try to treat our patrons fairly; second, we have as desirable grounds as can be found in the State; third, the country composing our district is of the best.

The quality of land in this State is usually indicated by the timber it grows. Our lands grow principally walnut, poplar, oak and sugar tree. Our people are thrifty, intelligent and enterprising. We do not know what it is to make a total failure in a crop of any grain grown in this State.

Stock raising seems to predominate in this district. Shorthorn cattle, Poland China hogs, and general purpose horses being the favorites.

Drainage is receiving considerable attention, with but little attention given as to whether the land is flat or rolling, the idea prevailing that it pays handsomely to drain rolling land.

While our farmers try to keep pace with the times in improvements, etc., the present gravel road law has created one "unanimous howl." We pay too much for red tape. There seems to be in this vicinity an urgent demand for reform in the law.

In the matter of building and fencing there has been a decided improvement in the last few years. In buildings, the frame has the preference, being regarded more sightly, healthful, and less expensive. In fencing, the rail fence seems to "lord it" over others as yet, but the neat and substantial plank is making a good fight for supremacy, while the wire fence grows more into disfavor daily on account of its injury to stock.

In regard to the "dog law," will say that if there is such a law its effects are not "visible to the naked eye" in this district. Every dog seems to be a law unto himself only.

Taken as a whole, it may be said of our district that it is making heroic efforts to keep step with "Father Time" in his march to perfection. As a consequence, with the aid and enterprise of the citizens of our district, we have been able to hold six successful fairs, and, relying on them for the support they have given us in the past, we announce our seventh annual fair, to begin August 10, 1885.

H. E. HADLEY,

Secretary.

NORTHEASTERN INDIANA AGRICULTURAL ASSOCIATION.

The Northeastern Indiana Agricultural Association held their thirteenth annual fair on their grounds north of Waterloo, September 22, 23, 24, 25 and 26, 1884.

Notwithstanding the protracted rain storm which greeted us on our opening day, and continued with little intermission up to Wednesday night, we had the largest number of entries ever made on our grounds.

The attendance during the week, however, was very much reduced by the inclement weather, so that practically we had but two days' fair, and those, with roads in such bad condition that only about half the usual number of tickets were sold.

The Association this year made strong efforts to present a varied and interesting programme to its patrons, by dispensing among the usual sources of entertainment, balloon ascensions, bicycle races, and good music, and we feel that under the adverse circumstances the fair of this year was a success.

The number and quality of exhibits in Floral Hall was unusually good, showing a marked increase in taste and quantity of production of those articles tending to the beautiful in textile fabrics. The exhibit in the Fine Art Department was unusually good. Total number of entries in Floral Hall, 501.

Exhibits in the Mechanical Department were rather less in number than usual, but the display was found to be interesting, with a number of new mechanical contrivances in addition to those usually found. Number of entries in this department, 171.

Agricultural and horticultural products made a much better showing than for a number of years; and it is observed that the general supply of such products in this district, much exceeds, on an average, that of several years previous. Total number of entries reached 1,128.

The exhibitions of live stock were well sustained, and the parade of premium stock was fairly up to the standard. This is the more encouraging from the fact that this stock was entirely made up from our own district, and not from foreign show herds; and is indicative of a growing vigor and pride among our home farmers in the production of blooded stock. This, we believe, is due very largely to the comparisons and ideas gained at our annual agricultural fairs, and is a sample of the influence they are exerting toward a gradual improvement in all kinds of stock. Entries in this department, however, were fewer in number than usual.

The society completed, previous to the fair, a new and commodious poultry house, and were rewarded by the largest and most interesting exhibition of poultry ever seen in this district.

Our Speed Department was well filled, and races as interesting as could be expected, considering the heavy condition of the track.

The permanent improvements made on the grounds during the year, comprise the poultry house before alluded to, a new Secretary and Treasurer's office at the entrance gate, well fitted and furnished for that purpose, and increased facilities for water privileges. The beauty of the grounds has also been enhanced by the addition of about two hundred shade trees.

I am pleased to report the affairs of the Society in a prosperous condition, with the expenses and improvements of the year fully paid, and an indebtedness of only \$700.

I append hereto a full statistical report of entries and premiums, receipts and disbursement for the year.

D. A. GARWOOD, *Secretary.*

PLAINFIELD HORTICULTURAL AND AGRICULTURAL SOCIETY.

On September 3d, 4th and 5th this society held its annual fair, after considerable expense and labor to get the grounds in order. The weather was dry and dusty, but the preparations for water was ample, and shade plenty, so that all were reasonably well accommodated. The exhibition was better, in most respects, than expected (our society being young in the fair enterprise), there being about six hundred and seventy entries in the several departments. As well as we can summarize, the condition of agriculture in our vicinity, it is as follows:

Wheat below an average crop, quality only fair, with price so low that there has been a smaller crop sown this fall than usual. Condition of growing crop at present pretty good.

Oats crop good.

Hay abundant, with quite a surplus left over from last year.

The corn crop matured very nicely, and was housed in good condition. The drouth shortened the crop a little, but there is no scarcity of good, sound corn in this district.

Hogs have not been very healthy the past season, some cholera prevailing.

Sheep in good condition. Flocks considerably reduced.

Cattle in good health, and come into winter in fair flesh, the fall pastures being excellent and the weather fine until late in the winter.

Horses have mostly done well during the year, except that a serious throat disease prevailed to some extent during the late autumn. Some cases fatal.

Poultry has not done as well this season as usual, some disease prevailing, hawks and foxes taking a small per cent.

The practical working of the road law is not giving entire satisfaction. The roads have not been much improved for a few years.

Improvements in building and fencing rather neglected at present, on account of the closeness of finances.

The game law meets with almost universal disapproval.

As the insects and birds become more and more deleterious to the interests of fruit growing, and the price of grain has become so low, there is an increased inclination on the part of farmers to graze more and plow less.

Milk dairying is receiving increased attention of late.

WM. H. MILLS,

Secretary.

DANIEL COX,
President.

SOUTHEASTERN AGRICULTURAL SOCIETY.

Our fair the past year was held the first week in August, the earliest period we have ever tried to hold an exhibition.

Having been "frozen out" of the Southeastern Indiana Fair Circuit, our Board of Directors made the attempt to get in ahead of our competitor in our own county

and ahead of the county fairs in our vicinity, and in this we fully succeeded, and held the best fair ever had in the district.

A great many things worked against our success, and it was only through the almost untiring work of our President, Col. John McGuire, that scored our fair a success.

The almost entire failure of our corn crop, short crop of wheat, a disastrous flood, which put some of our grounds thirty feet under water and disheartened greatly our many patrons, were among the few things that worked against our easy success.

In attendance and gate receipts our fair was above the average in our county. Contrary to our former usage, we held a purely moral fair, the only one in Southeastern Indiana where drinking or gambling was not allowed. In this we think we have struck the right course, and the probabilities are that our fair for 1885 will be carried on in the same way.

The condition of agriculture in Southeastern Indiana for the past year, may be summed up as follows:

In stock, horses and cattle especially, our part of the State is improving the breeds very fast.

The crop of corn, the past year, was very poor. Wheat very little better. Hay an average crop and of excellent quality. Oats an excellent crop.

The prospect for 1885 may be said to be about an average—probably a less acreage of fall grain sown, on account of exceedingly dry fall, and fears of another flood. For list of officers and statement of finances, see tables appended.

WILL A. GREER,

Secretary.

SWITZERLAND AND OHIO COUNTY.

The thirty-third annual exhibition of the Switzerland and Ohio County Agricultural Society, held at East Enterprise, Sept. 9th to 12th inclusive, 1884, was, all things considered, quite satisfactory, both as regards the display and attendance. A severe drouth was prevailing at the time, water was scarce, and the dust stifling. The people were also somewhat depressed in spirit, and were not as lavish in expenditures as they would have been under more favorable circumstances. Yet the receipts were near \$3,000, and, aside from some substantial improvements in buildings, fully met expenditures. The society is out of debt with a neat little balance in treasury. The entries numbered over 1,100. The horse show and Ladies' Department were especially fine, with a good show in nearly every class. The society, as heretofore, excluded gamblers, tricksters, and swindlers, rejecting all their tempting offers. Believing that the Society is the better,

"That noble ends, by noble means obtains,
Or failing, smiles without such venal gains."

This society has elected her officers for the ensuing year, revised her premium list, and is getting ready for the fair of 1885, Sept. 8th, 9th, 10th and 11th. Her aim will be to deserve and achieve success.

CONDITION OF AGRICULTURE.

We can make no flattering report either of progress or prosperity in agricultural pursuits. The past season was not propitious for the farmer. Hay and oats were good, tobacco fair, wheat, corn, potatoes, fruit and fall crops generally about a half crop. Wheat injured by freezing in late winter or early spring. Other crops injured by long continued drouth. The partial failure of crops, the exceedingly low price of farm products, together with the general suspension or stagnation of business, contributes to make times dull, money scarce, and all improvements or undertakings requiring an expenditure of money, are lagging, and we have very little to note in the way of improvements, or new methods in farm business. We think there is a tendency on the part of farmers generally, to engage more and more in stock raising, although stock in sympathy with other commodities has very materially declined in value. Yet it is adjudged the more profitable business for the farmer, both in a monetary point of view and also in reclaiming and improving the soil. The area of wheat sown last fall was, perhaps, one-third less than usual, is looking tolerable well at the present.

There has been a large emigration from our country westward, during the past year. Many are already returning, preferring old Hoosierdom to Kansas, Nebraska, etc. Many are willing to admit the possibility of a better country than this, and yet choose to remain and suffer the evils existing here, rather than to fly to others they know not of. True, this is not our ideal of a paradise, and yet it is a very good country. True, we have an occasional drouth, or flood, our climate is changeable, sometimes hot, sometimes cold, but generally quite healthy. Our soil is mostly a clay loam and limestone land, some poor, some good, and some very good, ranging in price from \$10 to \$100 per acre. The country affords an abundant subsistence for both man and beast, and with ordinary thrift and industry a good living can be obtained, while the more energetic are accumulating property. We possess many advantages and facilities, such as good markets, good society, schools, churches, etc., and we are confident that persons desiring good homes, might seek farther and fare much worse. The law requiring stock to be kept up is very generally enforced, and gives satisfaction. Any law that would lighten the burdens of taxation or prove an incentive to the industries, and general business of the country, would meet our approval.

In making this report we have tried to avoid uninteresting details or particulars, and have dealt in generalities, making it a kind of epitome of existing facts as beheld from our standpoint, with all due respect for the opinions of others.

WM. H. MADISON.

URMEYVILLE AGRICULTURAL ASSOCIATION.

The Urmeysville Agricultural Association held their sixth annual fair commencing on the 9th of October, being the first fair held under our new organization. The exhibit in all departments was much larger than at any former fair, especially in the Agricultural and Ladies' Departments. We gave extra premiums on corn; also, the Franklin Starch Works gave a large premium, which brought out a larger amount, if not better quality, of corn than I ever saw at any fair, State Fair not excepted. There was a large increase of entries in the Horticultural Department, and there was a decided improvement in the articles exhibited. Our Floral Hall was well filled; the articles were both elegant in design and execution, which combined with a fine collection of beautiful flowers, made the hall a place of great attraction. In this connection, I think fair associations should give liberal premiums in this department for the purpose of encouraging the ladies who, as a rule, are but poorly paid for the time and trouble taken in making the beautiful and tasty articles, the exhibition of which does so much towards making our fairs a success. Another reason for increasing the premiums in this department is, that the display has a tendency to cultivate a taste for the beautiful, both in art and nature, which will certainly have an elevating and humanizing influence on all.

Bee culture in our county has made a wonderful improvement in the last few years. All are now using the improved movable frame hive instead of the old-fashioned log gum, and are learning to care for and feed their bees during winter when necessary. The exhibit at our fair this year was very good. This industry should be encouraged at our fairs by giving larger premiums.

Fish culture is now on a boom in our county. As near as we can learn, there are eleven ponds, all stocked with German carp, some of which are now three and four years old.

JOHN TILSON,
Secretary.

WAYNE, HENRY AND RANDOLPH.

The fifth annual fair of this Association was held at Dalton, Wayne county, Ind., August 26, 27, 28 and 29, 1884. The number of entries was largely increased over former years. The exhibit was good in all departments, except farm implements. In this department, handsome diplomas were given, but no cash premiums, which no doubt partially accounts for their absence, though we do not believe manufacturers properly appreciate the advantages they would derive from exhibiting more extensively in this locality. This Association has never failed to have a good show of good horses, and the last display excelled them all, the number of entries being 230. We are also happy to note a great improvement in the show of thoroughbred cattle. Considering the threatening weather and a "soldiers' reunion," the attendance was very large. No charge was made for the admission of horses or vehicles, which very materially curtailed the receipts of the fair, and was

a mistake in the management. It is a feature of this fair, that the exhibits are mostly made by "amateurs," as it were, and not by professional "premium takers," thus encouraging general improvement among the producers of this section much more than would otherwise be the case. No animal or article is allowed to receive more than one first premium. They may enter as often as they choose, but whenever a first premium is awarded, the animal is supposed to have filled its class, and has received the highest honor and must stand aside and give others a chance. No premiums are paid for speed. No liquors or gambling are permitted, nor can be under the present articles of association. We admire fine horses, good movers, good roadsters, and all that, and premiums are given for the encouragement of those qualities, but we do not believe that the best interests of agriculture is best served by awarding large premiums to "jockeys," and perhaps on ill-shaped or blemished animals (the only point in the contest being to "get there,") from which competition all but "professionals" are practically excluded. Believing that an agricultural fair should afford facilities for a general exchange and sale of products, as well as to award premiums on meritorious articles, the association held a stock sale on the last day of its first and second fairs; also, extended an invitation to all legitimate industries to bring of their manufactures, wares, etc., and advertise the same and sell on the grounds, thus benefiting themselves and making it an object financially for people to visit the fair; but those interested have not "caught on," to any considerable extent, and the good results hoped for have not been realized. Mixed farming greatly predominates in this section. The corn crop of 1884 was considerably below the average, though it is of excellent quality.

Wheat was good, both as to quantity and quality, but the price (70 cents per bushel) is below the cost of production. Oats and flax were good. Early potatoes were good, but owing to dry weather the yield of late varieties was light. The yield of small fruits was good, but the larger kinds, owing to insects and the loss of many orchards from freezing, are not very plentiful.

Plank, wire, and hedge fences are fast taking the place of the old "worm" fence. The fence most in favor at this time is made of both boards and wire, thus avoiding the danger to stock resulting from the use of wire alone. As to fencing stock "out or in," the rule is to fence them out, if possible. There is not much agitation of the question.

There has been some hog cholera in our section during the past year, and remedy, we have none, except preventive, in the way of cleanliness, frequent change of pasture, change of feed, etc.

The draining of wet land progresses rapidly, and land is now being drained which was once considered good enough without.

The clearing of timber land still goes on, and the mania for cutting off the undergrowth and thinning out for pasture (which must inevitably result in the clearing of the land) continues. It is noticeable in such cases, that the grass does not do quite as well as was expected. The storms take down some of the best timber, and as there is no young growth coming on, the owner soon concludes to clear it up. In this way much land will soon be cleared that should not be, and was not so intended by the owners when the shrubbing began. Perhaps it is not wisdom

for each individual to preserve and pay taxes on a very large proportion of timber land; but what is kept should be in such condition as to be of value in after years, and to those who are to come after us.

The roads in Wayne, Henry, and Randolph counties will compare favorably with those of any other section of the State, though some localities are sadly deficient in this respect. Henry county probably has a greater proportion of its roads graveled than any other county in Eastern Indiana. Owing to the low prices of products, less improvements in the way of buildings have been made than usual.

B. B. BEESON,
President.

EXHIBIT OF THE AGRICULTURAL SOCIETIES OF INDIANA, 1884.

NAME OF SOCIETY.	PRESIDENT.	ADDRESS.	SECRETARY.	ADDRESS.
Indiana State Board of Agriculture	Robert Mitchell	Princeton	Alex. Heron	Indianapolis.
Blackford County A., H. and M. Association	W. A. Bonham	Hartford City	B. G. Shinn	Hartford City.
Boone County Stock Agricultural Society	Jno. V. Ball	Lebanon	John W. Kise	Lebanon,
Cass County Agricultural Association	Geo. Zinn	Logansport	D. W. Tomlinson	Logansport.
Clark County Agricultural Association	M. B. Cole	Charlestown	D. F. Willey	Charlestown.
Clinton County Agricultural Society	James McDavis	Mulberry	M. H. Belknap	Kilmore.
Dearborn County Agricultural Association	E. D. Bannister	Lawrenceburg	W. H. O'Brien	Lawrenceburg.
Decatur County Agricultural Society	Will Cumbaek, Sr	Greensburg	Ed. Kessing	Greensburg.
Delaware County, Ag'l and Mechanical Society	Jno. M. Graham	Muncie	John F. Wildman	Muncie.
Fayette County Fair Association	A. T. Beckett	Everton	A. B. Claypool	Connersville.
Fulton County Joint Stock Agr. and M. Society	N. A. McClung	Rochester	John M. Davis	Rochester.
Glendon County Horticultural and Ag'l Society	Wm. M. Cockerum	Oakland City	S. Vet. Strain	Princeton.
Grant County Agricultural and Stock Ass'n	Hezekiah Steelman	Marion	David S. Hoag	Marion.
Hamilton County Agricultural and Fair Ass'n	Geo. W. Wheeler	Noblesville	Geo. M. Young	Noblesville.
Harrison County Agricultural Society	John Q. A. Sieg	Corydon	J. A. Miller	Corydon.
Henry County Joint Stock Agricultural Society	J. P. Nicholson	New Castle	Frank M. Millikan	New Castle.
Hendricks County Horticult'l and Ag'l Society	Daniel Cox	Cartersburg	Wm. M. Miller	Plainfield.
Howard County Agricultural Association	David Smith	Vernont	John R. Curlee	Kokomo.
Huntington County Agricultural Society	Robert Simonton	Huntington	Leon T. Basley	Huntington.
Jackson County Agricultural Society	George Veshlager	Brownstown	Joel H. Matlock	Brownstown.
Jay County A., H. and I. Joint Stock Company	Jonas Votaw	Portland	I. L. Gilpin	Portland.
Jefferson County Grange Jubilee A. and M. Ass'n	D. P. Monroe	Saluda	Thos. H. Watlington	Stony Point.
Johnson County Fair Association	J. M. Thompson	Franklin	Dr. D. H. Miller	Franklin.
Knox County Agricultural and Mech. Society	Wm. W. Berry	Vincennes	Gerard Reiter	Vincennes.
Lagrange County Agricultural Society	Moses Balyeat	Lagrange	Isaiah Platt	Lagrange.
Lake County Agricultural Society	Henry B. Ward	Hebron, Porter Co.	Harry P. Hewgill	Crown Point.
Laporte County Agricultural Association	Daniel P. Grover	Kingsbury	Simon Wile	Laporte.
Madison County Joint Stock Ag'l Society	John P. Barnes	Anderson	C. K. McCulloch	Anderson.
Marion County Ag'l and Horticultural Society	Sylvester Johnson	Irrington	W. B. Flick	Lawrence.
Monroe County Ag'l and Mechanical Ass'n.	John F. May	Bloomington	Walter Bradfute	Bloomington.

Montgomery County Agricultural Society	Jasper N. Davidson	Whitesville	F. L. Snyder	Crawfordsville
Noble County Agricultural Society	Oriando Kimmell	Ligonier	D. W. Green	Likemier
Parke County Agricultural Society	S. C. Paett	Rockville	W. J. White	Rockville
Perry County Fair Association	A. T. Wheeler	Cannelton	Walton Wheeler	Tell City
Perry County Agr'l and Mechanical Ass'n	Samuel Harkrove	Rome	Goodlet Morgan	Rome
Pike County Agricultural Society	Wm. Rigg	Union		Petersburg
Porter County Agricultural Society	Rezin Johnson	Valparaiso	E. S. Beach	Valparaiso
Ridley County Agricultural Association	J. T. McMillen	Elrod	Wm. R. Glasgow	Osgood
Rush County Agricultural Society	Joseph L. Carson	Star, P. O	Lon Link	Kushville
Shelby County Joint Stock Agr'l Association	A. W. Hendry	Shelbyville	E. J. Hackney	Shelbyville
Stroben County Agricultural Association	J. T. Hunter	Angola	E. A. Bratton	Angola
Tipton County Fair Company	Jas. M. Sankey	Shicksville	Wm. Barlow	Tipton
Vigo County Agricultural Society	Nath. Bunister	Terre Haute	Wm. H. Duncan	Terre Haute
Wabash County Agricultural Society	J. B. Hart	Dora	Fred J. Shavelly	Wabash
Warren County Agricultural Society	John L. Rutherford	Boonville	S. W. Taylor	Boonville
Washington County A., H., M. and F. Ass'n	Jesse Stevens	Campbellsburg	Fred L. P. Roy	Salem
Wayne County Agr'l and Hor'l Society		Centreville	Jos. C. Ratliff	Richmond

DISTRICT AGRICULTURAL ASSOCIATIONS.

NAME OF SOCIETY.	PRESIDENT.	ADDRESS.	SECRETARY.	ADDRESS.
Acton District Association	Shepler Fry	Acton	G. A. Slanton	Greenwood.
Bridgton Union	Reuben Cox	Rosendale	Dempsey Seybold	Perth, Clay County.
Cambridge City A. H. and M. Association.	A. B. Claypool	Connersville	G. W. Shultz	Cambridge City.
Edinburg Union Agricultural Society.	M. Patsinger	Edinburg	J. A. Thompson, Jr.	Edinburg.
Eastern Indiana Agricultural Association.	N. B. Newnam	Kendallville	J. S. Conlogue	Kendallville.
Fairmount U. J. S., Agricultural Association.	E. Beals	Fairmount	Wm. C. Winslow	Fairmount.
Francesville Agricultural Society.	J. G. Hunt	Medaryville	W. A. Brewer	Francesville.
Knights Union Agricultural Association.	W. L. Walker	Carthage	T. B. Deem	Knightsdown.
Lawrence District Fair Association.	O. W. Voorhes	Lawrence	W. B. Flick	Lawrence.
Loogootee A. and M. Association.	Henry J. Johnson	Loogootee	Geo. M. Sharrin	Loogootee.
Miami and Fulton Counties District Fair Soc.	N. A. McClung	Rochester	Joshua Coffing	Wagoners.
New Ross Agricultural Association.	John Lockridge	Mace	H. E. Hadley	New Ross.
Northeastern Indiana Agricultural Association.	Robert N. Crooks	Waterloo	D. A. Garwood	Waterloo.
Northern Ind. and Southern Mich. Agr'l Soc	W. O. Jackson	South Bond	C. G. Towle	Mishawaka.
Switzerland and Ohio.	Jesse W. Stowart	Rising Sun.	Wm. H. Madison	East Enterprise.
Southeastern Indiana Agricultural Society.	John McGuire	Aurora	L. W. Cobb	Aurora.
Wayne, Henry and Randolph Co.'s Agr. Ass'n.	E. B. Besson	Dalton	J. F. Dennis	Dalton.
Xenia Union Agricultural Horticulture Society.	Thos. C. Kimball	Xenia	J. W. Edward	Xenia.

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA—Continued.

ENTRIES.

NAME OF SOCIETY.	ENTRIES.													Total.		
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Agricultural.	Horticultural.	Textile Fabrics.	Fine Arts.	Natural History.		Miscellaneous.	Special Premiums
Indiana State Board of Agriculture	607	24	387	339	596	298	2,176	24	651	319	1,447	25	31	275	..	4,647
Blackford Co. Ag'l, Hort'l & Mech'l Ass'n	114	8	33	27	48	106	336	133	62	43	24	25	..	..	..	729
Boone County Stock Agricultural Society	261	28	58	46	74	12	517	43	140	43	355	40	..	20	5	1,253
Cass County Agricultural Association	226	5	49	117	77	119	593	43	375	142	40	115	..	911	..	2,221
Clark County Agricultural Association	86	7	45	15	11	7	72	80	26	51	84	2	..	28	11	292
Clinton County Agricultural Society	274	10	99	100	111	46	640	47	94	101	95	56	..	1,040	..	2,073
Dearborn County Agricultural Association	229	51	87	50	83	67	579	23	136	45	..	14	..	..	91	1,030
Decatur County Agricultural Society	218	21	55	58	81	43	476	94	54	36	..	..	..	805	25	1,396
Delaware County Ag'l & Mech'l Society	228	7	45	176	82	90	658	64	221	66	..	546	31	51	..	1,407
Fayette County Fair Association	85	9	37	29	49	91	337	11	214	34	292	36	..	..	..	824
Fulton Co. Joint Stock Ag'l & Mech'l S'y	74	3	50	47	11	15	200	52	259	54	148	27	..	123	15	890
Gibson County Hort'l & Ag'l Society	154	25	76	77	47	88	593	25	175	340	325	115	..	965	..	2,538
Grant County Ag'l & Stock Association	108	3	53	35	41	168	408	44	126	51	207	56	..	110	..	1,062
Hamilton County Ag'l & Fair Associat'n	250	13	41	63	108	146	621	87	335	48	417	125	5	181	..	1,819
Harrison County Agricultural Society	512	22	79	44	75	58	790	51	337	60	88	29	..	62	589	2,006
Henry Co. Joint Stock Agricultural Society	229	12	37	76	33	39	426	31	81	57	256	6	..	3	..	859
Hendricks Co. Hort'l & Ag'l Society	185	39	41	26	16	4	311	2	162	54	154	..	..	43	8	674
Howard County Agricultural Association	103	7	32	52	57	13	284	10	216	25	116	25	..	16	..	574
Huntington County Agricultural Society	315	32	164	116	110	117	851	472	545	327	115	53	..	310	329	3,165
Jackson County Agricultural Society	127	7	31	28	6	6	204	52	82	23	..	104	..	25	..	486
Jay Co. Ag'l, Hort'l & Indust'l J't St'k Co	62	1	37	45	48	55	248	77	93	63	182	16	..	210	22	916
Jefferson Co. Grange Jub. A. & M. Ass'n	116	10	77	40	40	24	245	35	88	78	214	..	..	72	..	782
Knox County Ag'l & Mech'an'l Society	323	25	114	53	51	181	748	296	178	384	198	536	..	..	..	2,540
Lagrange County Agricultural Society	167	50	72	80	30	41	800	13	80	24	63	38	..	63	..	568
Lake County Agricultural Society	179	1	66	27	50	36	359	12	33	18	74	13	..	24	..	533

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA—Continued.

NAME OF SOCIETY.	ENTRIES.													Total.		
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Agricultural.	Horticultural.	Textile Fabrics.	Fine Arts.	Natural History.		Miscellaneous.	Special Premiums.
Laporte County Agricultural Association	147	4	27	22	32	21	253	61	82	92	136	53			140	821
Madison Co. Joint Stock Ag'l Society	165		52	105	79	239	610	58	163	353	460	112				1,438
Marion Co. Ag'l & Horticult'l Society	4		6	4	3	17	17		136	71	138			107		351
Montgomery Co. Agricultural Society	486	20	126	108	196	327	1,263	374	298	90	92	326	174		8	2,527
Noble County Agricultural Society	150		33	35	17	12	251	20	119	125	230	40				771
Parke County Agricultural Society	182	10	37	23	89	4	351	102	95	170	35	220			16	989
Perry County Fair Association	169	13	5			4	191	10	30	75	77			29	15	427
Perry County Ag'l & Mechan'l Ass'n	99	2	3		2	7	113	20	330	50	160			136		809
Pike County Agricultural Society	177	16	27	32	27	48	430	20	233	37	102			237		1,059
Porter County Agricultural Society	97		40	27	28	11	203	29	55	9	27	24		46		383
Ripley County Agricultural Association	146	20	58	54	65	25	359	11	156	43	322	9		33		932
Rush County Agricultural Society	231	17	102	59	70	118	567	42	230	48	374	73		62		1,426
Shelby County Joint Stock Ag'l Ass'n																
Stauben County Agricultural Association	112		52	61	51	22	298	63	896	212	287	33	6	35		1,870
Tipton County Fair Company	257	16	52	62	116	40	543	36	174			746		29		1,519
Vigo County Agricultural Society	162	12	51	21	49	30	325	28	61	38	60	39		446		1,192
Wabash County Agricultural Society	368	15	77	63	104	65	692	75	180	28	463	50		57	5	2,030
Warrick County Agricultural Society	197	20	49	23	11	49	349	19	30	40	192	12		192		985
Washington Co. Ag., Hort., M. & I., Ass'n	408	36	45	64	69	19	657	25	246	17	97	141		369		1,544
Wayne County Ag'l & Hort'l Society									43	67	8	2		11		131

DISTRICT AGRICULTURAL ASSOCIATIONS.

NAME OF SOCIETY.	ENTRIES.													Total.		
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Agricultural.	Horticultural.	Textile Fabrics.	Fine Arts.	Natural History.		Miscellaneous.	Special Premiums.
Acton District Association	114	7	42	98	98	24	243	37	171	40	218	3	..	15	11	785
Bridgeton Union	112	18	16	51	65	6	281	19	128	67	133	227	..	..	..	857
Cambridge City A. H. & M. Association	67	1	36	13	17	76	291	40	15	5	..	..	..	..	5	296
Edinburg Union Agricultural Society	190	17	40	32	33	38	270	126	585	..	836	..	..	54	..	962
Eastern Indiana Agr'l Association	127	..	73	60	48	119	427	23	595	..	496	99	22	..	..	1,716
Fairmount U. J. S. Agr'l Association	269	8	105	34	54	169	570	75	109	80	235	73	..	..	..	1,142
Francesville Agricultural Society	114	2	21	5	6	18	166	..	169	3	100	..	..	7	..	445
Knightstown Union Agr'l Association	210	25	126	42	95	120	638	50	50	100	50	30	10	..	..	1,526
Lawrence District Fair Association	151	3	67	61	30	63	375	..	310	133	502	..	20	342	..	1,682
Longview Agr'l & Mech'l Association	130	27	87	41	68	17	373	..	40	170	287	64	..	38	..	599
Minuti & Fulton Co. Distr. Fair Society	76	2	36	24	21	15	174	..	214	127	71	..	..	11	..	595
New Ross Agricultural Association	281	10	29	37	57	10	424	..	239	52	187	25	..	..	..	977
Northeastern Ind. Agr'l Association	132	..	60	60	39	138	421	171	608	520	432	58	11	..	..	2,221
North n. Ind. & South'n Mich. Agr'l So.	190	11	32	32	38	38	..	100	230	44	259	44	..	92	..	2,100
Switzerland & Ohio Agr'l Society	162	38	29	36	40	80	385	..	..	..	..	..	..	451	..	1,110
Southeastern Indiana Agr'l Society	230	12	55	52	58	39	446	14	51	76	171	15	..	41	..	836
Wayne, Henry & Randolph Agr'l Society	247	21	80	60	50	136	604	25	364	21	380	63	..	143	..	1,260
Xenia Union Agr'l and Hort'l Society	247	21	80	60	50	136	604	25	364	21	380	63	..	143	..	1,260

EXHIBIT OF THE AGRICULTURAL SOCIETIES OF INDIANA, 1884.

NAME OF SOCIETY.	PREMIUMS PAID.													Total.
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Agricultural.	Horticultural.	Textile Fabrics.	Fine Arts.	Natural History.		Miscellaneous.	Special Premiums.
Indiana State Board of Agriculture	\$3219	\$157	\$2977	\$663	\$878	\$316	\$8110	\$25	\$451	\$961	\$755	\$134	\$119	\$10414
Blackford Co. Agr., Hort. and Merch. Ass'n	216	28	98	32	43	37	453	13	23	13	20	612	24	1664
Boone County Stock Agricultural Society	865	53	256	108	108	10	1400	81	103	19	157	15	100	1899
Cass County Agricultural Association	1159	7	282	91	87	78	1701	71	86	63	12	45	292	2214
Clark County Agricultural Association	161	21	79	21	30	7	319	36	9	15	33	5	39	486
Clinton County Agricultural Society	1086	40	402	97	131	46	1805							2573
Dearborn Co. Agricultural Association	1078	68	371	105	931	31		162	19	8			370	2446
Decatur County Agricultural Society	191	18	283	177	128	33	1632	89	66	58		122	26	1993
Delaware Co. Agr. and Merch. Society	253	26	237	81	137	37	1466	37	92	50	163	41		1719
Fayette County Fair Association			146	65	31	5	517	42	57	38	42	5	4	705
Fulton Co. Jr. S. Agr. and Mech. Society			217	115	112	89	1259	81	60	38	106	23		2538
Gibson County Hort. and Agr. Society	687	9	362	69	168	36	1530	25	118	17	121	32	46	1612
Grant Co. Agr. and Stock Association	830	45	362	69	168	36	1530	25	118	17	121	32	29	1897
Hamilton Co. Agr. and Fair Association	889	54	217	92	131	82	1415	91	95	41	59	49	7	1914
Harrison County Agricultural Society			266	125	104	28	1136	39	27	39	161	3	1	1406
Henry County Joint Stock Agri. Society			202	73	98	11	883	33	12	38	83	27	21	1097
Hendricks Co. Hort. and Agr. Society	486	13	328	91	199	40	1966	400	239	263	158	54	207	400
Howard County Agricultural Association	422	16	328	91	199	40	1966	400	239	263	158	54	207	400
Huntington County Agricultural Society	671	15	107	50	16	9	868	45	20	14	46	46	935	1004
Jackson County Agricultural Society			178	73	138	52	667	92	52	43	76	6	108	1511
Jay Co. Agr., Hort. and Indus. Jt. St'k. Co			44	30	20	7	176	15	15	14	28		10	258
Jefferson Co. (Grange) Jub. A. and M. Ass.	65	10	44	30	20	7	176	15	15	14	28		10	258
Knox Co. Agr. and Mechanical Society	1220	68	637	178	125	216	2465	147	66	156	163	207		3144
Lagrange County Agricultural Society			184	52	98	23	776		26	26	51	26	39	763
Lake County Agricultural Society	419	5	184	52	98	23	776		26	26	51	26	39	938

Laporte County Agricultural Association	621	12	155	45	80	14	927	108	31	44	136	77	92	1518
Madison Co. Joint Stock Agri. Society	1039		311	191	223	135	1899	107	71	102	214	43		2436
Marion County Agri. and Hort. Society	16		20	8	6	50	24	22						10
Montgomery County Agricultural Society	4460	30	1576	342	453	290	7151	182	201	112	68	125	52	7925
Noble County Agricultural Society	1502		121	62	39	14	1738	20	45	38	80	26		2012
Parke County Agricultural Society	325	34	211	64	101		765	41	24	60	22	75		1287
Perry County Fair Association	44	8				1		7	7	33	40		10	160
Perry Co. Agri. and Mech. Association	140	6	5		4		150	12	30	10	70			312
Pike County Agricultural Society	473	85	122	43	104	31	1988	20	78	34	72		61	1933
Porter County Agricultural Society	627		89	52	43	7	818	37	25	11	21	10	29	913
Ripley County Agricultural Association	1401	47	346	154	184	25	2157	45	126	36	134	8		2461
Rush County Agricultural Society							2293	274					399	2986
Shelby Co. Joint Stock Agricultural Ass'n														
Stauben County Agricultural Association	235		114	79	81	11	517	16	111	85	130	23	8	1410
Tipton County Fair Company														1627
Vigo County Agricultural Society		63	670	150	340	45	2692	105	133	39	179	17	147	2870
Wabash County Agricultural Society	824													2741
Warrick County Agricultural Society	524	85	214	67	32	55	1025	40	32	85	109	15	100	1397
Washington Co. A., H., M., and Int. Ass.	1101	70	161	85	138	15	1595	40	46	10	52	55	64	1863
Wayne County Agri. and Hort. Society								8	24	4	3		5	44

DISTRICT AGRICULTURAL ASSOCIATIONS.

NAME OF SOCIETY.	Horses.	Jacks and Mules.	Cattle.	Sheep.	Dogs.	Poultry.	Total Live Stock	Mechanical.	Agricultural.	Horticultural.	Textile Fabrics.	Fine Arts.	Natural History.	Miscellaneous.	Special Premiums.	Total.
Acton District Association	221	14	24	25	49	15	378	31	36	9	38	108	..	6	24	492
Bridgeton Union	506	30	91	42	88	5	762	..	29	34	69	..	..	..	..	1,043
Cambridge City A. H. and M. Association	1,280	25	265	175	112	87	2,028	..	87	12	7	..	..	..	..	2,149
Edinburg Union Agricultural Society . .	1,258	75	345	164	176	36	2,654	155	91	..	97	..	..	..	..	2,838
Eastern Indiana Agricultural Association	334	..	332	132	84	38	950	25	81	..	125	54	29	17	54	1,333
Fairmount Union Joint Stock Agr'l Ass'n	402	21	318	54	51	102	949	131	52	33	155	59	..	520	..	1,889
Francesville Agricultural Society	315	9	43	9	16	10	402	210	61	2	45	..	..	10	..	519
Knightsdown Union Agricultural Ass'n . .	575	90	360	140	200	75	1,450	..	250	130	170	50	40	10	..	2,300
Lawrence District Fair Association	470	4	91	67	59	16	710	..	40	23	60	..	10	..	..	843
Loogootee Agricultural and Mechanical Ass'n	771	34	228	49	68	17	1,167	..	18	120	247	83	..	20	..	1,655
Miami and Fulton Co. District Fair Ass'n	57	3	37	10	13	5	124	..	20	14	7	..	..	2	..	167
New Ross Agricultural Association	1,132	31	313	85	111	7	1,539	81	71	40	88	22	..	..	..	1,961
Northeastern Indiana Agricultural Ass'n .	1,213	..	131	72	99	52	1,586	..	86	97	187	42	22	..	..	2,101
North, Ind. and Sou. Mich. Agr'l Society	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7,000
Switzerland and Ohio Agricult'l Society	825	37	187	68	103	28	1,250	194	158	25	141	43	..	62	..	1,873
Southeastern Indiana Agricult'l Society	630	75	140	73	65	36	1,649	..	..	..	..	..	..	300	1,000	2,949
Wayne, Henry and Randolph Co. Agr. S'y.	167	11	71	61	61	15	387	..	28	12	29	100	..	16	..	556
Xenia Union Agr'l and Hort'l Society.	74	11	32	18	15	20	180	..	..	..	..	..	..	..	84	1,800

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA, 1884.

NAME OF SOCIETY.	RECEIPTS.						DISBURSEMENTS.						Total.
	Admission Fees.	License Fund.	Entry Fees.	Privileges.	All Other Sources.	Total.	Rents and Old Claims.	Improvements.	Salaries.	Premiums Paid.	Expenses of Fair.	All Other Expenses.	
Indiana State Board of Agriculture	\$20,000	.	\$1,350	\$2,410	\$11,481	\$35,291	.	\$3,899	\$1,650	\$10,414	\$4,241	\$7,136	\$27,341
Blackford Co. Agr'l, Hort'l and Mech'l Asso	628	15	124	185	50	1,092	318	.	175	664	140	140	1,052
Boone County Stock Agricultural Society	2,713	.	6	650	146	3,515	.	175	180	1,890	168	.	2,415
Cass County Agricultural Association	3,051	.	478	628	391	4,551	664	283	300	2,214	393	.	4,465
Clark County Agricultural Association	639	.	174	90	118	1,040	.	180	486	300	.	.	950
Clinton County Agricultural Society	3,285	.	351	635	391	4,672	.	.	.	2,573	1,334	538	4,436
Dearborn County Agricultural Association	2,689	5	457	1,610	245	5,007	.	1,107	.	2,808	987	.	4,903
Decatur County Agricultural Society	2,187	.	345	505	190	3,227	.	557	130	2,743	391	528	4,149
Delaware County Agr'l and Mech'l Society	2,692	25	92	552	153	3,514	42	140	100	1,393	737	502	3,514
Fayette County Fair Association	2,206	.	450	691	120	3,477	200	168	.	1,749	250	60	2,437
Fulton Co. Joint Stock, Agr'l and Mech'l So	1,446	5	48	144	615	2,293	777	600	240	705	274	.	2,297
Gibson County Hort'l and Agr'l Society	3,251	10	63	591	1,498	5,414	.	800	140	1,918	1,285	.	4,173
Grant County Agr'l and Stock Association	1,160	.	338	179	700	2,377	.	700	168	1,612	177	150	2,845
Hamilton County Agr'l and Fair Assoc'n	2,233	.	170	406	190	2,999	50	500	250	1,897	390	140	3,137
Harrison County Agricultural Society	2,579	.	.	416	1,936	4,982	725	700	.	1,943	650	358	4,376
Henry County Joint Stock Agr'l Society	1,689	.	183	147	74	2,093	.	30	.	1,370	452	.	1,862
Hendricks County Hort'l and Agr'l Society	235	34	28	6	28	302	25	250	.	25	25	157	450
Howard County Agr'l Association	1,267	50	180	211	190	1,887	300	100	260	1,097	130	.	1,887
Huntington County Agr'l Society	3,463	.	837	915	2,213	7,438	76	938	175	2,366	972	.	4,527
Jackson County Agr'l Society	685	25	280	415	.	1,416	71	.	60	1,003	372	10	1,416
Jay Co. Agr'l, Hort. and Ind'st Ju. Soc'y Co.	1,879	5	380	276	287	2,827	.	293	545	1,510	307	14	2,689
Jefferson Co. Grange-Jubilee Agr'l & M. Asso	677	.	52	48	777	1,984	.	50	.	400	400	69	2,777
Knox Co. Agr'l and Mech. Society	4,414	80	705	1,725	3,590	10,425	.	3,960	571	3,144	813	943	9,431
Lagrange County Agr'l Society	721	18	120	122	61	1,042	.	.	85	229	777	.	1,991
Lake County Agr'l Society	1,177	.	288	186	237	1,887	66	.	85	1,261	127	119	1,638

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA, 1884—Continued.

NAME OF SOCIETY.	RECEIPTS.						DISBURSEMENTS.						Total.
	Admission Fees.	License Fund.	Entry Fees.	Privileges.	All Other Sources.	Total.	Rents and Old Claims.	Improvements.	Salaries.	Premiums Paid.	Expenses of Fair.	All Other Expenses.	
Laporte County Agr'l Association	\$1,605	\$75	\$343	\$141	\$910	\$2,974	\$125	\$976	\$151	\$1,518	\$368	\$1,738	\$5,013
Madison Co. Joint Stock and Agr'l Society	3,847	45	308	1,037	500	5,767	355	355	478	2,436	457	18	5,689
Marion Co. Agr'l and Hort'l Society	290	90	1,611	985	180	11,298	..	..	400	7,925	320	..	178
Montgomery Co. Agr'l Society	8,402	90	677	280	240	2,765	236	..	150	2,012	306	61	8,645
Noble County Agr'l Society	1,517	50	..	..	..	..	..	..	..	..	..	..	2,705
Parke County Agr'l Society	1,711	30	120	235	208	2,204	617	48	60	1,287	278	..	2,290
Perry County Fair Association	985	..	..	356	58	797	5	448	25	373	577	..	1,228
Perry County Agr'l and Mech'l Association	424	..	..	135	164	733	..	6	..	312	125	202	645
Pike County Agr'l Society	2,215	10	581	927	144	3,877	..	475	325	1,933	454	150	3,337
Porter County Agr'l Society	1,550	..	220	276	..	2,185	..	..	..	..	..	..	2,100
Ripley County Agr'l Association	2,956	..	604	1,100	479	5,269	..	300	50	2,461	2,200	..	5,011
Rush County Agr'l Society	3,767	..	437	1,366	572	6,043	..	1,563	331	2,966	220	237	5,118
Shelby County Joint St'k Agr'l Association	2,003	..	454	1,395	4,436	6,289	..	400	..	4,925	4,925	..	5,325
Stauben County Agr'l Association	2,003	25	175	320	178	2,701	..	1,406	75	1,410	254	342	3,087
Tipton County Fair Company	2,211	337	68	1,640	..	2,780	300	912	..	1,627	..	..	2,738
Waco County Agr'l Society	2,174	90	500	422	2,166	5,392	1,265	284	231	2,831	713	110	5,535
Wabash County Agr'l Society	3,538	45	503	611	370	5,608	288	306	420	2,741	834	115	4,704
Warrick County Agr'l Society	1,455	15	205	..	..	1,290	35	570	130	1,387	..	..	1,362
Wash. Co. Agr'l, Hort'l, Mech. & Ind'l. Asso	1,947	69	343	486	175	3,000	273	256	150	1,862	351	107	3,000
Wayne County Agr'l and Hort'l Society	23	..	21	..	..	113	..	..	..	44	..	60	104

DISTRICT AGRICULTURAL ASSOCIATIONS, 1884.

NAME OF SOCIETY.	RECEIPTS.					DISBURSEMENTS.						Total.
	Admission Fees.	License Fund.	Entry Fees.	Privileges.	All Other Sources.	Rents and Old Claims.	Improvements.	Salaries.	Premiums Paid.	Expenses of Fair.	All Other Expenses.	
Acton District Association	\$843	..	\$103	\$46	\$128	\$50	\$1,000	\$75	\$492	\$150	\$50	\$1,817
Bridgeton Union	1,052	..	114	239	57	..	100	50	1,034	267	..	1,451
Cambridge City A., H. and M. Ass'n	1,800	..	480	175	75	..	200	150	2,119	480	150	3,084
Edinburg Union Agricultural Society	1,683	\$960	585	58	302	270	2,397	419	2,397	419	..	3,262
Eastern Indiana Agricultural Ass'n	3,872	..	245	845	..	..	2,150	75	2,363	719	..	5,308
Fairmount U. J. S. Agricultural Ass'n	2,068	306	521	..	137	44	..	144	1,889	422	..	2,465
Francesville Agricultural Society	391	..	126	132	8	..	22	..	519	70	..	656
Knightstown Union Agricultural Ass'n . . . . .	..	..	..	..	4,325	..	..	..	2,300	1,500	400	4,300
Lawrence District Fair Association	915	..	111	115	142	27	325	40	915	110	..	1,307
Leogootee Ag'l and Mech. Association	1,446	25	308	537	30	..	50	150	1,635	181	110	2,146
Miami and Fulton District Fair Society	250	25	57	14	..	..	62	10	167	73	6	317
New Ross Agricultural Association	2,023	..	228	506	623	200	202	483	1,980	203	235	3,374
Northeastern Indiana Ag'l Ass'n	2,471	15	..	785	1,140	35	191	225	2,101	1,779	..	4,332
Northern Ind. and Southern Mich. Ag'l Soc. . . . .	..	..	..	..	14,330	..	..	..	..	..	..	12,542
Switzerland and Ohio Agricultural Society	1,871	..	369	415	327	119	300	340	1,873	298	241	3,172
Southeastern Indiana Agricultural Society	1,840	..	205	400	600	30	100	50	2,349	247	..	3,069
Wayne, Henry and Randolph Co. Ag'l Soc.	577	..	..	68	147	..	61	..	436	..	..	708
Xenia Union Ag'l and Hort'l Society	1,546	..	264	648	166	41	185	375	1,800	130	33	2,581
Total.	\$690	\$690	\$128	\$46	\$128	\$50	\$1,000	\$75	\$492	\$150	\$50	\$1,817

SHORTHORN BREEDERS.

The annual meeting of the Indiana Shorthorn Breeders was held in the rooms of the State Board of Agriculture, in the city of Indianapolis, January 27 and 28, 1885. In the absence of the President, Hon. W. W. Thrasher, the Vice-President, Hon. Robert Mitchell, took the chair and called the meeting to order.

Mr. J. W. Robe, the Secretary, moved that the calling of the roll be dispensed with, owing to the extraordinary snow storm and delayed trains. The motion was seconded and adopted.

The morning session was informal and an occasion of social greeting and cordial hand-shaking, without entering upon any regular routine of business.

AFTERNOON SESSION.

The convention met at 2 o'clock, Vice-President Mitchell in the chair.

Mr. W. J. Carter, of Westfield, Ind., was appointed to make a short-hand report of the proceedings of the meeting.

Mr. J. A. Thompson, Edinburg, Ind., then read a paper on

THE EARLY MATURITY OF THE SHORTHORNS AS COMPARED WITH OTHER BREEDS.

The subject assigned me is "Early Maturity of Shorthorns as Compared with Other Breeds."

I realize the fact that I am not as well qualified as many others of this convention to do this subject justice, not having had the experience in the breeding and handling of many of the improved cattle breeds of the country.

My experience in breeding and handling cattle is confined to Shorthorns, grade Shorthorns, so far as the beef breeds are concerned. In my experience in the breeding, rearing and feeding cattle, the fact has been fully demonstrated to me that the Shorthorn is a very valuable improvement on the common stock of the country. His early maturity, rapid growth, greater weight, smaller shrinkage, much larger percentage of dressed beef to live weight in young as well as old animals, and beef of a better quality, being better matured and selling for more

money in market, tend to make the Shorthorns pre-eminently the best early maturing beef cattle of the country. For some years I have been breeding Shorthorns and grade Shorthorns, rearing and feeding them with the common steers of the country, all grazed and fed together. I have invariable found the Shorthorns and grades far more profitable than the common cattle. More profitable to the breeder, the feeder, the shipper and the butcher. To the breeder in having an animal susceptible of being converted into much more money in much shorter time; to the feeder in having an animal of more rapid growth, greater weight on same feed, and an animal that will fatten and mature at a much earlier age than any other breed of the country, and when ready for the shipper (at the same age and feed as other breeds) will weigh from 30 to 50 per cent. more and sell in the best markets of the country 25 to 30 per cent. higher than the common cattle of the country. The shipper having an animal more docile to handle it can be shipped more cheaply, being able to put more tons in a car, there is much less shrinkage in shipping, and when in market, the Shorthorn always sells more rapidly and brings better profits to the shipper. For the butcher and consumer we have an animal better matured at an early age, one that will dress 65 to 75 per cent. net beef to live weight, the beef being far superior in every respect to that of the common stock; a nice, well fattened, juicy, tender marbled beef, selling more readily and bringing more money.

My experience in breeding and feeding Shorthorns is, that at thirty months old a fairly good Shorthorn steer reasonably well reared, with one season good feeding, will weigh from 1,500 to 2,000 pounds, while the common stock steer at same age with same rearing, and same feeding, will weigh some 1,200 to 1,500 pounds (and perhaps less), a difference of at least 300 pounds in weight; and when you sell you will get at least \$1 per 100 pounds more in price in favor of the Shorthorn, giving you a profit of \$30 to \$35 against the common stock steer, a very fair showing for the early maturing Shorthorn over the common stock of the country.

I can see nothing the Shorthorns have to fear from their rivals, other improved cattle breeds of the country, to-wit: Angus-Aberdeens, Herefords, Galloways, or Holsteins, for where equally well kept the Shorthorns are superior to all other breeds; all recognize the fact (and the fat stock show at Chicago has fully confirmed this fact) of the superb beef productiveness at any age of the Shorthorn. The claim that he puts in is, "The best beef beasts in the world." This claim is based on "early maturity, rapid growth, great weight, small shrinkage, and superb carcass." I am fully satisfied that the several fat-stock shows at Chicago, where the rival beef breeds of the world have all come in competition (and the very best have been there), that I am fully justified in the claim made for the early maturity of the Shorthorn over all other beef breeds of the country. Compare, if you please, the Shorthorns with the Angus-Aberdeens and the Herefords at the fat-stock show at Chicago. Take Black Prince, probably the very best Angus-Aberdeen bullock ever shown at any fat-stock show, he having been imported from Europe at a great expense for the express purpose of competing against the Shorthorns at Kansas City and Chicago. When shown at Chicago, in the grand sweepstakes ring, in company with Netherwood Jock, and other Polls, with Artless, Prince, and Rosy Duke, and other Herefords, with Clarence Kirklevington, Charles Ross,

Swift, and other Shorthorns, the Shorthorn bullock, Clarence Kirklevington (a younger, though heavier and better matured animal than the imported Black Prince), took the championship premium over all his competitors. This champion Shorthorn was shown at three successive fat-stock shows in Chicago, always taking the first honors over all other breeds. He was shown first as a yearling, weighing at that time 1,620 lbs.; next at two years old, weighing 2,048 lbs.; then at three years old, weighing 2,400 lbs., here establishing the superiority of the Shorthorns for early maturity.

The grade Shorthorn steer, Charles Ross, the winner of first premium and sweepstakes premium for all grades of all breeds and crosses at Chicago, the past season, shows a daily gain of 1.81, while Black Prince shows a daily gain of 1.43; Netherwood Jock (an Angus) shows a daily gain of 1.35, all three years old. Orio, a yearling Shorthorn, shows a daily gain of 2.50, while the next best yearling slaughtered was a Hereford, Joseph, showing a daily gain of 2.22. We will take the yearly gains of the beef breeds shown at Chicago. The Shorthorn steer, "Storm," at two years old weighed 1,515 lbs., at three years old weighed 2,060 lbs., a gain of 545 lbs. The champion Shorthorn steer, McMuller, at two years old weighed 2,095 lbs., at three years old weighed 2,560 lbs., a gain of 465 lbs. The Shorthorn steer Schooler, made a gain last year of 612 lbs., while the Hereford steer, Benton's Champion, made a gain of 390 pounds. The Hereford steer Tuck made a gain of 485 pounds. Again, take the average weight of two-year-olds shown at five successive fat stock shows at Chicago.

Two-year-old grade Shorthorns average 1,702 lbs.; two-year-old Shorthorns average 1,670 lbs.; two-year-old Herefords average 1,577 lbs.; two-year-old Devons average 1,113 lbs.

Early maturing Shorthorn largely ahead in the two-year-old ring.

Take the one-year-olds shown at Chicago for five successive years: One-year-old Shorthorns average 1,382 lbs.; one-year-old Herefords average 1,225 lbs. Again you see the superior early-maturing Shorthorn largely in the lead.

In all the tests made at the fat stock shows at Chicago competing against the very best Angus-Aberdeen, Herefords, Holstein, and Galloways that could be found in the country, the Shorthorn has fairly and firmly established his superiority over all other breeds of beef cattle for early maturity, rapid growth, superb carcass, and largest percentage of dressed beef to live weight.

DISCUSSION.

Mr. Mitchell. Gentlemen, you have listened to Mr. Thompson's very interesting paper, and now the subject is before you for discussion. Remember that these meetings are just what you make them, and that the best work of such meetings consists in the free discussion of all subjects submitted for your consideration. Let us hear from you.

Dr. Forsythe. I will venture to make some suggestions in regard to the methods of some of our home breeders which I think deserve criticism. Why is it that while we have among us in Indiana, many excellently well-bred young bulls, whenever one of our breeders wants to add a bull to his herd, he thinks it necessary to

go to Kentucky or Canada or somewhere else to get one? Why indulge, as some do, in a prejudice against the Seventeens, than which no better cattle ever lived. When I went to Kentucky first, many years ago, to get some fine Shorthorn stock, Mr. Warfield told me not to get any unless they had some "Seventeen" blood in them, and yet, as soon as they got rid of them over there, then there was something better. I do not believe in these fancies of some special families, for which men will pay extravagant prices. Again, as to color, we indulge in ridiculous fancies and disparage any but all reds, yet in England the record of the prizetakers at their shows, proves that red is not there regarded as an essential. I should like to see this association condemn these strange and unnecessary fancies.

Judge E. B. Martindale. I do not think that a paper, such as Mr. Thompson's, should be passed by the association without a conversational discussion. I think the paper is a good one, and seems to me pretty largely made up of the result of the Fat Stock exhibition. Of course, that is the best possible way of demonstrating and bringing the animal into test. There is one point absolutely not demonstrated in the test that I would like to hear discussed, that is, the increase under the same food. These animals brought together have not been given the same food, and I do not learn from the paper what food they have been fed on. They claim for the Hereford breed that it will accumulate flesh far more rapidly than the Shorthorns if you confine it to grass alone; upon that I would like to hear some discussion. The cross bred Hereford-Angus took the gold medal at the Kansas City show, but the prize did not go to the best animal, as afterwards demonstrated. I am prejudiced in favor of the Shorthorn, and think the Shorthorn men are in the lead. They are benefactors to the farming interests of the State of Indiana, and the more information they can furnish the better it is for the community.

J. A. Thompson. In comparison at the Fat Stock Show, Clarence Kirklevington beat anything that came into competition, from one year up

Judge Martindale. Is the increase in weight more from one to two years old or from two to three years old?

Mr. Thompson. The increase is greater on a young animal than on an older one.

Mr. Mitchell. I served on a committee for that purpose at Chicago; the amount of feed and the weights were not correctly kept. The best we could learn there is, that the most profit was realized from one to two years old. I would like to know how Clarence Kirklevington was fed; he ran far ahead of his competitors.

Judge J. S. Buckles. I would like to say in this connection that the Shorthorn men are ahead in Indiana, and in my opinion, it is our fault more than anybody else if we do not keep ahead. We don't talk enough or write enough. We should infuse more life into the attendance, and those qualified to write essays should write them, and by a united effort, I think we may be able in a short time to make the Shorthorn interest in Indiana better than it is. For one, I feel like taking action in reference to these matters. I do not know any better way than for each one to feel that the responsibility rests upon his shoulders and lay to work with a will. I think we should say something more about the different kinds of feed.

Judge Martindale. I would like to have the experience of these gentlemen here as to how they feed to get the best results. This is the way in which we can get useful information on this subject.

S. F. Lockridge. It is a very broad subject; it is as broad as the universe, because we have cattle scattered all over the world. I am not prepared to stand up here and say that the Shorthorn cattle are the best beef producing cattle to the given amount of food. In America we are not prepared to say much upon that subject. Our Fat Stock Show at Chicago is a new institution, but is growing rapidly, and, I trust, in time will give us much information on this subject. In England they know more on this subject than we do. The great Smithfield show and some others have been run for one hundred years. I can not agree altogether with Mr. Thompson, that some kinds of cattle shown at Chicago are better than others. We do not know how much it costs when you bring the animal into the ring. As here, so at Chicago, the results of care and feeding the Shorthorn, Hereford and Polled Angus stand out in the different breeds. The flesh on one of those animals may have cost twice as much as the others. They can not get reliable facts in feeding animals to that point by the pound. They can tell how much they put on in twelve months, but as to quality of feed, it has never been brought out very accurately. They have a system of feeding at Bow Park which is widely different from the way we feed here. They feed turnips, mangel-worzel and clover hay. Here, we feed Indian corn cut up in the shock, and some of us grind feed and make a kind of mash, which is good feed. Mr. Gillet, of Illinois, never houses an animal until it goes to the shambles. He lets it run out in the open fields and have rough fare until two years old, he then puts it on pasture and gives it all the Indian corn it can eat, feeding on this winter and summer. We don't know how much it costs to put that meat on, but it don't cost as much as at Bow Park, because they were housed. There they feed eight months in the year, while we only feed five. I feed in the barn, turning out during the day and keeping them up of nights. I grind my corn feed, giving about a peck of meal a day. When I feed my steers shock corn I aim to feed one-third of a bushel a day, which is about forty or fifty bushels a year, then put them on grass and finish; it makes fat cattle. It is easier to put on fat in summer than in the winter, as much of this feed necessarily has to go to keep up heat in the winter. Where you take the Shorthorn as general purpose cattle, it is the best in the world. The Shorthorns are a good beef-producing animal, and possess excellent milking qualities. Fifty or one hundred years ago they were the best milkers. If they are not so now, it is because we have not taken care of them. They have become acclimated, and breed in almost all quarters of the world—in France, Germany, Australia and South America. Taking all these considerations together, the Shorthorns are the best cattle in the world. I am not prepared to say which will put on the most flesh to the given amount of food. Some think they are good for the plains, but I am inclined to think that they are not as well adapted to that part of the country as some other breeds.

J. A. Thompson. I would state that I have one thoroughbred steer, Shorthorn, two years old, castrated because he was of bad color. The first year I let him run with the stock cattle. The second year I fed him, and two years old past he weighed 1,850 pounds. He is now three years old, and weighs something over a ton. He had rough feed the first year, but the second year little extra attention was given him. I usually feed mill and starch feed. This steer had starch feed and bran. I had a three-year-old that I fed two years and was slaughtered here by Mr. Kingan. It

was the nicest marbled meat I have ever seen. It was seven-eighths grade, Short-horn. My opinion is that to get first-class marbled beef you have to feed your cattle longer. You can not make good marbled beef short of one year's feeding. You can make cheaper beef in the summer by letting them run on blue grass pasture.

Walter Quick. I am much interested in the reading of this paper. In the last Breeders' Gazette I see an article from Mr. Culbertson regarding the award given at the late Fat Stock Show. He went on to say that Clarence Kirklevington was not what he was represented to be. At the Pacific Hotel they found the beef of poor quality, and the greater portion of the carcass was returned to the butcher who sold it to them. The reading of this article makes it of interest to know what is best to feed on to make the animal mature properly. Mr. Thompson's essay has answered some questions brought out by Mr. Culbertson. In reference to the steer spoken of being two years old and weighing 1,800 pounds, the heaviest two-year-old ever exhibited at the Fat Stock Show was one that Mr. Pickeral raised, which weighed 1,830 pounds, and the heaviest I ever read of at just two years old weighed 1,856 pounds.

The following address was then read on the

CONTAGIOUS DISEASES OF CATTLE.

BY DR. J. ELLIOTT, V. S.

Mr. President and Gentlemen: The subject which I have been requested to read a paper on to-day is Contagious Diseases in Cattle. As this is a class of diseases, for it embraces many which has been causing death and destruction to the bovine species of domestic animals, at various times, and different parts of Europe, for nearly two hundred years, and in America for nearly ninety, and to give you a description of the many diseases which are contagious in the bovine race, it would be taking up too much valuable time here to-day; and in order to be as brief as possible, I have selected the ones most prevalent and disastrous in this country and in Europe, and ones most interesting to the stockraiser at the present time, namely: Texas or Splenic Fever, Epizootic, Apatha, or mouth, and foot disease, and contagious Pleuro-Pneumonia.

A disease called splenic apoplexy, having pathological resemblance to our Texas fever broke out in England, as far back as 1693, but it was not until 1847, that the pathology of the disease was looked into or investigated. It was found to or rather defined to be, extrarotation and congestion of the spleen, occurring suddenly in animals in a plethoric condition, and dependent on blood changes principally amongst ruminants.

It was in New South Wales the disease was first discovered, and at that time some of the viscera was sent to Liverpool for examination, but, by some mishap, was eaten by some hogs belonging to the keeper of the hospital, causing their im-

mediate death. In 1849 two men contracted the disease from skinning a heifer, and they died. In 1850 it spread into the townships of Liverpool, following the cow pastures to the southward. There one man contracted the disease from skinning a bullock, and died. Sheep were seized with it and died, as did, also, the shepherds who skinned them. As to the cause of the disease at that time, it was discovered to be most deadly and fatal in damp, marshy soil, and lands poorly drained, and during hot seasons. It not unfrequently happened that the first appearance of the disease was not discovered until several of the animals were dead. They were seen apparently healthy in the morning, and dead by noon. The symptoms first presenting themselves were sudden uneasiness. They were excited, eyes prominent, colicky pains, urine high colored and tinged with blood, also the feces, back arched, very weak, and stood leaning against anything near them; pulse weak, hard, feeble and small; breathing accelerated. The animal soon drops, and is seized with convulsive twitchings, froth issued from the nostrils, and death closed the scene, the disease lasting from four to twenty-four hours. Post-mortem examination revealed the spleen of a deep, dark red color, and swollen to three or four times its natural size, weighing from three to four pounds; all the stomach found healthy, except the true digestive stomach, which showed a general redness. The kidneys were dark colored, and occasionally a considerable quantity of serum found in the pericardium. Treatment was not satisfactory, no matter what kind pursued. The best preventive measures adopted were low diet, active exercise, purgatives, and neutral salts in the water to drink. And to show you the resemblance of this splenic fever or apoplexy of Europe has to our Texas fever, we will compare it with the outbreaks in this country.

In 1796 there was an outbreak of cattle disease in Pennsylvania, attributed to infection from a drove of cattle brought from South Carolina in the month of August. There was a weakness of the limbs, inability to stand, and when they fell they would tremble and groan violently. Bloody urine was discharged; bowels costive; kidney found, on post-mortem examination, inflamed (but no mention made of the spleen or notice taken of it at that time). Since that time there has been many outbreaks in many of the Southern States, invariably in the summer months. These outbreaks were characterized by weakness of the limbs, constipation, bloody urine, drooping of the head, and lopping of the ears. Post-mortem revealed the spleen the most conspicuously diseased organ, as was also the kidneys.

It would be useless to go on and recite the many outbreaks from that time on, but the ones of most note occurred in 1856, '67 and '68, when Texas cattle were carried into the herd-growing sections of the West. In the stock-yards of Chicago, in 1868, 161 animals perished in a few days, 925 in a single township, and 400 on a single farm contracted the disease and died, and to Dr. Salmond, of the Bureau of Animal Industry, who deserves credit for his deep researches into the history of the disease, we are indebted for the appearance of the spleen. He says it was the organ, beyond all others, which suffered in Texas fever. He described it in one cow as weighing five and three-fourths pounds, and associated with bloody serum in the pericardium. In two others it weighed five pounds, and four others between three and four pounds. Here is where we get the great resemblance to splenic apoplexy in European cattle.

Dr. Salmond also says he had opportunity of observing the disease in several living animals, and noticed the following symptoms: The sick ones were weak and staggering in their gait; pulse feeble; the breathing hurried and panting; the evacuations from the bowels were either hard or profuse and watery; the urinary secretions were either absent or profuse and bloody, and in his post-mortem of them, the spleen was enlarged, dark purple, and in some, black kidneys, enlarged and congested; the bladder filled with bloody urine.

The medicinal treatment of Texas fever, like all other contagious diseases, is very unsatisfactory. There is no medicine we know of which acts as a specific. Many have been tried. As constipation is more or less present, especially the third stomach; purgatives will be found useful. Occasionally diarrhoea may be present, but that may be owing to irritation of the intestines. At the same time the third stomach impacted, the gall bladder and ducts connected with it are congested, the flow of bile is impeded, which leads to its absorption into the blood vessels and some of the worst features of the disease may be attributed to this mixture of bile with the blood. Sulphate magnesia being the most reliable purgative for ruminants, it may be given in the dose of one pound with four drachms of pulverized ginger dissolved in a quart of warm water. Calomel or aloes may be added. From their specific action on the liver they will be found useful.

After all, some cases recover without any treatment, and many will die in spite of all remedies.

Easily digested food should be given, and all dry and indigestible food avoided. As some outbreaks in all contagious diseases are milder than others, recovery in many cases will take place without treatment. The disease usually passes unnoticed in the Texas cattle, but is exceedingly fatal in northern animals. Contagion takes place through the bowel discharges, and roads, pastures, water courses, etc., become efficient bearers of the virus. It is destroyed at once by frost, and has never been satisfactorily demonstrated to be conveyed from one northern animal to another. Sucking calves and young animals rarely suffer.

Epizootic aptha, commonly called mouth and foot disease, is a contagious eruptive fever, affecting all warm blooded animals, attacking man under certain circumstances, as readily as any of the domestic animals. It consists of an inflammatory affection of the mucus membrane and skin, evidenced by the appearance of vesicles or small bladders, containing a colorless fluid, on the inside of the mouth, around the coronet and in the cleft of the foot, in fact, any part uncovered with hair. This disease first appeared in England in the spring of 1839, and spread rapidly over England, Scotland and Ireland, and remained about two years, when it seemed gradually to wear out, the severity of the disease abating. Since that time they have had repeated returns of the disease, of a more or less general prevalence. Experiments have been made to test its infectious nature, by saturating food with the saliva from infected animals, and feeding it to healthy ones. The effects were developed in thirty-six hours, and as railways, cattle sheds, and even the clothes of the attendants, are means of infection, hence the necessity of Legislative interference in preventing the introduction or removing of diseased animals from one place to another, when by mixing with healthy ones the disease may be carried all over the country.

Contagious matter is discharged with the saliva also from the vesicles which form in the mouth, on the teats and feet. The period of incubation varies from twenty-four hours to three or four days; it sets in with a shivering fit, and vesicle eruptions form in the mouth, around the top of the feet, and in the cleft of the foot, and, in the females, on the teats. The eruption is first indicated by saliva from the mouth, and loss of power in mastication; the pain is intense and on opening the mouth, vesicles are found about the size of a bean; they sometimes congregate in patches, and are also found in the lips and cheeks; in about eighteen hours these vesicles burst, and red spots are exposed, from which in some cases unhealthy ulcers develop. The eruptions on the feet, producing such intense pain, they become lame and scarcely able to stand; and the whole foot may become so inflamed as to end in suppuration of the hoof. In favorable cases all symptoms of fever subside by the fourth day, the appetite is restored, and convalescence well established by the seventh or eighth. But in unfavorable cases, the fever runs high, the ulceration spreads, the animal becomes exhausted, the hoofs slough off, the blood becomes poisoned, and death occurs about the ninth or tenth day; in the treatment of this disease, if the bowels are torpid, a mild purgative may be given, followed by alteratives, but cleanliness of the feet is indispensable; and the animals removed to a dry clean place, the sores dressed with some astringent application, the vesicles in the mouth which have been broken should be dressed, and the mouth sponged with some astringent. But cleanliness should be strictly observed, and all stables and sheds where infected animals have been kept, thoroughly disinfected.

CONTAGIOUS PLEURO-PNEUMONIA.

The early history of this disease is involved in considerable obscurity, and it is impossible to say at what precise date the disease made its first appearance, but, from meagre descriptions handed down to us, there is every reason to believe that a malady similar to pleuro-pneumonia existed within the mountainous regions of Europe in 1693. J. C. Wirth, one of the best authorities in his day on cattle plagues, says it is certain pleuro-pneumonia manifested itself in the years 1713 and 1714 in several parts of Switzerland. The constant spread of the disease from countries in which it rages to others which, prior to the importation of diseased animals, had been free is proven by the fact that it was carried into England by affected animals, from Holland, in 1842. Twelve months after the importation of those animals the disease spread from England to Scotland. A cow shipped to Australia was found to have the disease on landing, but the evil results were confined to its owner's stock, and further spread of the contagion effectually checked. It was introduced into this country by the importation of some cows from Holland, I think in 1842, and we have noticed the many outbreaks up to the present time, the last one occurring last summer, and there is no mistake of its existence at the present time. No disease has given rise to more discussion as to its origin, nature and treatment than this, for it has been a source of great loss to the stock raisers of Europe and America.

The name pleuro-pneumonia signifies an affection of the pleura, or covering, and pneumonia, the lungs, both being implicated. It may be divided into three

stages. First, the incubative or hatching stage, secondary or middle stage, and the fatal stage. The incubative stage is when the disease is making its way silently into the system without any external symptoms. This we know from the fact that animals slaughtered for the market, apparently in good health, and had exhibited no symptoms of any disease when killed, have shown considerable disease in one or both lungs when dead, and to this difficulty of recognizing the affection in its first stage may be ascribed much of the fatality of pleuro-pneumonia, as before any means of preventing its spreading, or curing the diseased ones, can be adopted, it is past medical aid, and has acted as a focus of contagion to the rest of the herd.

This stage may last some days, varying from forty days to two months. In the second stage symptoms begin to develop themselves, though at first slight. The animal looks dull and dispirited, and rumination is suspended; a slight shiver or shaking, probably a little cough, with slight accelerated breathing; if a milker, the supply of milk is suspended. These will be the only symptoms observed, but as the disease advances the cough becomes louder, the pulse is quickened, usually numbering from 80 to 100, and the temperature rises, and all the appearance of acute fever sets in; the breathing becomes accelerated, and with each respiration the animal gives a peculiar, low grunt; the secretions of milk gradually diminish from day to day, until entirely suspended. Digestion is now interfered with, and constipation, sometimes attended with tympanitis, is present. In the last stage the symptoms are distressingly aggravated. The grunt is changed to a loud moan of pain; the breathing is laborious; offensive diarrhoea sets in; the pulse is almost imperceptible; the legs and horns get cold, the abdomen filled with gas, and death quickly takes place. In auscultation, or sounding the chest, which is applying the ear to the sides of the chest, over the region of the lungs. To do this effectually it is necessary to be acquainted with the sounds in the healthy lung. In health, a peculiar sound is heard at each respiration. This is called the respiratory murmur, and is caused by the air passing into the minute structure of the lungs. In the secondary stage, or, in fact, when the disease commences, these sounds change, and are not heard at all, the lungs becoming impervious to air. Percussion, or striking the sides of the chest between the ribs with the ends of the fingers, assists us in detecting the lung which has become solid or hepatized. In health, a hollow sound is emitted, but when hepatized a sensation is given to the hand as if it had struck a solid body. On examination after death the lungs (or oftener one lung) are found enormously enlarged—so much so, in some cases, as to fill up the cavity of the chest. Upon cutting into the substance of the lung, which in health is light and spongy, the cut edges will have a veined or marbled appearance, having abscesses of various sizes, filled with pus or matter. The cavity of the chest is filled with lymph; strings of it cover the pleura and that portion of it lining the ribs, and extending from one to the other. These are infectious as well as contagious diseases—infectious from having the qualities of infection, the thing which taints, poisons or corrupts, communicating it from one to another; contagious from containing or generating contagion that may be communicated by contact from poisonous excreted matter or poisonous exhalation, the containing of which may be propagated and communicated from one to another. As to the causes of those infectious and contagious diseases, all writers on the subject seem to agree,

especially those of them who have made microscopical examination. They have found in the blood a germ, or poison, or organism, in the system of diseased animals, called bacteria, which, when conveyed into healthy animals, produces the same disease.

Dr. Greenfield, of London, an eminent writer on this subject says, in the case of infective disease, it is natural to look to the process of decomposition—and to seek either in the products, or the agents of the decomposition of animal fluids or tissues, the source of contagion—and further, he says, with regard to the specific contagia, the hypotheses most commonly entertained, may be classed into three groups. First, that contagion of any specific disease, consists of some constituent of the body, possessing the power, when transferred to another animal, of setting up a similar disease process. Second, that an organized ferment, produced in the disease, is transferred and sets up the vital change. Third, that some organs having an existence independent of the body, but capable of growing and multiplying within it, and by its growth and reproduction gives rise in some way to the phenomena of the disease.

Owing to the length of time this germ of poison is concealed in the system, working its way silently, without showing any outward symptoms, can it be wondered at, that the whole herd becomes affected with the malady before the owner is aware of its existence, and as there are no sanitary agents which can be relied upon as curatives, hence the necessity of stamping out the disease by the destruction of the animals in which it commences, and Congress should not only be called upon to make laws and devise means of preventing its spreading, but should cause the destruction of all herds in which it exists, and make appropriations paying the owner a reasonable compensation for the loss sustained.

DISCUSSION.

Mr. Mitchell. It is stated in some of the papers that pneumonia can be mitigated by vaccination.

Dr. Elliott. There has been instances of this kind, and attended with considerable success.

Mr. Mitchell. Then you give it as your opinion that it may be done intelligently.

Dr. Elliott. Taking it in time it may be done.

W. R. Goodwin, of Kansas City Indicator. There are a number of papers which deny that there is pleuro-pneumonia in this country.

Dr. Elliott. It has been in some sections of the country, but we do not have it in Indiana.

Mr. Hill, of the National Live Stock Journal. You spoke of inoculation just now. At the stage it is now in, in this country, don't you think it would be the easiest way to effectually suppress it, and then keep it out? Is not inoculation only as a mitigation, a choice of the two evils, and is not the pulse the quickest indication of this disease?

Dr. Elliott. The best test we know of is percussion, or striking the chest with the ends of the fingers.

Mr. Hill. When a herd is not doing well, would it not be the herder's first thing to see if his cattle had fever and send for a professional man?

Dr. Elliott. If disease breaks out, and we could not account for it, it would be important to call in a professional man to make an examination without delay. Every stockman should know where the pulse is located. We can find the pulse under the angle of the jaw on the submanillary artery. You can also find the artery under the forearm. The normal pulse in cows is 38 to 44, in horses 41 to 45. In animals affected by the diseases named the pulse often indicated 80 and 100, even higher.

Mr. Goodwin. Should not every stockman have a clinical thermometer, and know how to use it?

Dr. Elliott. Yes, they should know the temperature of the mouth. When the temperature gets beyond 100 you should call in a professional man.

Mr. Mitchell. I have a bill, presented from Mr. Frazee, asking that we take some steps toward getting a State Veterinarian appointed. We should ask every member of the Legislature to use their influence toward providing a chair of veterinary science at Purdue University, so that those young men can be skilled in animal diseases. The farmers ought to be demanding that this chair of veterinary science be filled. We have had some experience already in this so-called pleuropneumonia, and we want to be informed what the disease is. One of the most important things this meeting can do is to get up a resolution indorsing the statement of Governor Gray in his inaugural address regarding this disease.

Mr. Thos. Nelson. I had something to do with the examination of the bill you had with you, that was endorsed by the State Board of Agriculture, contemplating the appointment of a Veterinary Surgeon connected with the University and to be appointed by the Governor. I like the plan of the appointing power and think good results will come from it. I would have this chair located at Purdue University. The State Agricultural Board recommends persons for trustees of Purdue, but the Governor appoints, and they select instructors for chairs they see wise to form.

Judge Martindale. I warmly advocate the suggestion of the chair—that a skilled veterinarian be appointed by the faculty, like the other professors, at Purdue. Our stock-owners should certainly know enough to feel an animal's pulse or to use the clinical thermometer, and I believe the agricultural students at Purdue should certainly be taught at least the elementary principles of veterinary medicine. On the other hand, I do not believe in a State veterinarian.

Mr. Quick. I concur fully in Judge Martindale's remarks. Having myself been a student at Purdue for two years, I can speak feelingly on the necessity for such a chair. In that respect our college compares very unfavorably with those in our neighboring States, Ohio and Illinois, or even with Colorado.

Mr. Goodwin. In the first place, gentlemen, you want a Professor of Veterinary Science at Purdue, who will devote his whole time to it. I have raised some cattle in Kansas, and while engaged in this business something broke out among our Angus cattle; they all began coughing, and in two days all the herd were affected by it. I telegraphed to Dr. Holcomb, and in twenty-four hours the doctor arrived. He made a thorough examination and gave it as his opinion that the cattle were

affected with the lung worm. Dr. Holcomb makes this a special study, and is going night and day on that kind of business. I can assure you, from personal experience, that he is doing much good there. When the Texas fever broke out they were quarantined and the Governor written to. He checked it at every point and kept it from spreading. A man thoroughly skilled in his profession should be kept to attend to the wants of the farmers. There are not enough veterinary surgeons in the country. Our experience in Kansas, I think, from what I know of this work, has been profitable throughout the State.

The Chair announced as the Committee on Preparation of Programme for the Next Annual Meeting the following: Messrs. Aikman, Cooper and Quick.

Mr. Nelson offered the following resolutions, which were adopted after some discussion:

Resolved, That this convention does hereby endorse the course of all live stock and agricultural journals that have taken an active part in expressing, through their columns, the existence of pleuro-pneumonia and other contagious diseases among the cattle of the country, and their able advocacy of the bill passed at the last session of Congress, known as the Bureau of Animal Industry, which has already proved to be efficient as a step towards the stamping out of said pleuro-pneumonia.

The two others were also adopted without discussion. They read as follows:

Resolved, That the Shorthorn Breeders of Indiana, in convention assembled, are unalterably opposed to the action of the St. Louis convention of cattlemen in their advocacy of a so-called national cattle trail, beginning somewhere in Texas and running to the British possessions, said trail to be six miles in width its entire length, and we hereby instruct our representatives in Congress to use all honorable means to defeat the enactment of such a measure

Resolved, That this convention indorses the action of the representatives of the National Cattle Growers' Convention, Chicago, in withdrawing from the Cattlemen's Convention held at St. Louis last fall, as that convention was sectional in its character, and had for its object the building up of an entirely Western and South-western interest, ignoring the existence of organizations of a central and Eastern character, and having for their object the good of cattle breeders of the nation at large.

The chair announced the receipt of a notice from the Commissioner of Agriculture of an agricultural convention at New Orleans, February 10th, and conveying a cordial invitation from the National Cotton Planters' Association to all agricultural associations to send delegates, with an earnest recommendation from the Commissioner that it be accepted. On motion, the invitation was accepted, and the Hon. Robert Mitchell was appointed the official delegate of the association.

The remaining gentlemen who were to have presented papers to the meeting not having reported, and there being no special business before the meeting, the chairman, Mr. Robert Mitchell, made a warm and earnest address on the apathy that seemed to have settled down upon the Shorthorn breeders of Indiana. He said: In regard to the indifferent manner in which the Shorthorn breeders treat one another, I would like to say a word. I have been a visitor in Kentucky, and I would like to see the fraternal feeling exist among us that prevails there.

When a breeder goes there in search of stock and one man has not got what you want, he does not turn around and try to prejudice you against buying his neighbor's cattle, but takes you in his buggy and drives you to his neighbor, and tries to get you to buy of him. If I have stock to sell and another man is engaged in the same business, it is a part of my duty not to allow that party to go away without buying some of our stock here at home. We should try to build up the Shorthorn interest in our State, rather than to throw up barriers against it. There are fifteen or twenty of our Shorthorn breeders not here to-day, who should be taking an interest in this meeting. Every farmer should have a pure bred Shorthorn bull, or a pure bred bull of some other breed—instead of breeding some scallawag cattle, going to market and bringing three to three and a half cents per pound. It is a shame on the people of this State to take such cattle to the market of Cincinnati and other cities—where it is positively damaging to say that you are from Indiana; it lowers the selling value of your cattle. We should try and correct this and go to work in earnest and get every man to breed Shorthorn stock, and then wherever they sell the cattle, it will speak for the cattle of the State.

In 1883, Mr. Brownlee, of Iowa, showed a fine cow at the fat-stock show at Chicago, and was successful in taking a first prize over Mr. Miller's heifer. The next year I was there, and the very fact of that cow winning that prize, was said by a prominent Iowa breeder, to have been worth millions of dollars to the State of Iowa. Mr. Moberly, of Kentucky, is going to take his herd to New Orleans, and those beef cattle taken there will speak for Kentucky. Mr. Potts is also there with fine cattle, which will speak for Illinois; Mr. H. C. Burleigh is there with one of the finest herds of Hereford cattle ever shown. We want to go to work and popularize the breed of Shorthorns. The Jersey men hold up to the public gaze a cow giving thirty or forty pounds of butter a week. I say now, without the least fear of contradiction, that if we were to quit breeding those little infernal bulls in this State to-day, it would take twenty years to sweep out the evil they have done. The Jersey cow will do very well in towns and cities, but those little bulls scattered throughout the State, I would like to shoot down as I would a wolf. The Polled cattle men are working with a will. These cattle and the Herefords are in the hands of good men and making a place, and if the Shorthorn men lie still, as we are doing now, they will ride right over us and we shall never catch up in the world.

If you go to Chicago and see the cattle there, you will want to come home and see how big you can grow your bullocks. We try to grow too much grain in this State, when we should be turning our attention more to the raising of beef. Dr. Stevenson, with his 1,800 to 2,000 acres of land, was not making money by harvesting grain, but he was making his money easily with cattle—as he once said to me, "I get along very well with this little bucket of salt." These are my feelings in regard to the Shorthorn interest. I have been grading some, but I am now aiming to have nothing but pure bred cattle, and when I get a good herd I am going to push them and get them ahead of everything else if I can.

Judge Buckles. We have been neglecting our business too much. We should have a few men who are willing to meet our adversaries on any field that may be selected; if they beat us to-day let us beat them to-morrow. Another thing is to get our agricultural men educated up to raise good stock. The only suggestion to

my mind is that you may have as fine a herd of cattle as there is in the State, yet you have neighbors around you who don't know the merits of your cattle, they can not buy or breed them. The mass of the Indiana farmers should engage at sometime, not far distant, in improving their stock. The truth is, Mr. Chairman, that in Indiana, a general purpose country, we should plow less and grass more, take care of our stock and better save our manure. And I think we should have a Shorthorn department in our agricultural paper, and in that we should try to convince the farmers that it is right to breed up. We have stock journals which are valuable; but they don't go into every family, while the agricultural paper does. If that paper could contain two columns devoted to live stock it would be of much interest. Such a move need not be against the interests of the Live Stock Journals. I wish to make another suggestion: that the members of this association make arrangements that each county paper have a live stock department. We have such a department in our county paper, which proves to be valuable and interesting. I think the Indiana Farmer would be a proper paper in which to have this department. This would be the most effective way in which to reach the majority of the farmers of the State, and it would not be long until we find every body that is interested in his stock trying to improve them.

Mr. Mitchell. I used to think I was a good judge of cattle, but by attending the fat-stock show at Chicago I learned more there in a day than in a year attending fairs. Take two of the best steers you can get, put them on grass, feed them in earnest, and you will get the farmers attention and show them the result. You don't want to tell them of one you have got at home, but take them right before their eyes, and they will want to know how it is done. The mere fact of getting a live stock journal is not enough on your part, but that paper must be a good one, one that will educate the man in his business.

Mr. Thompson. As to reading agricultural papers and live stock journals, what first induced me to go into the business was reading the Live Stock Journal. The best way to get this before the people is to get them interested in live stock. After I became a reader of that journal and the Breeders' Gazette I took more interest in the Shorthorn business. I hope something may be effected in this way.

W. D. Cooper. We do much by breeding and showing our stock. If we take a few steers and show them it has more influence in improving stock than any thing we can do. Whenever I go to the fair I find more attention is given to stock than anything else. We should try to push our stock out as much as possible. Parties often come ten miles to my house to see my cattle. As to reading agricultural and live stock journals, some people won't read anything but a political paper, and we should do everything we can to get them interested in live stock literature.

Judge Martindale. I am not in full membership as a Shorthorn breeder, but I will nevertheless give the reasons why I am a live stock man. It is because I notice cattle raising is a safe and profitable business. Men place money in banks—the banks break and they lose their accumulations; they put it in manufactures, and a panic causes a reverse. There is no panic in the cattle business. A panic does not stop the growth of the blue grass, nor quell the ardor of the bull. It is an interest that is not affected. There have been over productions in wheat and

corn, but there has never been an over production in beef. We are becoming, day by day, more of a beef-eating people. There are hundreds of thousands of workers in iron, in mines, in various manufacturing industries, and the dense population of our cities to be fed, and they demand beef. "I do not want any veal; I do not want rabbit. I want it understood to-day that the color in my face is due to beef." [Laughter.]

The President. You are entitled to be received here as a full-grown Shorthorn breeder.

Mr. Mitchell strongly urged the utility of, and reported the result of his endeavors to secure a fat stock show at Indianapolis, which would have been undertaken last fall, as he believed, had not the Ohio flood sufferers become just then an object of sympathy to which all wanted to contribute. After this, of course, he had to forego any further collecting of the necessary guarantee fund.

Mr. Thompson. I move sir, that the State Board of Agriculture take some steps to hold a fat stock show in November, and we guarantee that Johnson county will have some here.

Mr. Mitchell. From what I have seen it should be later than at Chicago. Our beeves should be here two or three weeks before Christmas and you can sell them for Christmas beeves. If we have the show in November, you would have to take them home and wait for the Christmas market. I think Chicago will recind the killing of premium cattle so early hereafter. The carcasses of Star Prince and Roan Boy spoiled on their hands, owing to warm weather.

Mr. Thompson. By fixing the time before the Chicago show, it would induce them to exhibit at Chicago after showing here first, but I am willing to leave this to the State Board of Agriculture to arrange.

Motion carried.

Convention adjourned until 9 o'clock to-morrow morning.

WEDNESDAY—MORNING SESSION.

The meeting came to order at the call of Vice-President Mitchell, pursuant to adjournment.

The parties who were to have presented papers being still absent, some time was taken up with discussion regarding the propriety of joining the National Cattle Growers' Association, but no definite action was taken.

Judge Buckles took the floor and spoke some time in favor of his suggestion made the day previous, that a column or so of space should be secured in some weekly agricultural paper published in Indianapolis, for a Shorthorn department, to be edited by the secretary or some other properly qualified person on behalf of the society. If it was necessary to pay for such services, he, for his part, was quite ready to do his part towards it. The good accomplished by the stock papers he was most ready to acknowledge, but, unfortunately, they circulated among men who were already breeders and did not reach, or but rarely reached, the general farmer.

Mr. Lockridge. Judge Buckles has spoken well as to the necessity of our showing more activity in pushing our own interests. I am not quite sure to what extent the plan he proposes is feasible, but I know we are moving along in a rut, and we must get out of it. It is all very well for us to meet once a year and hear a few papers read, interesting and instructive though they may be, discuss them a little, and then go home again. That may be pleasant enough for us, but it does not help our cause among outsiders. This society is the oldest Shorthorn Association in the country; it is actually the parent of the National Association; but we must do some work for the cause or we might as well cease to exist.

Mr. Mitchell. We want to do like the Jersey men are doing. If any of you have a cow that will give forty one pounds of butter a week, put her up; this is one important thing which is too much overlooked by the Shorthorn men. They breed for color and beef altogether, and neglect the milking qualities. We want to get to work, and let people know that the Shorthorn is the best breed of cattle in the world, and induce them to bring their cattle out to fairs. The generality of farmers believe these cattle are taken care of at home, and blanketed, and they can not do this. We want to get the steers taken to the county fairs, and show the farmers what can be done with the steers. If the members of this Association would take an active part at the fairs, all the calves they may grow will find ready sale.

Mr. Lockridge. Perhaps the members of the Association are not aware that this one was the first one ever organized. The National Association sprang from this one. After the call, perhaps by Dr. Stevenson, we met here and organized a State Association, and out of that call came a call for a National Association, which met in this city. That lead the way for others; but after we have done this, we seem to have rather gone back. Our discussions are interesting, but don't grow. We repeat too much, and don't investigate something that is new, by reaching out; and the reason is, we are not on the right basis; we should have something more to do. The National Association got in the same rut, and did not know what to do until they got hold of the National Herd Book. After that they bought up the American Herd Books, and consolidated them into one. They have now a live work. This Association might, in a less degree, accomplish much more in the boundaries of our own State. This Association should have a history of the Shorthorns of this State; when first introduced, and who were the first breeders, and have this history filed away in the archives of this Association.

Mr. Mitchell. Every Shorthorn breeder should report his name and address to this Association. Then let the Secretary notify him of the meeting. I hope some one will make a resolution to that effect.

Mr. Goodwin. It seems to me that Mr. Lockridge has struck the key-note regarding the facts of the case. I suggest that a committee be appointed, to which this whole subject may be referred, to carefully consider and place it on some specific basis, and do work a little more official. In gathering facts, make them palpable, that they may be referred to the next annual meeting.

Mr. Buckles presented the following resolution, which was seconded by Mr. Lockridge, and carried unanimously:

Resolved, That a committee of five be appointed, one of whom shall be the president elected for the ensuing year, who shall be *ex-officio* chairman of said committee,

the other four to be appointed at this meeting, whose duty it shall be to inquire into the expediency of procuring space in some one of the weekly newspapers of the city of Indianapolis for a Shorthorn department in the columns of said paper; also to take such steps as will secure for the records of this Association a complete enumeration of the Shorthorn cattle in Indiana, the name and postoffice address of each Shorthorn breeder of the State, and number of his herd; also to consider the propriety of the reorganization of this Association upon a more effective and practical basis; said committee to report at the next meeting of this Association.

In connection with the resolution, offered by Judge Buckles, the following committee was appointed, consisting of Messrs. Buckles, Nelson, Quick and Lockridge.

The following resolution, offered by Secretary Heron, of the State Board, relative to the suggestion of Governor Gray, in his inaugural address, regarding the suppression of pleuro-pneumonia, was read and adopted.

Resolved. That this association heartily indorses the suggestion of Governor Gray, in his inaugural address, that precautionary measures be taken to prevent the spread of pleuro-pneumonia among the cattle in this State, and urge upon the General Assembly to take such steps as will prevent the possibility of such a calamity.

Hon. E. S. Frazee, the treasurer of the association, made the following report:

REPORT.

Received of new members	\$7 00	
Amount on hand	30 00	
Total receipts	\$37 00	
Paid Secretary for two years expenses	7 25	
Balance in Treasury		\$29 75,

ELECTION OF OFFICERS.

The following gentlemen were elected to serve as officers for the ensuing year:

President, Hon. Robt. Mitchell; Vice-President, Hon. S. F. Lockridge; Secretary, Walt J. Quick; Treasurer, Hon. E. S. Frazee.

Mr. Mitchell. I shall do all I can to advance the interest of the State. I want all to work at once and get out of this apathy that seems to have settled down upon the Shorthorn breeders. There is not a farmer in this State but should have a good grade of cattle instead of those little lantern-jawed, knock-kneed specimens which we see.

Mr. Walter J. Quick. I am surprised at the selection you have made in my absence on committee work, and had I been present, I should most certainly have declined the nomination. I feel that I have not the ability to attend to the office of Secretary. It is putting a young member too forward in this work. As it is the first time I have attended the association meeting I will be thankful for the co-operation of its members in this undertaking. I thank the association for the honor conferred.

Hon. J. N. Sankey. I regret that unavoidable difficulties have prevented me from preparing a paper on the subject assigned me. I wish that more information was had as to the manner in which Shorthorns are maintaining their reputation as milkers. We have got to do something to get more record as to their milking qualities. I do not know whether it would be best to offer a premium for this or not, but in looking up this record the history is deficient. As Shorthorn breeders we have got to do something to bring out their milk and butter qualities which would be an advantage to this and other states.

Mr. ———. What is the penalty for having spurious pedigrees recorded? Can one having such a pedigreed animal palmed off on him obtain damages for such falsifying?

Mr. Lockridge. The only way is to notify in the next publication that the thing is spurious, but we have no way of punishment. If any have been wronged they can have redress through the courts.

Mr. Mitchell. This is an important question. A part of the duties of the Shorthorn breeders is to protect themselves from such impostions. If any member of the association has been imposed upon the association should know it. If a member sells a calf that is not right he should be published in every journal in the land and subject to prosecution under the law. It is right for us to protect ourselves. People don't appreciate the idea of pedigree enough. Calves from a bull that is pedigreed are worth more than one that is not.

Mr. Quick. We have had too much paper work in our Association to make a live association. I understand the Bee Keepers swarmed here last week, and we surely can have as large a "round up." Let us have a few good, interesting papers, and have good lively discussions afterwards. These discussions are what make an interesting and profitable meeting.

The Committee on Programme for next meeting announced their readiness to report. They submitted the following:

1. President's Address—Robert Mitchell.
2. What is the Standard of Excellence of Shorthorn Cattle?—Thos Wilhoit, Middletown.
3. Value of Shorthorns over other Breeds of Cattle—James N. Sankey, Terre Haute.
4. The Necessity and Value of Local Effort—Judge Buckles, Muncie.
5. History of Shorthorn Cattle in Indiana—J. W. Robe, Greencastle.
6. Social Relations among Breeders Necessary to Advancement—Dr. N. D. Gaddy, Lovett.
7. Management of Breeding Herds—Spencer R. Quick, Columbus.

President R. M. Lockhart, of the State Board of Agriculture, was by the chair introduced to the Convention, and spoke as follows: "I am not in a condition to make a speech, but I say gentlemen, we are pleased as a Board to have you meet in our rooms. These State organizations are great auxiliaries to the State Board that we can foster with pride. If you gentlemen will permit me, I will say a few words regarding some resolutions, that you recommend that a column be secured in some agricultural paper in Indianapolis. I live in the Northeast part of the

State. Fourteen years ago we organized a Northeastern Indiana Association. At that time there was not a single pedigree bull in that county. After we commenced holding fairs, a man come from another section of country and showed some fine cattle, and many of our people were induced to buy. A few years ago a herd of thirty cattle were brought into our county from Kentucky, represented to have fine pedigrees, and quite a number were induced to buy them, and within a year it was found to be a fraud. One of our farmers bought one, and paid \$1,000 for it. It placed the Shorthorn men in rather bad repute. There are a number of as fine herds in Northern Indiana as can be found in the State. There are now two or three hundred good Shorthorn cattle in our part of the country. If you could get all your cattle men together, representing different breeds, it would be better for all concerned. It is an admitted fact that there are more of the Shorthorn breed in Indiana than any other. As far as I am concerned, I have not raised any other.

Convention adjourned *sine die*.

MEMBERS OF INDIANA SHORTHORN BREEDERS ASSOCIATION.

Thomas Wilhoit, Middletown, Henry county; W. W. Thrasher, Groves, Rush county; Hon. Thos. Nelson, Bloomingdale, Park county; Hon. E. S. Frazee, Orange, Rush county; Robt. Mitchell, Princeton, Gibson county; L. H. Aikman, Dana, Vermillion county; Hon. Claud Mathews, Clinton, Vermillion county; Hon. S. F. Lockridge, Greencastle, Putnam county; J. W. Robe, Greencastle, Putnam county; Hon. Fielding Beeler, Indianapolis, Marion county; Geo. W. King, Edinburgh, Johnson county; S. R. Quick & Son, Columbus, Bartholomew county; Henry W. Lambert, Columbus, Bartholomew county; J. P. Forsythe, Franklin, Johnson county; J. A. Thompson, Edinburgh, Johnson county; Elijah Clore, Alamo, Montgomery county; W. D. Cooper, Cadiz, Henry county; John McCaslin & Sons, Franklin, Johnson county; G. W. Thomas, Homer, Rush county; W. A. Banks, Laporte, Laporte county; Dr. N. D. Gaddy, Lovette, Jennings county; Mr. Kinsley, Shelbyville, Shelby county; Judge J. S. Buckles, Muncie, Delaware county; T. A. Cotton, Manella, Shelby county; James N. Sankey, Terre Haute, Vigo county; Newton Cornell, Goldsmith, Tipton county; Dr. J. Elliott, Indianapolis, Marion county; W. E. Yost, Muncie Delaware county; Warren Mason, Wabash, Wabash county; J. G. Bower, Muncie, Delaware county; J. W. Harper, La Fontaine, Wabash county; William Beatty, Edinburgh, Johnson county; Samuel Purcell, Indianapolis, Marion county; Judge Martindale, Indianapolis, Marion county.

INDIANA JERSEY CATTLE BREEDERS.

The third annual meeting of the Indiana Jersey Cattle Breeders' Association occurred Tuesday, January 20, 1885, at the rooms of the State Board of Agriculture, President Haughey in the chair. Upon the opening of the meeting the President read his annual address, as follows:

The return of the second anniversary of the Indiana Jersey Cattle Breeders Association is to them an event of deep interest, affording an opportunity for the advancement of their favorites to a still higher degree of appreciation, not only in the eyes of breeders and fanciers, but as well in the esteem of the farmer and dairyman.

A review of transactions in stock for the past year gives a remarkable showing in favor of the Jersey, and they represent about one-third of the entire number of pedigreed cattle sold under the auctioneer's hammer. While the average for 188 was \$426 per head, for the season for 1884 the general average was \$346, and for females alone over \$375, showing only a slight decrease from last year, though the number disposed of was largely in excess of the preceding year. As compared with other breeds the average is about double the sum realized for like numbers.

These prices can not be styled fancy; but are rather the outgrowth of a conviction that has gradually grown upon the people, until the Jersey cow stands pre-eminently the "Dairy Queen." Not perhaps, in quantity of milk, but unquestionably in quality; the product from the churn where Jersey blood predominates, commanding the best prices and the readiest market.

The price in itself does not yet fairly represent the increased profit to be realized from her, for it is obtained at a far less cost in drawing the milk, caring for it, and in less amount of food required. She is the "*mulum in parvo.*"

Gentlemen, in associating ourselves together, we have done so that we may the better promulgate these facts, and introduce to our brethren of Indiana, a better and more profitable breed of cattle; demonstrate to them other methods for deriving profit from the farm—methods that shall give an increased revenue, and at the same time lighten their burdens, open up new fields of thought, brighten farm life, and introduce to them one of the most fascinating occupations.

Our soils, naturally fertile, are, from continual cropping with grain, being gradually depleted, and the returns in consequence precarious. The intelligent hus-

bandman, looking to his interest, will seek to divert the farm to the production of some condensed product readily marketed; one upon which the transportation shall be reduced to the minimum, and at the same time command the maximum.

The united effort of the members of this organization, properly directed, will enhance in value the dairy product of our State more than any other source possibly can, and we will do well to discuss ways and means.

The publication of the proceedings and discussions of this meeting will impart information, beget inquiry, and create desire. How, then, shall this newly-born wish find development? Only in possession; and it would seem consistent, in order to facilitate that end, that a series of sales should be considered and encouraged under such restrictions as to inspire confidence and give satisfaction to all breeders and purchasers; which Indiana breeders are well qualified to do, having among them, scattered over the State, the blood of the most noted families known to the Jersey world. We are proud of our Rieter-Alphea, Rieter-Victor-Hugo, Stoke Pogis, Pedro, Hazen's Bess, Commassie, Jersey Belle of Scituate, Le Brocq's Prize, and Duke 76.

The Jersey is making rapid progress in public esteem; she is not only the gentleman's pet, that furnishes delicious cream and yields the fragrant golden butter that adorns his table, but she is the mine from which the dairyman, with skillful manipulation, brings forth the beautiful aromatic product that puts gold into his purse and brings gladness to his heart.

The Secretary reported six accessions at the last annual meeting, and a balance in the treasury of sufficient amount to meet the expenses of the current year without any dues being assessed. The report was referred to the Auditing Committee, Messrs. Johnson and Garretson. Opportunity was given for the admission of new members, when the following names were submitted: Dr. A. Moudy, Greencastle; Alex. C. Furgason, Cumberland; Peter Raab, Indianapolis; Ellwood Smith, Mt. Vernon; Jos. A. Moore, Indianapolis; Chas. L. Henry, Anderson; C. W. Fisher, Noblesville; A. E. Taylor, Columbus; Dr. H. W. Wiley, Agricultural Department, Washington, D C.; H. H. Wheatacraft, Southport.

Essay: "Jersey Cow, her past, present and future," by George Jackson, Beech Grove Farm. In the absence of that gentleman, a letter from him to President Haughey was read, in which he expressed his regrets that absence from home and pressure of business had rendered it impossible for him to prepare the paper. Communications from other bodies, a circular letter, and articles of association of the "National Cattle Growers' Association, Chicago," were presented, in which the I. J. C. B. A. was invited to unite with them. Mr. J. D. Connor, Jr., moved the papers be submitted to a committee of three. Carried. The Chair appointed J. D. Connor, Wabash; Dr. Levi Ritter, Irvington, and Sylvester Johnson, Irvington.

A communication from the Iowa Jersey Cattle Club relating to the A. J. C. C., and asking co-operation of this Association in securing a reduction of registration fees in the A. J. C. C. Herd Register. Mr. Hasselman moved it be laid upon the table. The motion was lost. Dr. Ritter then moved the matter be referred to a committee consisting of Messrs. W. J. Hasselman, George Jackson and J. D. Connor, which carried. Mr. J. D. Connor, Jr., moved the action be reconsidered, the foregoing committee consisting of only members of the A. J. C. C. He would move

that an equal number of non-members be added to this committee, to be appointed by the President. The motion prevailed, and the President added Jos. C. Ratliff, J. A. Guannt and Peter Raab.

Essay: Topic, "Tasting; its value in the development of the Jersey Cow," J. D. Connor, Wabash; a paper that was attentively listened to.

Dr. Ritter then introduced Dr. W. H. Wiley, chemist of the Department of Agriculture, Washington, D. C., who gave an instructive and highly appreciated address, which he was requested to give the Association in writing, to which he consented.

Essay: "Inter-breeding; to what extent may it be followed;" a profitable paper, by Dr. Ritter, and was followed by one from Prof. A. S. Heath, New York, on "In and in-breeding," full of good suggestions to breeders of Jerseys.

Mr. Jenkins moved that the portion of the President's address relating to combination sales be referred to a committee of three. Motion carried, and by request the Chair appointed Messrs. D. H. Jenkins, W. J. Hasselman and J. D. Connor.

Moved that when we adjourn we adjourn to meet at 7:30 P. M.

Committees ordered to report at night session.

Upon motion adjourned.

Meeting convened, in pursuance to adjournment, at 7:30 P. M.

Minutes read and adopted.

Report of Committee on Communication from National Cattle Association was called for. The chairman, Mr. J. D. Connor, Jr., submitted the following:

"While we recognize the importance of this movement, and are in sympathy with it, we do not, at this time, feel justified in recommending that this Association become an applicant for membership, though it might be advisable at a future time."

Upon motion the report was concurred in and the committee discharged.

Mr. Henry moved the Secretary be instructed to prepare a letter reporting the action to the National Cattle Growers' Association. Consented to.

The committee appointed to report upon the request of the Iowa Jersey Cattle Club, asked further time, which was granted.

The Committee upon Combination Sale also requested further time. Granted.

Mr. Connor, of Wabash, called the attention of the association to the importance of giving great care to this matter, that these sales might acquire a high reputation.

Mr. Henry, of Anderson, deemed such sales advisable under restrictions and careful supervision.

Mr. Ritter moved the matter be left in the hands of the committee that decide upon the feasibility of such sale, devise plans for it, and when matured, the Secretary to submit the report to the members for their consideration. The motion carried and committee continued.

ESSAY: "Judging and Judges of Jersey Cattle," James P. Ross, Wabash.

Mr. Henry moved a committee of three be appointed to select a list of names for expert judges at the fair of 1885. The Chair appointed Messrs. J. D. Connor, Jr., T. A. Lloyd, and D. H. Jenkins.

Mr. Henry suggested that judges were hard to obtain for county fairs, and the advantages arising from care in this matter, he would move that the Secretary be requested to correspond with these county fair associations proposing to furnish them with lists of names from which to select expert judges. Carried.

Upon motion, a committee was appointed to prepare a programme for the next meeting, whereupon the Chair appointed Messrs. W. J. Hasselman, Judge J. D. Connor, and Dr. Levi Ritter.

Upon motion, proceeded to the election of officers, whereupon the Secretary was instructed to cast the ballot as follows:

President—W. J. Hasselman, Indianapolis.

Vice President—Dr. Levi Ritter, Irvington.

Board of Managers—Chas. L. Henry, Anderson, Samuel C. McKeen, Terre Haute; S. F. Gray, Indianapolis; J. D. Connor, Jr., Wabash.

To fill the places of those whose terms expired as follows: W. J. Hasselman, Samuel C. McKeen, S. F. Gray, and J. D. Connor.

Moved that the Secretary notify all delinquents to forward dues, and also to publish in the *Jersey Bulletin* a complete list of names of members and officers.

A communication, presented from Commissioner of the Department of Agriculture, George D. Loring, requesting the Association to send delegates to the Agricultural Convention, to be held February 10, 1885, at New Orleans. By consent.

Theo. P. Haughey, Dr. Levi Ritter, and D. H. Jenkins, were appointed such delegates.

President elect W. J. Hasselman took the chair, returning thanks for the consideration and compliment in his nomination and election.

Dr. Levi Ritter, Vice President elect, made remarks eulogizing the Jersey cow, and the important part she will yet take as the source of food supply for the masses, giving a most wholesome, nutritious diet.

The essays referred to above will be found in the following pages.

Upon motion, adjourned.

T. A. LLOYD,

Secretary.

THEO. P. HAUGHEY,

President.

TESTING—ITS DEVELOPMENT OF THE JERSEY COW.

BY J. D. CONNER, JR., OF WABASH COUNTY.

Mr. President and Gentlemen of the Indiana Jersey Breeders' Association:

A few days ago I was somewhat surprised, I might say, by receiving a card from our worthy Secretary informing me that the President had assigned to me as the subject for an essay, "Testing—its value in the development of the Jersey cow," for the reason that it is one of the most important subjects, and should have been assigned to a wiser head, and to one better able than myself to discuss and point out its vast importance to us, who are breeders of that eighth wonder of the

world, the Jersey cow. But as all the knowledge and information of this world is not possessed by any one person, nor always derived from the most learned, but is made up of the little picked up here and there, like the great rivers of this country, from the silvery threads which go singing and sparkling through our meadows and woodlands, bounded by the luxuriant grasses, daisies and buttercups, on which the little Jersey is wont to graze, so we must each contribute our mite.

The cow has been truly described as our second mother, and one that is too often neglected and her merits ignored, and until the Jersey cow reached our shores and her worth was proven by actual tests, no sympathy was expressed on account of the drain on her system, the usefulness of her life, or the beauty of her form, and she was only looked upon as a money-making machine, and it is true that she is a money-making machine. The good old cow has paid off more mortgages, and paid for more farms than any other known production. She has turned the tide of our agricultural prosperity in many parts of the country from a downward to an upward and prosperous one, in raising stock, grass and hay. Flowers and grass spring from beneath her feet on the most barren soil, but the good old cow don't stop to enthuse over them, but converts them into good, solid, hard cash, through the milking pail, out of which contentment and happiness leap. But what is the condition of the high-bred milking cow of this country since the Jersey cow made her appearance? I suppose if I should say she has become one of the family, and that her wants are sometimes considered even before the members of the family, I would about express the truth. And in the case of the Jersey, our friends come to see her, her little calf is permitted to gambol on our lawns with the children, admired by all, and should the little thing perchance, or by design, find a soft place to recline in our wife's flower bed, it is undisturbed.

In order that a correct conclusion may be arrived at, in the discussion of any question and in determining the value of any article of machinery or merchandise, it is necessary, in the first instance, to thoroughly acquaint our-elves with the facts in the case, and ascertain for what purpose the article or machine is to be used, and then we are in a condition to determine its value. Now, take the Jersey cow—why was she imported from her flowery island home to this country, and, indeed, to every other country in the known world? The answer is, her beauty is unrivaled, her disposition perfect, and when her value as a butter cow is discussed, all breeders are compelled to take off their hats and bow their knee to her, as she is unsurpassed. As to her beauty, let us take a walk with our friend down through the shady grove, to the pasture where she is grazing; we reach the fence, she espies us, and up flies her head from the luxuriant clover on which she is feasting, and she comes walking leisurely to meet us, possibly in a rich seal-brown cloak, or, perhaps, in a silvery gray, or fawn circular; or, perchance, she may have known that we were coming, and meets us in a cloak varied in color. Ah! with what grace she approaches us, supporting a beautiful head, on which are perched small crumpled horns, the richness of which can only be compared to pure golden amber; neck thin and straight, clean cut throat, barrel-hooped, broad and deep at flanks, showing great capacity for food, and for the free action of the internal machinery for converting the same—in short, profile perfect. She has reached us, and with her full placid eyes upon us, how can we refuse her the apple in our pocket? As

she eats it, we walk around her, and, in stroking her hair, we are surprised at its softness; but when we take hold of her skin, which is as soft and pliable as chamouis skin, the softness is explained; and when we behold the udder, which is swung under her, and notice the great number and size of the milking veins that cross and recross before entering the udder, which seems too large, we are led to believe that the goddess of milk and butter, in all her perfection, for the *first* time, confronts us. As to her value as a butter cow, upon what is my former statement based? Is it on theory? No, indeed; it is on actual test. It is based on the amount of butter she will make in a specified time, as compared with the amount of butter made in the same time by other breeds of cattle. And I take it that any reasonable mind will admit, that if the Jersey cow will make more butter in seven days than any cow of any other breed, and that, take them as a family, more of them show superior excellence as butter makers, than those of any other family, that she is the queen of all, and as such should occupy the throne. And that this is true, no one can question, as the reported records of all tests to this time will prove. Hence, the value of tests to the Jersey cow. It is true that there are cows of other breeds that give more milk, but it is equally true that as a good cow, crossed with a good corn-crib, gives good milk; so one gallon of good Jersey milk, crossed with about three gallons of good, pure, sparkling spring water, gives quantity which equals in quality and richness the milk of these reputed large milkers of certain other breeds; because, as all know, quantity is at the expense of quality and richness. What has testing done toward the development of the Jersey cow? It has done everything. It has disclosed and brought to the knowledge of the breeder the comparative abilities of certain families as butter producers; has disclosed to us the best crosses; has shown what families are best to couple together to produce superior butter cows; has led to the investigation and analyzation of the elements composing the food which is fed, and has determined what kind of food should be given the cow to produce the best results, so that economy can be used in feeding. And when you couple this with the fact that the American Jersey Cattle Club has preserved for us the record of the breeding of thoroughbred Jerseys and has kept it in such a careful and jealous way, that it is almost impossible for an error to occur, and permit some presuming miss to creep into the register, too much can not be said in commendation of those who have taken the pains to test their cows, or have it done, and report the test for our benefit, and to the A. J. C. C., because the one is imperfect without the other. For, unless after the test is made, we know, beyond any question, the breeding of the tested animal, and this we can only know by the records of the A. J. C. C., it would be impossible to reach that high excellence in breeding, which has characterized the breeders of this country and of Canada.

Like many of you, gentlemen, I have enjoyed the pleasure of visiting the homes of, and examining such noted cows as Mary Anne of St. Lambert, and Ida of St. Lambert, and their sisters; Eurotas and Bomba, Hazen's Bess, Coomassie and her close relations, Fadette of Verna 3d, and Valhalla, and many more of the Signals; Lady Mel 2d, Dandelion, and Favorite of the Elms, and, in fact, representatives of almost all the noted families, and I am compelled to confess that, had I not been advised as to the records of these cows, I would, in many cases, have selected cer-

tain other cows out of the herds represented, in preference to the above cows. And why? Simply because it is impossible to know from an examination of an animal what is her ability to produce butter, but when you test her by the churn and scales, and are able to show, as a result of your test, a golden nugget weighing from 14 lbs. up to 36 lbs. 12½ oz. in seven days, worth from 50 cents to \$1 per pound, you have something tangible upon which to base a calculation as to the worth of the cow for dairy or breeding purposes.

A few years ago about \$200 would buy one of the best Jersey cows in the United States, but to-day we think it is money well spent, if for that amount we can visit the homes of a few of the most noted butter-makers, and even look at them; and if, for that amount, we could purchase a distant relation, we would think, in the words of Col. Sellers, "There's millions in it." And, again I ask, why is this so, but the answer is simple: because the Jersey cow has been tested and has demonstrated her superior ability to produce butter.

Does any one suppose for a moment that if the daughters of Stoke Pogis 3d had not been tested, that his descendants would have brought such fabulous prices?

Why, gentlemen, about two or three years ago Mr. Romeo H. Stevens offered us Prince of St. Lambert for \$125; to-day he stands for service at \$100, because his sisters have demonstrated their ability to make as high as 36 lbs. 12½ oz. of butter in seven days. What would have been the standing of this and other noted animals not before mentioned, such as the St. Heliers, the Victor Hugo's Champion of America, Columbiad 2d, the Albert-Pansys, the Victors, the Alpheas, and the noted Island celebrities, had there been no tests of them and their descendants? All would have stood on an equal footing, and the price would have been governed, as it was several years ago, by the fancy coloring and fancy points. And, while I admire solid colors, with full black points, yet I do not think that it makes any difference, when you sit down to milk, whether the cow kicks you over with a white and fawn colored leg, or a solid colored one, or whether she slashes you across the mouth with a black or a mixed switch, as it hurts just as bad; nor whether the milking machinery is encased in a solid colored or a broken colored covering, providing the number of pounds of butter are the same.

It has been said by some one, that it does not make any difference what kind of a tail a cow has, as it is not used as a handle to pump out the milk. But I am not certain. It was but a short time ago that when a test of 18 lbs. was reported as having been made by a Jersey cow in seven days, that no one believed it; and about the time they came to believe even that, tests were reported of from 22 to 25 lbs., which no one believed except those who were breeding Jerseys. And when Ida of St. Lambert was reported as having made 30 lbs., 2½ oz. of butter in seven days, even the Jersey men did not believe it; and when Mary Anne of St. Lambert was reported as having made a record of 36 lbs., 12½ oz. in seven days, all the Jersey men arose, as it were, in indignation, and said, "Here, gentlemen, we have stood this thing long enough. We have stood by you and tried to convince our friends that some one was not lying about this thing, but when you insist on us cramming that 36 lb., 12½ oz. lie down the throats of our friends, we will have to abandon you." But it has been demonstrated beyond any question that the record was, in fact, made. And in view of these great strides, is it unreasonable to prophesy that

when this Jersey Island phenomenon is thoroughly understood in all her parts, that some ingenious Yankee will discover some method of gearing the tail of the cow to her milking machinery, and that in turn to a DeLaval Cream Separator, with a churn and butter-worker attachment, so that the youngest member of the family can, by gently pumping the tail, supply us, on short notice, at the end of the butter-worker, with all the fresh golden butter that we may want, even to forty pounds per week. In which case the pumping quality of the tail may become a very important factor. I tell you, Mr. President and gentlemen, you don't know what a jewel you possess in this Jersey cow. She is capable of almost anything. Why, gentlemen, she is the standard of excellence for comparison, for all other milking breeds of cattle, and all breeders are attempting to secure a cow that will equal her in butter quality, but they have not been able to do it, and never will, as she occupies a plane of excellence so far beyond and above them that they will never be able to reach it; but should any of them perchance approach any ways near her, all we have to do is to give her one more quart of feed, which will act as did the peg on the head of the fabled enchanted horse, and off she goes, and the scales are tipped at forty pounds in seven days. To the Jersey breeders, then, more than to the breeders of any other strain of milking cattle, is due the fact that you must demonstrate by actual test the butter ability of your cow before she has any standing. A few years ago it was thought a great feat for a horse to trot a mile inside of three minutes, but what speed has been reached at this time! Maud S. has made a record of 2:09 $\frac{3}{4}$, and Jay-Eye-See 2:10. How was this accomplished? It was found, by investigation of the breeding of the horses that made records of 2:30 and under, that thirty-five of them were out of daughters of Seely's American Star, fifteen of which were sired by Rysdyk's Hambletonian, of Messenger descent, eleven by his sons, and two by his grandsons; and that the daughters of Pilot, Jr., got twenty horses in the 2:30 list, and that the best trotters out of the Pilot, Jr., mares were by direct male descent from Rysdyk's Hambletonian. And it was further found that when the 2:20 test was applied to sires that had at least two sons or daughters with records that were fast, the Hambletonians monopolized nearly seventy-five per cent. of the honors. From this is it not evident that these two flying wonders were not the result of accident, but, on the contrary, could only have been produced by the judicious uniting of the best blood, as proven by actual tests of speed; and so in breeding Jersey cattle, is it not absolutely necessary that there should be butter tests, coupled with a thorough knowledge of the ancestry, in order that the best results may be accomplished? I think no one will deny this. Hence I would add, in conclusion, that you, as breeders, owe to your fellow breeder the duty of testing your cows and reporting the same, so that they as well as yourselves may have the benefit of the knowledge to use in crossing and breeding. And should you contribute only a dandelion to this garden of rare flowers, you will have done your duty. As you remember that from the lovely though unpretentious pansy has sprung some of the richest plants, and, perchance, some one will cut a flower here and there, and couple it with some rare plant or shrub found sunning itself near the warbling brook of his own meadow, and give to us a flower of such unsurpassing worth and excellence that the best and rarest of to-day will seem common by comparison.

BUTTER AND ITS ADULTERATIONS.

HARVEY W. WILEY,Chief of the Bureau of Chemistry U. S. Dep't Agr., Washington, D. C.

Mr. President and Members of the Indiana Jersey Cattle Breeders' Association :

Good butter is a mark of a higher civilization. You may find a school house on every square mile of land, and church spires may be so numerous in every village that they remind you of the masts of Liverpool, but if the butter is streaky and rancid, full of big lumps of uncrushed salt, and little lakes of curdy brine, the community has not yet reached the higher civilization and the nobler culture. Wherever you find sweet, pure butter, there you will find peace, contentment, prosperity and refinement.

You have kindly asked me to address you on the subject of "Butter," and from what I have just said the address might also be called the "History of Civilization in America."

We find the same differences in butter as in men. At the bottom are the proletarians—the tub and scrap butters of commerce. Then we rise to the middle class—the butters of good farmers and their wives, full of solid merit, but without pretention. Then the "upper class" is represented by the creamery butter, often depending for value more on a name than on any particular merit. Then we have the genuine aristocracy butter, with a pedigree and a future, old in lineage but fresh in composition. This, of course, is the "Jersey butter."

Then we have too, the race of shams and dead beats, the oleaginous tramps. These are typified by the oleomargarines, the butterines, and all the other substitutes which try to pass in the world as realities.

To study the characteristics of all these classes, to describe the properties by which they can be isolated and detected, and to point out the way by which the real can be separated from the spurious will be the object of this address.

METHODS OF COLLECTING BUTTER FOR ANALYSIS.

Two methods of collection are employed, viz.: (a) purchase in open market, and (b) from reliable dairy men.

It is evident that by the first method it will be easy to arrive at the percentage of adulteration, especially when it is considered that these purchases will be made in various parts of the country, and under the operation of State laws bearing on the manufacture and sale of butter substitutes.

By the second method, samples will be secured which will give accurate data of the composition of genuine butter.

This research at the present time acquires additional interest from the fact that the manufacture of butter substitutes has reached in this country large proportions,

and seriously affects the interest of that large class of our agricultural people who are engaged in the dairy business. Even if the butter substitute be as wholesome and palatable as the genuine article, and if it be sold under its proper name, as is, indeed, often the case, yet it tends to overrun the market and thus cheapen the price of real butter.

WATER.

The contents of butter in water varies within wide limits. This is due to many causes, but chiefly depends on the treatment of the butter subsequent to churning. It is the practice of some to "work" the butter after churning only enough to roughly incorporate the salt. In this way much water and curd are retained. Others wash the butter well to remove the curd, and thus a butter poor in curd and rich in water is obtained. Still others—and this is the proper method—wash well to remove the curd and then work well to remove the water. This treatment produces a butter poor in water and curd. The amount of water which a good butter should contain should not exceed 12 per cent.

In thirty-one butters, as seen by the following table, the highest percentage of water is 14.31, and the lowest 7.34.

Foreign analysts have found in some instances the percentage of water to be above 25. It is generally acknowledged by these chemists that 12 per cent. water is a just limit, beyond which a good butter ought not to go.

Perhaps it would be somewhat arbitrary to say that more water than this would indicate an intentional adulteration, but manufacturers should not send their products to market until the water has been reduced to 12 per cent. or less.

SATURATION EQUIVALENT.

The saturation equivalent is the amount of potassium or sodium hydrate necessary to saponify a given weight of the fat. The fat is prepared for saponification by melting, allowing curd, salt, and water to subside, and then filtering. An approximate semi-normal solution of the alkali in alcohol is employed for the saponification. The alcohol employed should be previously filtered through bone black, otherwise the solution will be too highly colored for delicate titration.

The saturation equivalent is expressed in abstract numbers, obtained by dividing the molecular weight of the alkali employed by the number of milligrammes of it used in saponification. The numbers for the two hydrates thus become the same.

It appears from the table that the saturation equivalent is an almost certain test of pure butter. Its range in the analyses made is from 249.5 to 239.8, while in the oleomargarine it rises to 284.7.

SOLUBLE AND INSOLUBLE FAT ACIDS.

The best proof of a poor or adulterated butter is in the relative proportion of soluble and insoluble acids which it contains.

A first-class butter fat may have as high as 7 per cent. soluble acid, while the average may be placed at 5 per cent. On the other hand, the adulterants used in

butter and the substitutes therefor, will be found to contain only 5 per cent., or less, of soluble acid. It may be granted that no unadulterated butter will contain less than 4 per cent. soluble acid, while the limit might well be placed at 4.5 per cent. without excluding any desirable genuine butter. The estimation, therefore, of the soluble acid is an argument convincing alike to the chemist and the court whenever the purity of butter is called in question.

In the following table will be found analyses of thirty-six samples of butter, oleomargarines and fats used in butter adulteration. Nearly all of these samples were bought in the open market.

Nos. 1708, 1712, 1717 and 1718 were obtained directly from the manufacturers.

The melting point is given in degrees of the Centegrade scale. To change into Fahrenheit scale, multiply by 9-5 and add 32:

SUMMARY OF THE ANALYSES OF BUTTERS.

Number.	NAME.	Price.	Color.	Water, Per Cent.	Casine, Per Cent.	Salt, Per Cent.	Fat, Specific Grav.	Melting Point, Degrees.	Solidifying Point, Deg.	Saturation Equivalent.	Soluble Acid, Per Cent.	Insoluble Acid, Per Cent.
1700	Commercial Creamery	\$0 30	Light yellow	12 99	1 118	4 45	91 250	33 3	..	244 5	4 50	89 55
1701	Iowa Creamery	35	Deep	8 98	9 77	2 55	91 153	34 7	25	246 7	4 49	88 35
1702	Pennsylvania Creamery	30	Light	10 87	7 08	5 13	91 168	34 7	27	245 2	4 61	87 26
1703	Print	40	V y d p	11 44	5 53	2 63	91 235	33 3	26 5	245 0	5 54	87 86
1704	Dairy	35	Deep	11 08	7 03	2 65	91 235	33 8	27	244 8	5 52	87 81
1705	Dairy	35	Light	11 14	6 34	1 76	91 191	33 8	27 7	244 4	5 56	86 43
1706	Pennsylvania Creamery	35	Deep	11 70	6 20	2 51	91 250	34 2	27 7	246 1	5 26	87 80
1707	Grade Alderney	35	Deep	11 51	5 38	1 23	91 215	34 4	27 7	246 3	5 14	87 84
1708	Jersey cow, value 24	35	Deep	9 38	5 60	1 64	91 102	35 7	30	236 8	6 79	84 72
1709	Commercial lard . . . . .	..	White	..	..	..	88 857	47 5	35	280 0	None	91 80
1710	Commercial lard . . . . .	..	White	..	..	..	99 660	35 5	23 5	284 7	None	91 80
1711	Commercial oleomargarine . . . . .	..	Deep yellow	9 32	6 87	4 03	90 360	32 5	25 5	283 9	None	94 80
1712	Jersey cow, value 24 . . . . .	..	Light	12 54	6 22	1 64	91 089	36 0	25 7	247 1	4 52	88 02
1713	Ordinary tub	20	Light	8 71	1 230	3 83	91 072	33 0*	24 0	243 9	4 40	87 79
1714	Alderney print	35	Deep	9 52	5 56	2 11	91 209	34 2	25	246 4	4 69	88 16
1715	Creamery tub	35	Light	7 34	5 20	3 63	91 202	34 0	25	244 2	4 60	88 01
1716	Tub print	30	Light	10 50	4 92	1 96	91 022	30 5	25 5	248 9	4 60	88 39
1717	Oleomargarine	20	Light	5 07	1 72	3 31	90 188	30 5	20	282 5	20	93 42
1718	Oleomargarine . . . . .	..	Light	10 28	3 05	2 81	90 5 10	33 5	28	280 7	5 06	93 65
1719	Grade dairy	25	Light	8 30	5 52	6 15	91 114	35 2	28 5	219 4	5 02	88 08
1720	Alderney	25	Light	8 35	5 32	3 28	91 039	33 5	28	240 7	5 10	87 54
1721	Aldernes Shorthorn Stock	35	Deep	13 40	4 67	1 96	91 123	34 2	29	232 0	4 78	88 51
1722	Alderney	25	Light	10 26	2 84	2 90	91 147	33 2	29	240 5	5 00	88 65
1723	Alderney	60	Deep	14 06	5 07	2 78	91 149	35	27 2	247 3	4 97	88 46
1724	Hampden dairy	1	V y d p yel.	11 07	4 55	1 42	91 049	33 9	24 7	252 8	4 21	89 26
1725	W. H. Spencer's daughter	30	Light	13 51	5 81	3 33	91 630	36	24 5	216 7	4 97	87 25
1726	W. H. Spencer's granddaughter	30	Light	6 77	6 27	1 08	91 060	36 5	24 7	248 0	4 44	86 82
1727	Alderney	30	Light	12 62	4 27	3 00	90 862	37 5	28 7	255 1	4 00	88 49
1728	Grade Alderney	30	Light	9 63	5 97	2 33	90 961	36 5	25 7	249 4	4 49	89 03
1729	Grade	25	Light	11 02	7 16	2 28	91 083	34 9	26 5	247 7	4 68	88 35
1730	Grade	25	Light	10 38	7 37	1 52	91 134	35 7	24 7	245 7	5 13	87 74
1731	Grade Alderney	25	Light	12 53	7 54	5 50	90 601	36 7	25 1	245 7	4 56	80 22
1732	Grade	25	Light	11 69	7 81	2 41	91 031	36	24 2	251 0	5 17	88 57
1733	Grade	25	Light	10 30	7 89	3 05	91 068	35	24 7	247 7	5 18	88 28
1734	Alderney	25	Light	10 61	7 59	3 00	90 625	35 7	24 5	258 3	3 40	80 89
1735	Alderney	25	Light	9 64	..	1 31	91 011	34 7	23	252 8	4 50	85 58

CHARACTERISTICS OF A GOOD BUTTER.

Creamery butter is more highly valued than that made in a small way, because the conditions of its manufacture are better understood, the machinery more perfect, and the cream used in better condition. In this way a butter is secured of a pleasant color and agreeable flavor.

In respect to chemical and physical composition, a good butter should present the following characteristics, viz:

1. The percentage of water should not exceed twelve. In most of the samples examined it was less.

2. The percentage of salt may vary within large limits. In fact, many persons prefer butter perfectly fresh, while others like a large amount of salt. It is doubtful whether the small percentage of salt added ordinarily to butter acts as a preservative. Its only use seems to be one of taste. Judging from the table, 3 per cent. appears to be the amount of salt in American butter, the variation being from a minimum of 1.23 per cent. to a maximum of 6.15. The percentage of salt, therefore, is not to be much regarded in making our estimate of purity. It would probably have to go above 8 per cent. before it could be regarded as an adulteration.

CURD.

3. How much curd can a good butter have? This is a difficult question. If a butter should have no caseine in it at all, it would be a strong presumption in proof of adulteration. If it has too much, its keeping properties are impaired. One per cent. of curd cannot be regarded as an excessive quantity. The best butter, however, should contain less than this amount. On account of the great difficulty of estimating the percentage of curd, it would not be safe to use common fats as adulterants. The specific gravity of butter fat is about 912, water being taken at 1,000. On the other hand, tallow and lard have a relative weight of only 900 or less. This is a slight difference, and yet it is a valuable one when the question of adulteration is raised. But the difference is so small that only the most careful work in determining the specific gravity with strict attention to temperature and manipulation, gives it any value. Inasmuch as most of the fats which are used as butter surrogates are liquid at 40 degrees C. (104 degrees F.) This temperature of determination has been used in the foregoing analyses.

The numbers given were not obtained by calculation, but by direct comparison with distilled water at the same temperature. While this method is not absolutely correct, owing to slight differences in the rates of expansion of water and oils, it yet gives the comparative differences, and these are of the greatest importance in such analyses. A butter affording a fat whose specific gravity, taken as above, falls below 910, would have its genuineness subjected to doubt.

SATURATION EQUIVALENT.

5. The quantity of alkali required to saponify the fat, is another means of judging of the purity of a butter. Butter fat contains an acid (butyric) which has a lower molecular weight than the oleic, margaric, and palmitic acids, which form

nearly all of the common butter adulterants. By reason of this difference the quantities of alkali necessary for saponification are different for equal weights of butter fats and those of lard, tallow, etc. This difference is strikingly illustrated in the table of analyses, and is the most reliable evidence of the purity or impurity of the samples under consideration. The manipulation of the analyses being an easy one, the determinations of the saturation equivalent is generally the first test in determining the genuineness of the butter. If this number should fall under 250 it would be safe to call the sample genuine butter.

SOLUBLE ACIDS.

6. Pure butters have a large percentage of acids soluble in water. The percentage of these acids to the total weight of dried butter fat is about five. In the analyses given, this percentage does not fall below 4.49, nor rise above 6, except in one case of Jersey butter, made under exceptional conditions. In the butter substitutes these acids rarely go above 5 per cent. Their determination, therefore, is an almost certain one of the purity of the sample.

OPTICAL PROPERTIES.

7. Pure unmelted butter, when viewed through a selenite plate by polarized light, presents a uniform tint over the whole field of vision.

On the other hand, butter substitutes give a field of vision of a mottled appearance. This phenomenon is so marked that, with a little experience, the observer will be able to tell a genuine from an artificial butter, with a fair degree of accuracy. While the examination should never stop with this optical test above, it can be advantageously used as a preliminary step.

JERSEY BUTTER.

By consulting the table of analyses, it will be seen that two samples of Jersey butter were examined. Both of these were from the celebrated cow Value 2d, owned by Watts & Seth, Baltimore, Md.

In the first sample analyzed, viz: No. 1,708 the percentage of soluble acids rises to the high figure of 6.79. This is by far greater than in any other butters subjected to examination. This sample was secured from the 25 pounds produced in one week while under test.

In No. 1,712, we have a sample of butter taken from the same cow immediately after the test had been made, and when, it is fair to presume, her system was somewhat deranged by the severe trial to which it had been subjected. In this sample the percentage of soluble acids was only 4.52.

In both cases the melting point of the butter fat is remarkably high, and I am told that Jersey butter will keep its form in hot weather better than any other variety. This point, however, could only be determined by examining a much larger number of samples.

I am anxious to secure a large number of samples of pure Jersey butter, and would be under many obligations to the members of this association if they would send samples of their butter to me at Washington, care Department of Agriculture. By this method, many points in the character of such butter could be determined, to the mutual profit of producer and consumer.

The importance of some such an investigation will be apparent at once to every one engaged in the production of butter. The market is now stocked with butter of an inferior order, and with butter substitutes. I have nothing to say against the wholesomeness of a good oleomargarine. Beef fat is certainly not injurious to health in its natural state, and I see no reason why it should become so during the process of manipulation into so-called oleomargarine. It is true that a very unwholesome article might be made, but this we will not fear when proper care and cleanliness are exercised by the manufacturer. Since the continued sale of such articles depends on their purity, we have little to fear in the direction of unwholesomeness. The real fraud in this case is in the matter of price. Pure butter is forced into competition with the spurious article, and thus its price is forced down to the level of such competition. This is a positive robbery of the dairyman, and not a great benefit to the consumer. What you gentlemen should demand is a law, supported by a healthy public opinion, requiring all kinds of food to be sold under their proper name and description. I have no objection whatever to a dealer exposing any amount of oleomargarine for sale under its own name. What I do object to, is purchasing oleomargarine under the impression that it is genuine butter.

If Jersey butter should prove to have properties which make it more desirable for table use than ordinary butter, it is but fair that the maker of it should receive the benefit of this superiority. The way to secure such a state of affairs is to show the people the facts of the trade.

The mere technical analysis of butter could have no possible value for you who are practical butter makers, but it acquires a real value when it sets forth the superiority of your butter, and enables you to protect it against counterfeits.

In this country, where food is so cheap and so abundant, there is no necessity for adulterating any article of dietary importance. But such adulterations are practiced, and will continue to be unless the people are awakened to the magnitude of the danger, and the necessity of protection therefrom.

Hoping that these data may aid in securing such a protection, I desire to thank you for your courtesy and attention.

INTER-BREEDING—TO WHAT EXTENT MAY IT BE FOLLOWED?

BY DR. LEVI RITTER, OF IRVINGTON, IND.

The United States possesses advantages of climate, soil, grasses, and grain, that have enabled it, even this early in its history, to produce the finest cattle in the world; and we think the Jersey cow has been decidedly improved in quality, beauty and value, since her importation into this country.

The topographical and climatic conditions, and the feed supplies of the different sections of our country are so unlike, that in a few generations from the same parents, animals selected from different herds will exhibit great physical and constitutional contrast; so that, by crossing the best specimens selected from herds bred from two hundred to two thousand miles apart, we are relieved from the necessity of inter-breeding, and need not resort to it unless it is the best way to improve the animal.

I am sorry that but two weeks notice was given me in which to prepare this article; it should have been two years at least. I hope it will be assigned to a committee, whose duty it shall be to collect statistics from all the breeders in the State, and from time to time report to this body the facts thus gathered and the conclusions drawn therefrom.

In this paper I can only submit some general reflections upon the laws of procreation in the animal world.

It is reasonable to assume that the same general law runs through all animal life, and that a practice that proved injurious in one species would produce the same effect in all, the intensity being increased as the highest type of life is approached, and diminishing toward the lower. This general law is positively denied by the ultra-advocates of inter-breeding.

One phase of the subject can easily be disposed of; for it is undoubtedly true that many breeders have found it financially profitable to carry in-and-in-breeding to the fullest extent. This always presents a strong inducement to the fortunate owner of a first-class cow or bull to make a "corner" on their blood, if I may be permitted to use a common expression and practice of purely speculative business. This feeling is much stronger in the old world, where so much importance is attached to family blood, and where breeders so much desire to build up a great name for their particular family of cattle.

The question before us is, does in-and-in-breeding weaken the vital forces and ultimately injure the stock?

It is proper for me to admit that my personal opinion is that inter-breeding does tend to weaken the vital forces and injure the progeny. This conclusion was reached years ago by studying its effect in the human family.

Assuming a general law to run through all animal life, we are still much embar-

rassed in determining what weight should be attached to the facts gathered. In the human race, incestuous progeny are always the offspring of parents morally, and often physically depraved. On the other hand, the very best and most perfect animals are the ones selected for inter-breeding. From such animals, even if it be admitted that in-and-in-breeding injured the progeny, it would take generations to reduce them to a level with the "common herd."

If we could have the full history of every in-and-in-bred animal, and there are thousands of them in this country, and a like history of an equal number of animals produced by breeding together the best animals of families as far removed in kinship as it was possible to find, we would then have the data from which we might draw approximately correct conclusions. Such statistics must be gathered, if at all, through societies like this; for otherwise they would not be of sufficient extent to be of any considerable utility.

Can not our Society start the matter, and provide for a report from all its members upon this as well as upon other important matters connected with Jersey breeding and butter production? The statistics of cross-breeding can easily be started by sending one of your best cows to the best bull of some other family to be found among our members, and then taking the calves to another first-class animal of some different family. The cows first bred should then be in-bred, and the results compared with the results of the first trial.

The report of the test should cover all the calves dropped, or it can not be of much value.

Although the fortunate owners of remarkable animals have practiced in-and-in-breeding, and built up, very often, thorough family blood, yet we have no complete history of any of these families. The cows that produce from two to four pounds of butter per day, are well advertised, but what of the hundreds of others of which we hear nothing? We want the yearly butter yield of these animals as well.

Mary Anne of St. Lambert, 9770, made 838 pound of butter in 310 days; Eurotas, No. 2454, 778 pounds in 341 days; Jersey Queen of Barnett, A. H. B. 4201, made 851 pounds in 365 days. That kind of a record is of more value than one of four pounds per day for seven days, if the record stops there.

Mr. J. H. Walker, of Worcester, Mass, has rendered a valuable service by giving the butter yield of a number of each of the families represented in his herd. But these statistics of inbred cattle should also report as to the vital powers of each calf. How many die; of what disease? Is there any scrofula or other constitutional disorder produced? Are the animals dwarfed or deformed, or is any cross disposition or bad temper developed? Do they become so refined that a thunder storm will sour the milk in the udder, or that the firing of a gun will diminish the secretion for days? Have they a vigor of constitution that enables them to hold up all the year, or do they succeed only during the test week, and thereafter remain out of repair for the season?

May it not be a fact, after all, that we could start with even inferior animals, and by using the same care in selecting crosses out of other families, arrive at greater results if we only kept the record as carefully, and were as anxious for its publication?

Without a healthy, strong animal, a good feeder, of great vital endurance, it is impossible to build up much of a creamery. The breeding that leads the most directly to these ends is the best, and that which interferes with any one of the conditions is faulty.

I believe sheep and poultry breeders find it better to cross flocks. Swine breeders have not attached enough importance to it, but they have not proven that scrofula, cholera, and other diseases, so fatal to swine, may not be averted, to some degree, at least, by a frequent crossing of families in breeding. It can hardly be doubted that, with mankind, incestuous intercourse results in impaired and defective offspring. Dr. S. M. Bemis, of Louisville, Ky., by appointment of the American Medical Association, and after bestowing much time and labor upon the subject, in 1858, reported to the society the results of 873 cases of marriage among blood kin, and of incestuous intercourse where there could be no legal marriage. They were collected from twenty-five States, with great care, and mostly reported by members of that learned body. From such intercourse there resulted 3,942 children, of whom 1,134 were defective in body. Ten of these cases were between brother and sister, or parent and child, resulting in thirty-one children, of whom twenty-five were defective in body and mind, ranging from dwarfs and idiots to scrofulous, insane, deaf, dumb, blind, and hideously deformed persons. Six hundred cases were between persons no nearer of kin than first cousins; 2,778 children were produced, of whom only 793 were defective, and these were not so greatly deformed as those of the first class.

By the then law of Ohio, statistics were gathered upon this subject. Included in the above aggregate are reported from that State 155 cases, from which resulted 1,021 children; of these, 244 were defective. From the same reports in Ohio were taken, at random, and from the same counties from which the others were reported, so as to give a fair average, 125 cases of marriage between parties in no way related. Eight hundred and thirty-seven children were produced, of whom only 18 were defective.

A like result was believed to exist in other States by the learned reporter of these cases.

A great proportion of the children of these blood relations died young, showing diminished vital force. Here, then, is shown a rapid diminution of vital force and bodily vigor and beauty, as we approach the most perfect cases of in-and-in-breeding.

Dr. Walsbe says: "The mute, the dwarf, and the idiot, are as certainly the result of the marriage of blood relations, as sorrow is the offspring of sin."

But, on the other hand, Dr. Voisin, of Paris, from observation of 1,077 cases in the hospitals of that city, concluded that none could be traced to "healthy," consanguineous marriages. But the word "healthy" parents can be made to atone for any amount of deformity and disease, for, in any given cases, we have only to assume that the parents had some known or latent predisposition that produced the defect, under and by virtue of the general law of atavism.

Lewis F. Allen, in his valuable work on "American Cattle," while strongly approving in-and-in-breeding, feels constrained to say (vid. page 212): "We are not an advocate of the practice *now* except in particular cases, and under pecu-

liar circumstances. There is, indeed, no necessity for it, to any extent, as our popular breeds of cattle are so widely distributed as to permit advantageous selections to be made from various herds for fresh crosses, without running into close relations of blood. Yet, two or three direct crosses may be made in successive generations, with a choice bull, on his own descendants, even now, to decided advantage."

We copy the conclusion of this great advocate of in-and-in-breeding to approve every word of it, but stopping short at the limitation there stated. Even James C. Jones, of Delaware, Ohio, whose strong reasons against in-and-in-breeding Mr. Allen quotes, only to disapprove, would doubtless go this far; for he admits "that many instances can be cited where no bad results have followed where they have not been carried too far, but," says he, "I deny that, in any case, such breeding has been more beneficial than the breeding together of animals of the same blood and quality that were not of kin."

With this conclusion we also concur.

The testimony of Pierce, the Collings, Bates, the Booth Bros., etc., a great number of English and Scotch breeders, has only this value. They were careful handlers of stock, and could have taken two scrub animals and developed a reasonably good progeny in forty or fifty generations.

J. H. Walker, than whom there is no more enthusiastic or sagacious Jersey breeder in America, is often quoted as possessing extreme views in favor of in-and-in-breeding. He certainly does believe that "blood will tell," and so do all successful breeders; but this advice contains his conclusion of the whole matter, as we understand him: "Breed to the winner is the rule—the winner that is, not the winner that is to be."

Mr. G. E. Morris, in an able address delivered before the Illinois Jersey Breeders Association, and published in the Bulletin of December 17th, uses this language which will bear repetition: "Select breeding stock with care, giving much more importance to peculiarly useful qualities than to color or any special point, basing our decisions both on the appearance of the animal and the character of the ancestry, avoiding long continued close inbreeding."

Thomas & Drane, of Clarksville, Tenn., advertise Wossie 6802, one of those wonderful inbred bulls, tracing fourteen times to St. Helier 45, and five times to Ianthe 4562.

Of the same class is Alpha Star 7487, recently sold by W. J. Hasselman. His blood is almost pure inbred from Saturn 93 and Rhea 166. Mr. Walker's catalogue shows numbers of such animals.

These only illustrate the tendency of the day. Such animals would be very valuable for crosses with other of the best families, but it is our opinion that such blood should be mixed thenceforward.

I believe that many of as good animals as the world has produced are the property of members of this association, and I hope that you may build up great family names for these best animals, and make fortunes. But a greater achievement for this association would be to make Indiana famous for the vigor and beauty of our Jersey cows. Let us have the greatest proportional number to produce 800 lbs. of butter per year, rather than the greatest number that will produce four pounds per day for a few days, and be practically useless for two-thirds of the year.

IN-AND-IN BREEDING.

BY A. S. HEATH, OF NEW YORK.

Permit me to make a few off-hand statements on the subject of in-and-in breeding.

I have not the time at my disposal from my many cares, obligations and employments, to do the subject that justice that your learned association ought to expect from an outsider. Could I be present at your grave deliberations to defend my random remarks, I should feel the satisfaction of a reply to criticisms. But as you kindly suggest that my statements will find their way into the Jersey Bulletin, I feel a degree of assurance that I shall be permitted to reply for myself, should it be necessary. And then, as I know that you can, from personal experience as an editor and an essayist, appreciate all these circumstances fully, I the more readily consent to grant your request.

I shall, then, be brief, lest I weary your association.

I am a cosmopolitan, and therefore have less to bias my judgment than those of strictly sectarian views. I say this because I desire to bring forward a living, a potential, and a long-existing argument against in-and-in breeding. And before I refer to, or indicate my example or illustration, I wish to give some degree of respect, admiration and credit for the subject I desire to use as my first, foremost and strongest argument against in-and-in breeding, as it holds equally good in the human, as in the comparative animal subjects.

While I regard the Israelitish people as the grandest association of human beings under the providence of God Almighty, for the advancement of mankind in prosperity, civilization, and successful human advancement, yet I can not disguise the fact that the inter and in-and-in marriage of the Jews has entailed upon mankind the most monstrous physical and moral evils the world has ever seen. Deceitfulness, disease, suffering and premature death have all followed in the consequent train of human evils.

You will see that I have laid the foundation of my argument in history and in fact. I need not, therefore, state that it is universally admitted that among the Jews there is a greater degree of deformity, physical infirmity, and mental prostration than among any other people of the world, when their favored circumstances are fairly taken into account.

Then, I say, that similar influences operating upon animals, result in similar physical defects and degenerating results.

One or two, or even several, incestuous cohabitations of animals may not strike one as injurious, when we are blinded by a degree of refinement and beauty in the offspring. But when we study the stamina, strength and constitution of the progeny in a fair, full and unbiased manner we shall find a surprising degree of degeneration.

It is, therefore, desirable to perpetuate the excellencies of domestic animals by transferring our use of remoter strains of blood of the same breed. Thus, by breeding second, third and fourth cousins together we succeed.

There are excusing circumstances where the nearest relations may be bred together. Thus, to perpetuate a nearly extinct excellence, or family, this is excusable, when out-breeding maintains health, stamina, strength and vigor in the future progeny.

It is often desirable to duplicate, or perpetuate, an excellence in near relations. This should be done even at the risk of some slight debility, rather than to forever lose a coveted excellence or quality. This can be compensated for by reaching after desirable and saving, or recuperating strength, a little way off from the close consanguinity previously used.

This will probably enable me to assert that rather than lose a desirable quality, I would breed the nearest relations of animals together for once, or twice, or even thrice. But if I would not be very careful to fortify this desirable quality by cementing strength, health and vigor, I should not only lose the desired quality, but also much more excellence.

This, probably, will enable me to state that in-and-in breeding, when too long persisted in, without ample fortification to maintain the coveted excellence in perfection, must result in depreciation.

The excellencies of breed is only the sum total of the excellencies of individuals. And though the breed can not be so soon injured by the maltreatment of individuals, yet it ultimately militates against the purity of the flowing stream of the breed; for each animal sends rivulets to the grand stream, and the purity of these assures the purity of the grand flowing current of the blood of the breed.

I only intended this as suggestive, and not by any possibility as in any degree exhaustive.

But, Mr. Secretary Lloyd, you must permit me the expectation that your arguments, *pro and con*, will also be published in the *Jersey Bulletin*, that I may receive the instruction on the subject I so much desire from your learned association.

INDIANA WOOL GROWERS' ASSOCIATION.

PROCEEDINGS OF JANUARY MEETING, 1885.

The annual meeting of the Indiana Wool Growers' Association was held in the rooms of the State Board of Agriculture, in the city of Indianapolis, January 29, 1885, at 1:30 o'clock P. M.

In the absence of President C. T. Nixon, Vice President Hon. Fielding Beeler took the chair.

Mr. W. J. Carter, of Westfield, Ind., was appointed to make a stenographic report of the proceedings for publication.

Mr. Cal. Darnell called the attention of the Association to the importance of a more stringent dog law, and suggested that a committee be appointed to confer with the Legislative Committee on Agriculture regarding the passage of a dog law. The bill proposed by the Legislative Committee makes it a county fund instead of a township fund, claims must be proved before the County Commissioners, the Auditor draws an order on the County Treasurer, who is to pay the money. After the claims for sheep killed are all paid for, instead of turning any surplus money to the School Fund it is to be divided, one-half going to the Wool Growers and the other half to the School Fund. I move, sir, that a committee be appointed to confer with this Legislative Committee on this subject.

The motion was adopted and the following committee was appointed, viz: Dungan, Nelson, Harkness, Farquhar, Henley, Levering and Howland.

Messrs. Mitchell and Howland were appointed to extend an invitation to Gov. Gray to meet the members of the Association sometime during the session.

Mr. Dungan. I understand our records are lost, with all the previous proceedings of our meetings, and we are without any by-laws and constitution. It is necessary for us to do something towards making a new record.

Secretary Farquhar. Mr. President, on my return home from our annual meeting last winter, these records are supposed to have fallen from my pocket during the darkness and lost. I have made dilligent search and advertised for them in the papers, but never secured their recovery.

Mr. Mitchell. I move that the Secretary be requested to purchase another book and complete the record, as near as may be, from the published Agricultural reports. Carried.

S. W. Dungan read the following paper on

COTSWOLD SHEEP.

THEIR ORIGIN, TOGETHER WITH THEIR ADAPTATION TO THE WANTS OF
SHEEP-RAISERS OF INDIANA.

BY S. W. DUNGAN, FRANKLIN, IND.

Mr. President and Gentlemen of the Indiana Wool Growers' Association:

Sheep are of very remote origin; in fact, they claim the honor of an antiquity coeval with man. We imagine that when the flowers first bloomed and the trees first donned their rich foliage, the world was not without this beautiful emblem of innocence and purity. Dr. Navin, in his introductory remarks on sheep, uses the following beautiful and expressive language: "Abel was a keeper of flocks. It has been honorably mentioned by prophets and seers of old, and lent to the inspiration of the songs of bards through a cycle of six thousand years. The lamb has been made, and appropriately too, the emblem of meekness and purity. Its blood has even flowed as a libation when man would draw very near to commune with God. The character of the Savior loses no ray of its lustre when seen through that triumphant rhapsody: 'Behold the Lamb of God which taketh away the sins of the world.' As the sheep has been honored, so also has the shepherd. From Abel down the shepherd's office has been honored by patriarchs, prophets, priests, and kings. Abraham, Job, Isaac, Jacob, and his sons, Moses, Jethro, and David, the poet, prophet, warrior, lawgiver, and king, were shepherds. To a company of shepherds, when attending their flocks by night, was sent a band of angels from the courts of heaven with songs more sweet than ever mortal ears had heard, to announce to them the messages infinite love had prepared for the cheerless millions of our race. 'Behold I bring you good news, glad tidings of great joy, which shall be to all people.'" May I not, with propriety, congratulate my brother-shepherds to-day in being engaged in that high and noble avocation, which has divine precedence and holy origin and sanction?

Now to the consideration of the subject assigned me. Cotswold Sheep: Their Origin, together with their Adaptation to Indiana.

I have sought help from various sources in order to be able to give a true and impartial history of this breed of sheep, and the most satisfactory and complete history I have found is from the pen of Henry Stewart, whose work on Sheep Hus-

bandry should be in the possession of every owner of sheep. He says: "This breed has become so common in the United States, and has been bred so extensively without fresh importations of new blood that it may well be adopted as a native sheep. Many excellent flocks are now self-sustaining, and under their American nativity lose nothing of their original excellence. The Maple Shade flock, originally the property of Mr. John D. Wing, of New York, but some years ago divided and now owned by other parties, is one of the many instances of the successful acclimatization of this most valuable sheep. The Cotswold has an ancient origin or history. It is said to have been introduced into England from Spain, by Eleanora, Queen of Henry II., of England, in the 12th century. Although there is nothing more than tradition to support this, yet there is some corroboration of it in the fact that in Spain there has long existed, and is now, a breed of coarse, long-wooled sheep not unlike the original Cotswolds in some respects. It is known, however, that in fifty years after this early date the wool of the Cotswold sheep was a source of material wealth, and was jealously guarded by law. Three centuries after this (in 1467) permission was granted by the English king, Edward IV., as a royal favor to export some of these sheep to Spain. They were originally very coarse animals, with thick, heavy fleeces, well adapted to their home upon the bleak, exposed Cotswold hills. So valuable and staple a breed could not long remain without improvement. Naturally the sweet, nutritious herbage of the limestone soil covering these hills favored this improvement, and as the pastures became enclosed, and agriculture improved in character, the flocks improved with it. When the Leicester became the most popular sheep of England it was made to assist in this course of improvement of the Cotswolds. It gave to the breed a better quality, a smoothness and refinement, and a greater aptitude to fatten, while it did not lessen its ancient hardiness of constitution. The modern Cotswold is still capable of enduring hardships and exposure, and is at home on all sorts of soil. It produces a large carcass of excellent mutton and a heavy fleece of valuable combing wool, adapted, by its peculiar character, for a class of goods of wide consumption, it being in demand for various manufactures from the small matters, such as worsted dress braids up to various kinds of cloths for men and women garments. The breed is large, and matures at an early age.

A full grown sheep exhibited at a Christmas cattle market in England, dressed 344 lbs. or 86 lbs. per quarter. The weight of the fleece should average 8 lbs. for a flock of all kinds, and some of our naturalized flocks surpass this; many ewes have shorn 11 lbs. each. The fleece of Champion of England weighed 18 lbs. and the fleeces of the ewes of the same flock weighed from 11 to 16 lbs. The famous ram Golden Fleece, owned by Mr. Wing, of New York, sheared, in 1867, 19 lbs. 4½ oz.

The description of a well-bred Cotswold is as follows: The face and legs are white, but some times dashes of brown or gray, derived from the original stock, may be found on both face and legs. The head is strong and massive, without horns, and having a thick forelock of wool upon the forehead. The neck and forequarters are not so square and heavy, nor the brisket so prominent as in the best Leicesters, but the hind quarters are square, full, and broad, and the thigh solid and heavy. The back is straight, and broad, and the ribs well sprung, giving a round body; the flanks are deep, the legs of moderate length, and the bone not so fine as in the

Leicester. The general style and appearance is good and attractive, and indicative of a vigorous, active and hardy animal, and a prime mutton sheep. They are active and well fitted for gathering a living upon a pasture in which a Leicester would hardly thrive. The lambs are active and hardy, and the ewes good mothers. The fleece is closer upon the back than that of the Leicester (on this point, Mr. Navin and Stewart disagree.) The wool some times reaches a length of nine inches, and, although coarse, is soft and mellow. In many of these sheep, the fleece is beautifully waved. No breed is more valuable for crossing than this. It has helped to establish several permanent and valuable cross breeds—the Oxford Downs and the Shropshires in England; a Cotswold Merino in Germany and another of this cross which is well under way in this country, and last, though not least, a very promising cross-breed, originated on the Beacon Farm, Long Island, by Mr. William Crozier, called the Beacon Downs. It has, moreover, been used to produce many cross bred market sheep in various parts of England, and is extensively used by our sheep-raisers in the production of market lambs. Being capable of adaptation to almost any locality, and producing a wool which, both in its pure state and in its grades, is of wide availability in the woolen manufacture, it may justly claim to be the most valuable sheep we have acquired, and to promise a more extended usefulness than any other we at this time possess, or can probably procure.

Mr. Stewart's work was published eight years ago, and there has been a great improvement in this sheep, in quality and quantity of wool, brought about by careful and intelligent breeders of England, Canada, and the United States. Had Mr. Stewart written his book four years later, we could with pride and pleasure have given him much heavier weights in fleeces, and in length of staple than any thing he has recorded. I feel no little modesty in saying (as it may savor of egotism) that in 1879, if I remember right, I sold Mr. Farquhar, our present secretary, a ram, sired by old Gray Prince, that clipped $21\frac{3}{4}$ pounds at thirteen months old, and what was very remarkable, he clipped about the same amount the second year, which I presume was about one year's growth, and we have wool on exhibition in this room that we clipped from another son of Gray Prince, that measures $19\frac{1}{2}$ inches, clipped at fourteen months old, the fleece weighing 19 pounds. Two years ago this coming spring, one whole flock of 180 head of Cotswolds averaged $10\frac{1}{2}$ pounds. This is good, considering the number, but many flocks of less number have far surpassed this. It seems almost incredible, when we consider the wonderful change wrought by the art and ingenuity of man with many breeds of sheep, and perhaps one of the grandest triumphs of genius was accomplished during the seventeenth century in the production of the improved Leicester sheep. It has been nearly a century and a half since the old Leicester sheep fell into the hands of Mr. Robert Bakewell, of Leicestershire, England. They were then large, heavy, coarse animals, having meat of a poor flavor, a long and thin carcass, with flat sides, large bones, and thick, rough legs; were poor feeders, and at two or three years old made about one hundred pounds of mutton, the wool was long and coarse, and of only moderate value. By a course of breeding, about which he was very reticent even to his best friends, and which he kept secret from other breeders, he totally changed the character of these sheep, and built up a reputation for himself as a successful breeder, which is second to that of

no other in the world. He apparently used any animal whatever, without reference to breed or color; nor did he regard relationship, if he considered those coupled together would be most likely to produce the results he wished to attain in the offspring. His ideal sheep was to him precisely what the desired Short-horn was to the Colling Brothers, Mr. Bates, or Mr. Booth, and all these breeders gave their whole soul to the attainment of their one single object. Now for the result of Mr. Bakewell's labor. He began in 1755; in 1760 his rams were let for an annual sum of about \$4 each. In 1780 he received \$50 for the season's use of a ram. In 1784 the price was raised to \$525. In 1786 one ram was let for \$1,575. In 1789 he received \$6,300 for the use of three rams, all born at one birth; \$10,500 for seven others, and \$15,750 for the use of the remainder of his flock, making a grand total of \$32,550 for the let of his rams one season.

We present these figures to show you what one man can accomplish in money and reputation by the careful, intelligent and judicious selection of breeding animals. The Southdown sheep were as successfully transformed in the hands of Mr. Ellman. He says when he commenced with them they were of small size, of bad shape, being long and thin in the neck, high on the shoulder, low behind, high on the loins, down on the rump, the tail low, sharp on the back, the ribs flat, narrow in the forequarters, and the only good point they had was a good leg. To Messrs. Ellman and Webb, and their successors, belong the credit of weeding out all these bad defects, and to-day the Southdown stands unrivalled for its beauty and symmetry of form. But you will excuse this digression; I present these thoughts, hoping they may be an incentive to the members of our association in the improvement of their flocks. Do not buy a ram because he is cheap (the cheapest usually turn out to be the dearest), but have your ideal type of sheep, and spare no time, money, or labor to breed up to that type.

As to the adaptation of the Cotswold sheep to our own State, I will say that there are portions of our State, and every other State of our Union, that are not adapted to sheep husbandry. An old saying is that sheep must have a dry foot, or disease follows. All men who have handled sheep know that the soil most suitable for any kind of sheep is, one that is naturally drained with a sandy loam or gravelly soil and subsoil, but as all have not this character of soil, I would say that any dry land, naturally or artificially drained is adapted to sheep raising, and I have only to say in relation to Cotswold sheep, that they will accommodate themselves to, and do well on any soil that other varieties will.

It is said that Ohio and Western Pennsylvania, with their extensive coal-bearing formations underlying dry rolling fields, have more sheep than any other State, while New York, Illinois, Indiana and Michigan, which cover an extensive deposit of lime-stone and sandstone come next on the list. So you see our State is included with those adapted to sheep.

What is often considered a lack of adaptation of domestic animals to certain soils and climates is nothing more or less than a lack of good, wholesome, nutritious food, pure water, and careful attention. Why is it that some men always have fat, sleek horses, and their neighbors have poor, lean ones, with the hair turned the wrong way? Is it because the lean ones are not adapted to the soil and climate? No. The one is groomed regularly, well bedded, watered and fed regularly, and,

last though not least, treated kindly and humanely; while the other is fed enough at one feed to do him a day or two, and watered every other day, and, as a substitute for grooming, he is treated to the boot-heel or toe of his master occasionally. So it is with the sheep, or any of our domestic animals. I am aware of the fact that quite a number of men in Indiana who invested money in Cotswold sheep within the past ten years have had bad luck with them, and concluded they were delicate creatures and not adapted to our climate. The Cotswold's boom reminds me very forcibly of the grange movement in our country. Nearly all our farmers went into the order, and the great majority went in because it was the fashion, without understanding the grand and noble principles of the order; but when they found they had to make a small sacrifice of time and money, and that they were not getting as much money out of it as they expected, many abandoned the order. The trouble was with the people, not the grange, for I am convinced that it is the best order ever instituted for the benefit of the farmer and his family. So when combing wool was high and mutton a good price, everybody embarked in Cotswolds.

Yes, you remember we did not have any other sheep scarcely at our fairs but Cotswolds for years, and the result was we "had too much of a good thing," and produced more combing wool than our manufacturers could use, and in the meantime fashions changed and women quit wearing alpaca goods, and a little further on the tariff was reduced on foreign wool, and many became demoralized and concluded to abandon the business, and the result is, there are very few good flocks of sheep in our State to-day. It is said that history repeats itself; in the early part of this century, fine wool sold for \$2.50 per pound, and pure-bred Merino rams sold from a thousand to two thousand dollars per head, and Merino ewes as high as a thousand dollars. In five or six years after this, it is said that these sheep could be bought for one dollar a head, but they came up again, and since that time Merino rams have sold for five thousand dollars or more. We should not think of abandoning any business on account of these temporary depressions and fluctuations. Hoping that the members of the Indiana Wool Growers' Association may continue to improve their flocks until they are brought to the highest degree of perfection, I respectfully submit this paper.

DISCUSSION.

Mr. Darnell. I do not want to criticise the paper, but I want to ask Mr. Dungan if he is or is not a friend of the Cotswold sheep?

Mr. Dungan. I still have about one hundred and fifty Cotswold sheep, and like them, although I have other breeds of sheep. I have been experimenting with three different breeds of sheep. A year ago this winter I had a number of pure Merinos, some fifteen imported Shropshires, and five or six Cotswold, all fed together. All those sheep were in good shape when I commenced with them, and in still better shape in the spring, and I did not see any difference as to hardiness, etc. It is a confirmation of what I said in my paper, that what is often considered a lack of adaptability is a lack of good treatment. I gave those sheep all the clover and timothy hay they could eat, and bran and corn mixed. I am pleased, and

expect to continue with the Cotswold sheep. What made our combing wool so valuable in the middle of our century. Our alpaca goods were produced from an animal in South America called the "Alpaca," and no other wool was employed in their manufacture but this. The manufacturers of England conceived the idea that the wool of the Cotswold, Lincoln and Leicester could be manufactured into alpaca goods, and the United States commenced soon to manufacture goods from the same material, and hence this long combing wool came in general favor. Those alpaca goods so common as an article of dress among the ladies, were from this wool. It has not been long since we imported annually over twenty millions of combing wool, besides the other wool imported here. There was a grand field open and everybody went into it, but fashions change and we all know we sometimes go into extremes. When every farmer goes to rearing the same kind of stock we over-do the thing. It reacts, gentlemen; mark what I tell you. Combing wool is not as high in the market to-day as when it was in demand before, but the time is not far distant when the combing wool will be as high as in 1878, 1879 and 1880. There was not much demand for this wool, and people quit raising it. In five years combing wool will be higher than ever. Alpaca goods are coming in style again. Mr. Merritt told us last spring, after he examined this long wool, "don't stop raising this; there will be demand for it."

Mr. Howland. Is the Cotswold the best breed for producing long wool?

Mr. Dungan. Yes, the Cotswold, Leicester and Lincoln are all long wool sheep. The Lincoln has the finest wool of any.

Mr. Howland. How about Lincoln sheep, mainly called Bakewell?

Mr. Dungan. It was in England this sheep was produced, in Leicester, hence the name given.

Mr. Howland. Was the cross made between the Cotswold and Leicester after Bakewell got them?

Mr. Dungan. No, this was done before.

Mr. Howland. Has the Cotswold any other blood but Cotswold and Leicester?

Mr. Dungan. That is a hard question to answer. In all those breeds they use different animals that show symmetrical form. Mr. Navin used nothing but Leicester in making his improvement. Men differ on these points.

Mr. Howland. You don't know just what blood is in the Cotswold.

Mr. Dungan. Yes, and many others. The Lincoln is the largest sheep in the world. There have been hundreds and hundreds of them brought to this country by English breeders, and sold as pure bred sheep. The sheep we raised were pure. Mr. Darnell has the honor of bringing Gray Prince, the grandest sheep ever brought to this country. He took the premium at the Centennial Exhibition. I am very much pleased with the Shropshire. The Shropshires have much Cotswold blood in the face. They produce the original better than all those cross breeds.

Mr. Nelson. I must say that I have been well entertained by the reading of the address.

Mr. Farquhar. We have wintered the Cotswold, Southdown and Shropshire breeds, and at clipping time the Cotswold sheared 7½ lbs., Southdown 8 lbs., and Shropshire 6 lbs. Taking altogether, I think the Cotswold is the most profitable sheep to keep. I can't speak of the Leicester, Merino and Lincoln.

Mr. Wiley. What number of sheep would you consider proper for a flock to do well, of the different breeds.

Mr. Farquhar. I think fifty would be enough, and twenty-five would be better.

Mr. Dungan. As we have commenced giving our experience, it would be of interest to hear from all the members, that we may know what kind of sheep are being raised in the different neighborhoods, the condition of the sheep, and the feeling of the people so far as they know regarding the present outlook of sheep husbandry.

Mr. Beeler. I learn that about 60 per cent. of the sheep in Texas have been destroyed.

W. R. Goodwin, of the Kansas City Indicator. The destruction of sheep and cattle down there is attributed to the storm. The cold weather has extended farther down than ever known before, and the sleet and snow has covered up the grass from the sheep. At the Kansas City Live Stock Exchange, we have a market for the western trade, and sheep have been selling from 25 cents to \$3.00 per head. There have been several hundred sold in the last month at 25 cents per head. For some reason the farmers are bringing in all the ragtail sheep in the country, and there are many of them in Kansas and Missouri. I have been trying to find out the cause of this, but I can not tell you why it is. Some think the tariff has something to do with it. There is a general skirmish all along the line; but they are advised there not to be rash in selling off, but to hold on. My private opinion is, they have tried to use the grade too much instead of pure bred sheep.

Mr. King. The gentleman from Kansas has expressed the condition of affairs in our country. We are breeding some high grade sheep; are now shipping them at low prices, after having to feed a month or six weeks. The lamb trade is spoiled. I used to make it very profitable. The last lot of lambs, consisting of 100 or more, made me no money. The reason of this I can not tell. Men are selling their entire flocks and quitting the business.

Mr. Henley. The part I was most interested in in the last address was the adaptation of the Cotswold sheep to the wool growers of Indiana. The general inclination of wool growers and sheep breeders is to get rid of their sheep. I think the gentleman from the West struck the key-note when he said we breed too carelessly and breed scrubs. I have had some correspondence with parties in Kansas and Texas as to the character of their breed of sheep, and they say they have not the sheep that they want. Low prices cut a large figure. Men will abandon the business if it is not profitable. We must import a large amount of wool this year, according to statistics. From the destruction of sheep in the United States, the importation must be larger than it now is. The general tendency seems to be to get rid of the sheep. Some men are keeping their flocks up pretty well in numbers, while a great majority are cutting down in numbers. Men are not careful about breeding, and we are losing in price and quality of mutton and wool. I look upon our State as regards soil and climate as being a State in which sheep may be raised profitably. We have much land, low in price, which is well adapted to the raising of sheep. I claim that I can take a good flock of Cotswold sheep and make more money, even at present prices, by forcing them, producing a large amount of wool and heavy carcass, making more money out of sheep than hogs.

Mr. Ramah. I have had some little experience in raising sheep, and my reason for attending this meeting is to hear from others. I have not been as extensively engaged in it as some, and have not paid attention to improving the different breeds, though I have given that some attention. The last gentleman on the floor speaks of people quitting the business. Ever since I have been in the business I have seen people quitting it. You take a man who has an adaptation to the sheep, and he will do something with it, notwithstanding the low price of wool. This is one cause, and in many cases it is owing to their inability to manage and take care of them and see in the future something that might grow up. The price of wool to-day is not remunerative, but for mutton good sheep would to-day bring 6½ to 7 cents, gross. Our best bullocks seldom do that. Good early lambs are perhaps worth 4½ to 6½ and 7 cents. It costs less to get sheep than cattle. Poor land makes poor sheep. My experience has been that where I have treated them as I should they were as remunerative as any other class of stock that I have handled.

Mr. Darnell. We would like to hear your experience with crosses.

Mr. Ramah. I bought some Cotswold sheep of Mr. Darnell, and I like them very much. Really, my favorite sheep had been the Southdown. I bred these ewes to an American Merino buck; from the lambs I took all the bucks, and made wethers or sold them, keeping the ewes. I am now breeding to the Southdown, from which I get good returns. I had some experience sixteen years ago in crossing the Cotswold with the Merino, and got a fine flock of sheep. I am getting back to that now. I like the cross very much; I get the size and form, and closeness and fineness of wool; in other words, it makes a general purpose sheep for mutton and wool; also, by crossing with the Southdown or Shropshire-down.

Mr. Robe. I think the folks in our neighborhood are tired of raising sheep, because it is not profitable. My opinion is we can raise wool in Putnam county for twenty-five cents a pound. Last year we got twenty cents, but it did not pay. I breed Cotswold grades, putting a Merino cross on these Cotswold ewes. The low price is generally laid to the tariff question; I am sure it affects the price three cents a pound, and this makes many want to go out of the business. Large numbers are thrown upon the market, which reduces the price of mutton.

Mr. Henley. Rushing the sheep on the market in unmarketable condition makes our prices so low.

Mr. Wiley. What few flocks have been raised in our neighborhood do not pay. Some of my neighbors were highly elated with the Cotswold, but in a few years they were the worst sheep we have. The main reason was putting too many together, and not caring for them. We are now using the Shropshire cross.

Mr. Yoke. I would have a few sheep on the farm if I did not make anything on them, they are better than any other stock for keeping land in order.

Mr. Tomlinson. Before I began the business of raising sheep I had a certain pasture containing many weeds. I had noticed that pastures clean of weeds was an indication of a good farmer. Two or three years ago it occurred to me that it was sheep that had cleaned a certain farm of weeds. This man had nice pasture and sheep in them; so I got some good sheep and put on my pastures and killed out the weeds. It is not every man that can raise sheep successfully, but if you see a man who raises fine Shorthorn cattle and horses, you will generally see a fine

flock of sheep. There is not so much in the breed, as caring for them and dividing them into small flocks; they will make a greater per cent. of profit than any other animal. I cull my sheep very closely, taking out all the rag-tag and bob tails and send to the stock yards; every sheep left is in good condition for mutton, and my flock is in better condition now than I have ever had them. The trade is dull but if you have good sheep you can get almost your own price. They will make you more money besides keeping the farm in good condition than any thing else will; they can clean out an old fence row or briar patch better than I can. The price of wool is a little off at present, but I never pay any attention to that; the wool comes in about the time we pay our taxes and we are always glad to get it. It is the mutton that I am after and I am running into that stock of sheep. An old ewe is not worth more than a dollar, but you can sell six dollars worth of lambs from her. I have been letting my flocks out on the shares; it makes me from fifty to one hundred per cent. I could let out a hundred flocks if I had them. I furnish the ewes and half of the increase and half of the wool is mine, and the ordinary flock is mine the first day of September.

Mr. Darnell. You spoke awhile ago of culling your sheep out, selling the worst ones because they would not winter over.

Mr. Tomlinson. The last time I culled only six out of fifty or sixty. I have no thoroughbred Cotswold. I use only grades, breeding to Shropshire bucks. With half-bloods and good mutton sheep I make my money. When the bucks get in good shape I sell them; the ewes I keep over, some of them weighing 175 pounds at two years old next spring. I keep all my sheep in good condition.

Mr. ———. Do you have any of those bob-tails that sell at 25 cents per head?

Mr. Tomlinson. No, sir, I have not. I sold my ragtags for what I could get. I sold five or six to a neighbor, and in a little while they were better than mine. That convinced me that I had too many, as small flocks do best.

Mr. Prewitt. I think all the different breeds of sheep are good if put in small flocks. I never put more than forty head together.

Walter J. Quick. We are breeding Cotswold and Shropshire, and are convinced that they are good mutton sheep as well as wool sheep. We have had very good success in selling, yet the Cotswold are not selling quite so well as formerly; but we shall hold on to them. While we have cut our flocks down, we are keeping the best and breeding carefully as heretofore. Our grades are mostly Shropshire. We should advocate small flocks; I think they are preferable to large ones. We don't have more than forty in a flock. In the summer time I think it is very advantageous to change our flocks from one field to another. Turning them in an old field they will clean out old hedge rows and briar patches effectually. I want to say right here that few flocks get enough salt. I am favorable to this rock salt; it is splendid for stock; it is, perhaps, better than common salt.

Mr. Dungan. Please give us the method of using it.

Mr. Quick. It is not necessary to keep it dry; put in troughs, it makes a brine, which is not a good way to salt. If put in troughs it should be under a shed. A good way is to cut a hole in a log and put some in there; the brine will sink away in the log, and the sheep will gnaw at it. We also use salt and tar a great deal.

We thought the grub was in our sheep, and we used tar; would pour pine tar in a trough to the depth of three or four inches, then take salt and sprinkle over this; it would sink down in the tar and make the tar salty. The sheep had free access to this all the time. We think this is a good thing, but use it only in the summer time.

Dr. Conkle. My habit of using tar is to bore an inch and a half hole, three inches deep, in a log and fill it with tar and salt. The sheep would get enough to keep the fly off.

Mr. Quick. We have sheds where the sheep can go all the time and have access to it. You will find some sheep there all the time.

Mr. Dungan. Dr. Conkle, what injury would occur from the use of tar if the sheep would eat more than the system required?

Dr. Conkle. No injury; but some would get on the wool and make them look unsightly.

Mr. Nelson. I have given my experience in sheep raising before, and what I might say now would be a repetition of that. I keep a small flock of sheep—say about two hundred—and keep them in three separate and distinct lots, and am not discouraged in the business. I told you, last summer, that I crossed my Cotswold ewes with Merino bucks. This I have done, and had good success. I have had more success with that cross than anything else during the last twenty years. I have always used a pure breed buck, as I do with all male animals. I have not been sheltering my sheep, with the exception of my buck lambs and aged bucks. My lambs are now half blood Merino, and are lively, notwithstanding this bad weather. They are playing, no doubt, such a day as this. I have, also, one lot that I am going to put off as mutton sheep. I grade closely, and turn off annually as they are in condition for mutton. I sold my wool last year for 21 cents per pound. It was a low price, but I am satisfied. They average eight and a half pounds to the fleece. I remember, in England, some forty years ago, when rentals, even then, were much higher than they are anywhere in this country to day, wool was then worth about 16 shillings per stone (which is fourteen pounds in weight), or, in our money, 23½ cents per pound. The English farmer could do well at that. We should not talk of being discouraged about sheep raising. I have always bred crosses, and I want some one to tell me what should be my next cross, my ewes being Cotswold and the buck Merino. I have thought of taking the Shropshire. There is a discouraged feeling in our part of the State in regard to sheep raising. They complain that the depression is caused by the tariff. I am sorry that some in our country do not know what tariff means. I can make money off of sheep. The wool comes in a nice time, when money is needed, and is very convenient. I want to breed the best of sheep for mutton and heavy fleece. I can keep fifty sheep as well as twenty-five, but not one hundred. The selection is half the battle in sheep raising.

Mr. Dungan. What do you feed your sheep?

Mr. Nelson. I change my feed. The only grain I feed is corn, but do not give that entirely until about this time of the year. I let them run in the stalk field and on blue grass, and eat anything they can get. It is good to change sheep around, but I have obviated this by letting them have free range of all my pasture land—if it is 400 acres, so much the better.

Mr. Beeler. You don't limit them to fifty in a flock?

Mr. Nelson. No, I do not. I let them go together, but I have other stock also with them.

Mr. Quick. If we have only one kind of sheep, it is all right; but if we have different kinds of sheep, and bucks and ewes, we have to have different pastures. It seems to me we would have difficulty in that case, but if he only has grades he don't experience this difficulty. Of all animals, the sheep is the most delicate and particular about food, grass as well as grain. After they run over a pasture a few weeks they get tired of it, and they renew their appetite by changing to a fresh pasture.

Mr. Nelson. I don't wish to be understood that I let my bucks run together with the rest of my sheep. I never use tar among my sheep in connection with salt. I salt every few days. They require much salt. They will take a little every day if they had it.

Mr. Conner. My experience, when I was actively engaged in breeding sheep, was with grade Cotswold, and was similar to that of Mr. Tomlinson. Regarding the disposition to sell off and quit the business, some flockmasters said, during the pendency of the Converse tariff bill, that they hoped for the restoration of a better condition of tariff rates on foreign wools, that in their opinion the present tariff affected the price of wool three or four cents on the pound. I had some correspondence with those who were engaged exclusively in the business, and I have had some correspondence with the flockmasters, since the defeat of the Converse bill, who expressed themselves as being hopeful, with the intention of hanging on to the business, while some seem to think the profit in sheep was not so great at present as in other branches of husbandry.

Mr. C. A. Howland. I do not attach so much importance to the tariff question, as relating to the price of wool, as some others. People make a great blow sometimes about little things. If there was any profit in keeping sheep when wool was twenty-five cents per pound three or four years ago, there is profit to-day at twenty cents per pound. Everything else has come down in the same ratio. There is no good reason to assign for selling off our flocks of sheep; overproduction is the starting point of this. There has been an overproduction in many things by the American people, which often occurs; they enter in it with a zest, giving their whole soul to manufacturing implements and raising wool, and out-do any other people. This small matter of two cents a pound should not affect the sheep husbandry. While so many are seeking to get out of the sheep business, it is the very time for us to step right in, and have a good lot on hands. We will make money if we do. I have stepped out and in again. My advice is to "Stand by your guns," and in a few years you will make a good thing of sheep raising.

Mr. Smiley. I can not say much of interest to the Society. I breed a small flock; I have full blood Merino, and also some high-grade Cotswold and Leicester. I use Merino buck on my long-wool ewes. My idea is to produce a general purpose sheep, one that will produce a fair yield of wool and mutton combined. My flock last season was half and half divided. My sheep averaged $8\frac{3}{4}$ lbs., when clipped, for the Merino, and the long-wool a little less than 8 lbs. I would cross with Oxfordshire. I use pure bucks. I sold my wool last year at an average of twenty-two cents per pound.

Mr. Aikman. I would rather handle a Shorthorn bull than a sheep. There is no money in them for me at present, owing to the low price of wool. My father and I were in partnership in the sheep business. He retired from the farm, and I could not attend to all. I preferred hogs and cattle to sheep. If we take the right kind of care of them, and the price of wool is ample, there is some money in them.

Mr. Harkness. I breed Cotswold sheep, and am better pleased this year than I ever was. I make it a rule to take good care of my sheep. A year ago a manufacturer gave me a little information on the subject of wool. I was not aware that wool exposed to the weather was of better quality than "stable" wool. I had a different opinion, but he said he would rather buy wool that had been exposed to the weather. This winter I am not taking so good care of them, and the wool is cleaner and nicer than when keeping them in the stable. I do not keep many sheep—say thirty to fifty breeding ewes. My choice is Cotswold. They produce more wool and mutton than any other sheep. I sold my wool last spring at Knightstown, for 23 cents per pound. My breeding ewes averaged from eleven to twelve pounds of wool. I made 50 cents a month per sheep, or \$6.00 a year. Sheep will pay better with wool at 20 cents a pound and the increase than any stock I handle, besides keeping down weeds and briars.

Mr. Beeler. What reason did they assign for the wool not being so good when housed?

Mr. Harkness. The fiber was not considered so good.

Mr. Mitchell. The sheep are being sent to market from our part of the State. The farmers are discouraged. When we got 25 and 30 cents a pound for wool, it would do very well. I sold last year at 18 cents a pound. I think the best cross Mr. Nelson could get would be a Shropshire buck to put with his flock. They are a good wool and mutton sheep. There seems to be a pernicious fashion of painting sheep up with yellow ochre for fairs. Go where you may, you will find the sheep "doctored" up in this way. It is all wrong. I move that a committee be appointed to draft resolutions regarding the tariff.

Mr. Howland. I am opposed to such a committee. My opinion is, we can produce wool as cheap as anybody else. The present price of wool may seem cheap to what it was twenty years ago. During the war it was as high as 40, 50, and even 60 cents a pound. We can produce wool as cheap as any other country. Our pastures are ample, and we need not fear England or Germany, or any of those countries of the Old World. I shall vote against the motion.

Mr. Darnell. I am in favor of Mr. Mitchell's motion, and shall support it.

Mr. Nelson. I am a tariff man. We can not raise sheep and wool under the present tariff. I shall support Mr. Mitchell's motion. I should like to see the tariff restored as it was.

Mr. Mitchell. I am astonished that those gentlemen will say we can raise wool as cheap as in Australia—in that country where land and labor are so cheap. The United States Congressmen are our servants, and we should try to have them adjust this tariff question satisfactorily to us. I am decidedly in favor of giving expression on that question, so our law-makers may know the wishes of the wool growers of Indiana.

Dr. Conkle. I am in favor of asking Congress for protection; if we do not ask we can not receive. We have not come to the time that we can be put down, and we must be protected with all our labor, and if we ask protection we will get it.

Mr. Howland. It is good to have sheep pastured on the ground; here is where a part of the profit comes in, notwithstanding our land is worth from \$30 to \$40 an acre.

The motion prevailed, and the Chair appointed Messrs. Mitchell, Nelson and Tomlinson as committee on tariff.

On motion, the following committee was appointed to prepare a programme for next meeting, consisting of Messrs. Dungan, Harkness and Nelson.

A vote of thanks was tendered Secretary Heron of the State Board for his efforts in securing rates on the various railroads for members attending the convention.

Convention adjourned until 9 o'clock to-morrow.

FRIDAY MORNING SESSION.

Convention met at 9 o'clock, President Beeler in the chair.

The reading of the minutes of the previous session was dispensed with.

ELECTION OF OFFICERS.

The result of the balloting was:

President—Hon. Thomas Nelson, Bloomingdale.

Vice President—John Tomlinson, Shelbyville.

Secretary—I. J. Farquhar, Winchester.

Treasurer—J. L. Thompson, Arcana.

Mr. Dungan. I regret very much that those persons whose names appear on the programme are not here; it often places us in a bad position, as we come here to hear those subjects discussed which are full of interest to the wool growers.

Mr. Levering. I am not well prepared to give my ideas regarding the Shropshire. I am young in the business, but learning all I can by gathering ideas from others. It is a matter of great importance to know the difference between the Shropshire and Southdown. They are sometimes difficult to distinguish. I want some one to write an essay characteristic of the difference, so I may know something more about them.

Mr. Howland. I should like to have Mr. Dungan give us some knowledge on the Shropshire, not the Shropshiredowns.

Mr. Dungan. I have talked too much in these meetings in former years and am trying to quit off a little. I have been a member of this association longer than any one present, and feel, and always have felt an interest in the success of

this association. In relation to the Shropshire, my experience is quite limited. I have only been keeping Shropshires two years. I imported twelve head of ewes in 1882—fine specimens of the Shropshire breed brought from England. If I understand what produced the original type of the Shropshire, it was a cross of the Cotswold on what is called the "Morfe Common," which derived its name from a tract of country comprising about 600,000 acres called the Morfe Common.* This breed was a small horned sheep inhabiting that country. Mr. Stewart has given us some account of the Shropshire, as old a breed as the Southdown, but never considered distinct enough in England to receive a premium until 1842. We have a history of the Southdown as far back as in the seventeenth century. Like all other breeds, they have been selecting the best rams to couple with the ewes to produce an ideal type combining mutton and wool. The Oxford sheep are produced by a cross between the Cotswold and Hampshiredowns, but the characteristic of the Cotswold is nearer than the other sheep. The head and general form of the Oxford sheep resembles the Cotswold. The Cotswold possesses the power of transmitting the good qualities to the offspring. The Oxford sheep is the cross on the Cotswold and Hampshire down, and it is a grand sheep, larger than the Southdown or Shropshire; in fact, it is the largest of the downs. In relation to its adaptation to the wants of the people, I have no doubt but it is one of the best, yet they do not produce as heavy fleece or carcass as the Cotswold.

Mr. Nelson. Is this Morfe Common sheep identical with the black-faced sheep?

Mr. Dungan. It is a black-legged sheep. It was produced in England, instead of Scotland.

Mr. Nelson. My knowledge is limited in that matter. If that sheep is identical with the Scotch sheep, there is not much change. I have my doubts as to the true origin of the Shropshire sheep, as there would be no down in their mate at all. It was quite customary, in raising their early lambs, to select Scotch sheep, Bakewell or Leicester, and all become white-faced. This Morfe Common sheep is new to me.

Mr. Howland. I would like to hear a general discussion on the origin of the Shropshire sheep. It is something that I am interested in, and I came here to learn about it. I am disappointed, in view of the fact that we have not come to any definite conclusion regarding the origin of this sheep. I suggest, if the committee has not completed the programme, that they continue Mr. Thompson as an essayist for next meeting, and ask him to prepare a paper on this subject.

Mr. Levering. I notice quite a number of breeders are favorable to the black-faced sheep. I confess that I like the black face the best. It is the most distinctive feature between the Southdowns and the Shropshiredowns. Sometimes it is difficult to define the features on the Southdowns, Shropshiredowns and Oxforddowns. The best feature of the Shropshire is they have thin ears and well set back on the neck, and have a bunch of hair between the ears. I should like, as has been suggested, that Mr. Thompson, in his address next year, give us the distinctive cross of the Shropshire and Hampshiredown sheep. We do not call the Oxford a down sheep. Mr. Pruitt thinks it is a cross of the native black sheep, so there seems to be a difference of opinion in this respect

*This statement refers to England as it was a century ago.

Mr. Dungan. In my record book there is a very valuable note, taken from an address by one of the most prominent men of England. Perhaps it would be pertinent to read it here.

[The article in question was here introduced and read to the convention, but is missing.]

Mr. Nelson. I am convinced more than ever that the Shropshire breed don't come from the black sheep of the northern regions of England. People and stock don't spread around there like they do here. The climate is different. The very kind named in that article are in the south part of England.

Mr. Dungan. I will stick close to Mr. Stewart's works. He has done more than any man in the United States to investigate the origin of sheep. I am convinced when I handle and look at the Shropshire that there is certainly a cross of long wool in them.

Mr. Mitchell. We get the black face from the Southdown. The Southdown is the originator of the black face sheep. Those long horned sheep, accustomed to the hills of Scotland, are a hardy variety. They inhabit the hills of that country, and are known by the peculiarity of their horns. To my knowledge in the low lands the larger sheep have predominated, but in the Grampian hills the Cheviot sheep are there in immense lots. The Southdown has been from time immemorial a good sheep in England and Scotland. The Oxford is a more recent cross. The Hampshire is an older sheep than any. The Oxford and all the downs sprang from the Southdown.

Mr. Dungan. The Oxford is produced from a cross with the Southdown and Hampshiredown.

Mr. Pruitt. The Shropshire has, without doubt, some Southdown blood.

Mr. Mitchell. These sheep derived their name from the country in which they originated. It is the same way with cattle and hogs. Mr. Stewart claims the original type of the Shropshire.

Mr. Dungan. You don't claim the Southdown is older than these other breeds, do you?

Mr. Mitchell. I think it is.

Mr. Howland. I think it would be well to discontinue this discussion and make it a subject matter for next meeting. It is a question of great interest as to the Shropshire. The origin is of so great a date that we can hardly tell much about it, but few authors have written on the subject. If the Shropshire is the best sheep we have, we may leave the subject, and let each one make it a duty to study this up for next meeting.

Mr. Dungan. Do you not think we may commit the same error we did in the Cotswold a few years ago? The Shropshire produces a class of wool used perhaps more than any other in manufactured goods. If all go into raising this sheep and neglecting other breeds, it would meet the fate of the Cotswold.

Mr. Mitchell. Every person has their preference in sheep raising as well as anything else. The range sheep are not raised for mutton, but for wool. They get good prices for that, as it will bear shipment. Long wool is best for blankets. Fine wool is coming into use more and more all the time. Light woolen goods are better to wear than cotton goods. Long wools were in demand during the war for making army blankets; but that has ceased and we do not want them now.

Mr. Merritt. I have come to learn something. In the early part of the introduction of this sheep, there was a great demand for army blankets, and the sheep that produced the most pounds of wool, without regard to quality, was the most profitable. The Leicester wool was used in the finest dress goods, and always will be wanted for that. It is raised in England, Ireland and Scotland. The current has been against them; people have been running after mutton sheep, such as Southdown, Shropshire and Cotswold. So far, wool runs with the fashion; when fashions change it modifies and changes the quality of wool in demand, to some extent. The Shropshiredowns are producing a rush that is unwarranted, so far as wool is concerned. The wool is not a desirable wool, not equal to Cotswold and Leicester for combing purposes. If you are looking for a breed of sheep to raise, look for some other kind than Shropshiredown; it lacks softness and fineness.

Mr. Dungan. I am glad Mr. Merritt has corroborated my statement yesterday. I feel encouraged since Mr. Merritt told us two years ago this coming spring, when we examined those long fleeces; said he, "Gentlemen, don't discontinue the breed of this kind of wool; there will be a demand for it after awhile." We were then over supplied with this wool, but I predict that this lustre wool will be higher than any class of wool we have in five years. I am a strong friend of the Shropshire sheep, yet I notice this same quality that Mr. Merritt spoke of—it is dry and lacks softness. The Cotswold wool, under similar circumstances, would have a different feeling and lustre. We would all do well to continue breeding the long-wool sheep to some extent. At one time we had to import millions of pounds of this long wool, and then at another time we produced more than we could manufacture.

Mr. Merritt. In the first place I do not use Cotswold wool, but it has a market value. We can use full blood Southdown in the goods we manufacture for our market. We must have some Merino blood in our wools to make the goods soft—that is the class we use, and to put myself right regarding some statements made two years ago. At that time there had been no change in the tariff, and I based my conclusions on the tariff as it was. Had it remained, the market for this worsted wool would not have fallen so low as it has done now. The change in the tariff has hurt all wools, and that, perhaps, more than any other grades.

Mr. Mitchell. What was the tariff per pound?

Mr. Merritt. It was thirteen cents, but now it is ten cents. The difference is three cents on all wools made in 1883. But there was a greater reduction made in woolen and worsted yarn, and most of the importations have come in the shape of yarns and unfinished goods. The tariff on wools and woolen goods should be equally divided; it should be modified in both directions. Our manufacturers of worsted goods are paying now for the wool all they can afford to pay and compete with yarn sent in its raw state, run through the combers and not finished, coming into this country in large quantities. We should take this into consideration. The tariff, which was modified in 1883, was the result of a careful investigation and study of representatives of the wool and manufacturing interests. In 1883, when that tariff was modified, the wool interest was as well represented as it should be. If this body should make petitions to Congress to include both wool growers

and manufacturers, placing the tariff to the interest of both, no doubt the matter could be adjusted to the benefit of both, but while working two different strings, either will not accomplish anything.

Mr. Mitchell, of the committee on tariff, made the following report:

WHEREAS, Wool growing and mutton production is an industry of very great and growing importance to the prosperity of our country, and one that will repay the fostering care of the National Government; therefore,

Resolved, by the Indiana Wool Growers Association, in annual session assembled, That we believe it to be the duty of the general Government to continue its protection to the wool growing interests by restoring the tariff of 1867 on imported wool and woolen goods.

Resolved, That the secretary of this association is hereby instructed to transmit a copy of this resolution to each of the Senators and Representatives from Indiana in the Congress of the United States.

R. MITCHELL,
THOS. NELSON,
J. R. TOMLINSON,
Committee.

Mr. Dungan. This result does not meet the feeling of the association yesterday, I think it was the unanimous sentiment of this body that we request a restoration of this tariff. Mr. Howland voted in the negative, now you have brought in a resolution that just suits Mr. Howland exactly.

Mr. Howland. We generally come to a better conclusion after sleeping over this. The people have decided this thing. We are all Republicans, and it was done by a Republican Congress, and we thought it was the best thing at the time, and from that time to this, I have been satisfied with Congress in this respect. Three or five cents a pound on wool does not enter into the argument that the sheep interest is going to die out; I shall vote for the resolution as it now stands. If you take this request for the restoration of the tariff as it was, you only get up an unnecessary agitation and will not get it.

Mr. Goodwin. I understood Mr. Merritt to intimate that the present tariff was against the trade, which was on account of the reduction we have now.

Mr. Merritt. I think the good of the sheep growers and country in general would be brought about by a restoration of that tariff. There is some force, however, in the argument of the committee that it would be better to take care of half a loaf than none, and agitation the worst thing we can have. However, material agitation is just, and we should ask for it; it will give force towards preventing a further reduction. There may be an effort to further modify the tariff, and if that time comes, this Association should be well represented, and time and money to go there and look after this and watch it closely.

Mr. Levering. I attended the National Wool Growers' Convention at Chicago. They were united in asking Congress to restore the tariff of 1867, and the wool growers were requested to give support. This convention was attended by the lead-

ing wool growers of the country, besides there were 220 gentlemen present representing the manufacturers of the United States. A committee was also appointed to attend Congress and get it through.

The resolution was adopted.

The committee on programme made the following report :

1. President's address.
2. "What Relation Should Sheep Husbandry Sustain to Mixed Farming." Hon. Charles Howland, Indianapolis.
3. "The Present Outlook of Sheep Husbandry, and Can it be Made Profitable at Present Prices of Wool and Mutton to Farmers of Indiana?" Hon. Thomas Nelson, Bloomington Indiana.
4. "Preparing Sheep and Lambs for Market." A. C. Remy, Indianapolis.
5. "Distinguishing Characteristics of the Southdowns, Oxforddowns and Haupshiredowns." Mortimer Levering, Lafayette, Ind.
6. "Influence of Climate, Feed and Shelter on the Growth and Fiber of Wool." J. R. Tomlinson.
7. The Shropshire Downs; their origin, together with their adaptation to the wants of the sheep raisers of Indiana. J. L. Thompson, Arcana, Ind.

S. W. DUNGAN,
THOMAS NELSON,
JOHN B. HARKLESS,
Committee.

Mr. Merritt. The Merino fleeces will shrink from 70 to 80 per cent. We have several samples sent us from Illinois and other States.

Mr. —. Is it best to shelter wool or not?

Mr. Merritt. My observation is that the sheltering of wool as practiced is injurious, but I can not see but that a moderate amount of shelter from the severest storms would be beneficial. Anything that keeps the sheep healthy will improve the quality of wool, and anything that injures the sheep will also affect it. Sheep when sheltered are liable to get too hot, the wool is generally weak and tender, breaking easily, and unfit for combing purposes. Sheds, where they can get under and out at will, would probably be better.

Mr. Howland. Have you had any experience with any of those extra fine fleeces from sheep not permitted to go into the weather at all? Have you had any of that kind of wool under your treatment?

Mr. Merritt. Yes; they are immense in the way of shrinkage; the fiber is not materially hurt.

Mr. Mitchell. I take good care of my sheep; I do not compel them to go into the barn unless they want to. I have shelter easy of access, and they go and come at their will, and when a storm comes they are sure to run there. I think this is probably the best plan for sheltering sheep. A sheep has a wonderful instinct. It is remarkable to read of some in Scotland protecting themselves under snow-drifts, and finding feed when the snow is deep. They can always find shelter. I think it is better to let them go to shelter when nature says go. What we want is

to get a wool that will be acceptable to the wool buyers, with a good mutton carcass combined; if we don't they will not give good returns. I thought the Shropshire was going to be that sheep, but from what you say, I am a little off. I am afraid of the Merino, but think they will do in the range. Have you had Cotswold crossed with the Southdown fleece?

Mr. Merritt. Such a cross would not be profitable as to manufactures. The Southdown is a light shearing sheep, but you would keep up the mutton qualities. But do you think it impossible, by careful selection and crossing the Merino with the Cotswold, to keep up the quality?

Mr. Mitchell. You seem to run ashore; you don't know whether to go back to the Cotswold or keep Merino. If we could stop it would do, but we have to keep going on crossing.

Mr. Merritt. There is a marked difference between the Merino and Mexican-cross sheep. We get those crosses from Kansas; often there is material in them that is unfit for anything.

Mr. Mitchell. Have you handled those Hampshiredown fleeces?

Mr. Merritt. I do not know them at all.

Mr. Mitchell. I want to use the most profitable kind of sheep for wool and mutton. The Shropshire don't seem to be the kind Mr. Merritt wants.

Mr. Merritt. Last year I bought Shropshire wool and paid two cents less than for Cotswold. I paid full price the year before, but lost money on it.

Mr. Mitchell. I had 300 fleeces last year, sixty of which were crossed by Shropshire buck and Cotswold ewes. I thought I would realize much from them, but only got eighteen cents per pound.

Mr. Merritt. What is your objection to following up crosses first on one side and another, keeping your cross as near half blood as you can?

Mr. Mitchell. When you do too much crossing you injure the animal. If you commence one way, then another, you don't know whether you are going to get the type of the animal or the likeness of the progeny. I would rather get a good sheep and breed right in that line. We must use pure sires.

Mr. Merritt. The only objection is not for breeding purposes.

Mr. Mitchell. If we do not use a pure sire the lambs will not be like him, because it is a cross breed. No, sir, we want a full-blood buck, that he may transmit his qualities to the lamb.

Mr. Howland. I hold that the Shropshire is the best general purpose sheep I ever came across. It may turn out that I may have to take two cents a pound less for wool. That is a secondary object; the mutton is the thing I raise sheep for. Living close to the city, as I do, I sell my lambs. Two or three years ago medium wool was most desirable for the manufacturers here. They never objected on account of being Shropshire, and I generally got the best prices for wool. I got 22 cents last year, and it was mixed up with the Shropshire breed. I think I got 25 cents a pound the year before. The fashion changes, and we have got to consider whether certain breeds of sheep, though a little out of fashion, sometimes would not be best to raise. To the man who raises fifty sheep it is a small matter whether the tariff is on or off. I have looked at this thing very carefully. The tariff is for the benefit of the large sheep raisers. Whether it would benefit the people or

Indiana farmers generally is a doubtful question. Not more than one man in fifty has any sheep, and the forty-nine are interested in getting goods cheaper while you are benefiting one in fifty.

Convention adjourned.

AFTERNOON SESSION.

Convention met at 1 o'clock, President Beeler in the chair.

Mr. Dungan, of the committee appointed to confer with the Committee appointed by the Legislature on Agriculture, to press the necessity of the enactment of a more efficient dog law, reported that a conference was had with the legislative committee, and a very favorable expression was had toward an improvement in the dog law, and said they would do what they could to secure a more favorable dog law for us.

It was moved that a sheep-shearing festival be held in the spring.

Mr. Mitchell. I think it would not be best to have a public shearing. There seems to be a lack of interest among the wool growers, probably it is not altogether a lack of interest in the association, but due to the cold weather. I fear we might make a mistake and it would be best to let it go by this year. Motion lost.

M. J. J. Farquhar offered the following resolution, which was adopted.

Resolved, That when this association adjourns, it adjourn to meet on the last Thursday in January, 1886.

On motion of Mr. Mitchell, Hon. Fielding Beeler, was appointed a delegate to the Agricultural Congress to be held at New Orleans, February 10th.

The following substitute for article 3, of the Constitution, was offered by Mr. Dungan:

This association shall hold its meetings annually in the month of January or February, the date to be announced in due time before each meeting by the secretary. The election of officers shall be held at these meetings together with all other business and discussions pertaining to the association. Special meeting may be called by the President.

A vote of thanks was tendered the Kansas City Indicator and the National Live Stock Journal, for their faithful reports of the meeting.

Also a vote of thanks to Secretary Heron of the State Board, for courtesies extended.

The convention adjourned.

MERINO SHEEP; THEIR ORIGIN AND ADAPTATION TO THE WANTS OF THE SHEEP RAISERS OF INDIANA.*

BY I. N. COTTON, OF TRADER'S POINT, MARION COUNTY.

If antiquity was the point to be established we should all take it for granted in favor of the Merino sheep, for at the time of the conquest of Spain by the ancient Romans that country was celebrated for its fine-wooled Merinos, which had been produced by that extraordinary care which the Spaniards gave their sheep, even to the washing, oiling and combing the wool while yet on the sheep's back, and anointing the skin with wine, and housing and blanketing to an extent not known at the present day, to the sacrifice of the size and form of the sheep; but at this early day there was but little profit save the fleece; mutton had not entered into general consumption. The lamb was considered a rare morsel, but the old sheep was neglected as mutton. This special care in breeding and handling for a long series of years has given the peculiar characteristics to the Merino, not only in form and wrinkle, but in fleece.

There appears to have been some difference in the Merino even in its native country, the locality, its climate, soil and production in connection with the care bestowed upon the flocks determining the peculiar characteristics, for, notwithstanding the endeavors of man to hold any of our domestic stock to a certain type, they will deviate, and are changed to a certain extent by the geological structure of the country in which they are raised, and also by the peculiar characteristics of the forage; and still greater is the change brought about by the flock-master, not only by his crossing and feeding, but the very tone of his voice has an influence on his flock.

The history of the Merino in this country commences with the present century. They were imported from Spain, some of the bucks selling from one thousand to fifteen hundred dollars, and ewes as high as one thousand each. They were imported from different flocks, and generally took the name of the owner of the flock as a prefix to Merino; and from these importations, with the addition of some imported blood, has come the American Merino, which now has no superior, if any equal, in any country in the world among Merinos; and it has become so well known that it needs no description from my pen. It is a well-recognized fact that they may be kept in larger flocks than any other sheep, and will stand more exposure, their wool being more compact and containing more yolk and oil better protects them from inclement weather. And the records show that they are the heaviest shearers known among the sheep family, not only in pounds but better price, as was fully demonstrated at the late sheep-shearing festival of the Indiana Wool Growers' Association, held at Indianapolis.

*This paper was prepared according to the programme, but owing to illness of the author, was not presented in time for the meeting.

But notwithstanding the numerous good points of the Merino, we find comparatively few Merinos in Indiana. The farmer has not taken to the Merino, and we often hear the question asked at our fairs, "What kind of a sheep is that dirty black thing over there?" showing that they are not so common. The Merino has, in the last few years, got a back-set from the low price of wool, it being raised more especially for wool. Some say the cause was overproduction; some say that it was low tariff; some say that it was because the Republicans were in power so long; but these questions I shall not attempt to settle, neither shall I tell you what the present Congress will do in regard to the tariff, but I shall not be surprised if they do nothing. Then we must take things as they are and not wait for them to get as they should be, as the gentleman did when he entered the public library presided over by a lady, and asked for the book "Woman as She Is;" the lady informed him that that book was out, but that she had another book, "Man as He Should Be." The gentleman took the book but never returned it. Now, gentlemen, I am in favor of taking the present price when we can do no better, and not returning a single Congressman that votes against the wool interest.

Now, sir, with the low price of wool there is one point settled for the wool grower in regard to the sheep—that is that he can not raise sheep for wool exclusively, but he must handle a sheep that will go into the market as mutton at a good price, and also one that will shear the best fleece possible for a mutton sheep; then, sir, we will not be in 'the fix that Mary Ann was when she had two beaux. She said, "If I can not get Tom I will take Jo, and if I can not get Jo I will take Tom; but I do not want both." We sheep raisers want both fleece and mutton. And my experience and observation has taught me that a cross of Merino blood on the common sheep, Southdown, Shropshiredown or Cotswolds, will increase the weight of the fleece and produce a wool of the greatest value and of the greatest demand of any wool produced, there being more fabrics manufactured from this class of wool than all others. You who attended our late sheep-shearing festival well recollect the sheep shown by Mr. O. Pursel, being a cross of a Merino buck on a Cotswold ewe which sheared sixteen pounds and took the first premium on wool in the grade department, outweighing the premium fleeces of all other sheep except the full blooded Merino, showing a sheep both adapted to wool and mutton, and I doubt much whether we can make a better cross than the Cotswold and Merino for the farmers' sheep, although I have succeeded well in crossing the Merino on high grade Shropshire, getting a good sheep in size and a good fleece in quality and weight. Gentlemen, it is easy to talk of grades and cross breeds, but when we come to continue this crossing, grade upon grade or full blood upon grade, then, sir, you need all your judgment, experience and skill to know what to do when you get to certain points. I have used a Merino and Shropshire buck, crossing back and forth on each other's grades, the original ewes being high grade Cotswold, and have failed to retain the size of sheep and weight of fleece of the first cross; the first cross being better than the ewes crossed upon. I have come to the conclusion that after a few crosses you must fall back to an original set of ewes to breed from, or get a buck of the same blood as the ewes you started with.

But I think the coming sheep is yet to be produced by a wise crossing from

various breeds; that is, the sheep that is to eat the grass of the common farmer and fill our butcher's stall with mutton and furnish the wool that clothes the millions, and in this coming sheep we shall find a good per cent. of Merino blood, let the remainder be what it may. We find no sheep that leaves its impress on its offspring as a grade stronger than the Merino. Now let every sheep raiser study well what the character of the coming sheep should be, then let him breed so as to produce that type of sheep which will give the largest profit for the smallest outlay, and as the object of this paper was not to laud the Merino above other sheep, but to point out some of the characteristics of the Merino, then let him who dislikes the Merino follow the course that thought and intelligence may suggest.

INDIANA SWINE BREEDERS' ASSOCIATION.

The ninth annual meeting of the Indiana Swine Breeders' Association, met in the rooms of the State Board of Agriculture, in the City of Indianapolis, January 28, 1885, at 1:30 o'clock P. M.

In the absence of President Jones, the Vice President, Mr. D. L. Thomas, called the meeting to order and was made the president pro tem.

The Secretary, Mr. W. H. Morris, also being absent, owing to severe indisposition, Mr. W. E. Jackson was requested to serve as Secretary.

On motion, Mr. W. J. Carter, of Westfield, Indiana, was appointed to make a stenographic report of the proceedings for publication in the annual agricultural report.

The secretary read the minutes of last meeting which were approved.

Mr. Mitchell, of the State Board of Agriculture, made the following verbal report in reference to the proposition made at the last meeting to hold a Fat Stock Show:

During the spring of last year, in order to carry out the wishes not only of the Swine Breeders, but also of the Shorthorn Breeders, the State Board of Agriculture appointed me to canvass the city to ascertain what could be done before attempting to hold a show. That canvass was made and \$1,500.00 subscribed; in the meantime a great flood came in the Ohio valley, and the people were called upon to contribute liberally to the relief of the sufferers by this disaster, and also being a year of high political excitement, we thought best to postpone the Fat Stock Show.

Mr. Mitchell. It has been our custom to invite the Governor to call upon us some time during the session. I move an invitation be extended to him to visit our meeting before its adjournment.

The Chair appointed Messrs. Mitchell and Reveal to confer with his Excellency on the subject.

Mr. Williams. I wish to call the attention of the association to the death of our aged friend Samuel Dragoo, of Edinburg, one of our best and most experienced swine breeders. I think it would be proper for this association to draft appropriate resolutions concerning his death.

On motion, the Chair appointed Messrs. Williams, Cooper and Barker to draft such resolutions.

D. L. Thomas. I would like to know what the State Fair Association has done regarding a show of hogs under twelve months old.

Mr. Mitchell. This will come up before our February meeting of the State Board.

Mr. Williams. I move that we recommend the premium list laid down by the National Fair Association, with the exception that we have two classes under one year old.

I. N. Barker. I second that motion.

Mr. Williams. A small breed of hogs will attain their growth earlier than larger ones. It will be better to have one year old and over than one year old and younger. Note the fact that there is but one class for boars and sows under one year, which I regret very much. I would rather have two classes under one year and one over a year. The Ohio State Fair List says: Best boar under one year, and also, best boar under six months—their list is divided into two classes. Swine are very early maturing, and an eleven-months'-old pig should not show against one four months old.

T. M. Reveal. I quite agree with the gentleman last on the floor. Perhaps 80 per cent. of the hogs are farrowed in the spring, say in the month of April. That gives a class under six months old at fair time in the fall. Not more than 20 per cent. are farrowed in the fall. They would come in a class at the fair not quite twelve months old. It is not just that those under six months should show against those nearly twelve months old. Hogs get their growth quickly, and there is much difference between one that is six months old and one that is a little under twelve months old.

Mr. Barker. I agree with both the speakers. I am satisfied that 90 per cent. of the breeders of swine would be in favor of two premiums, one six months or under, and one over six and under twelve months old. It is not right that a three or four-months-old pig should compete against one that is eleven months old. The St. Louis fair is regarded as one of the leading fairs in the country. There they have a class over six months and under twelve months. I think if this was adopted here it would be best. If it is not done one-half of the exhibitors will drop out.

Mr. Mitchell. Exhibitors will have the pigs dropped so they make them nearly a year old at fair time. What the fair managers want to get at is a uniform system. Then next year the pigs would be dropped in the spring, and at our State Fair they come with these pigs in such vast numbers we would have to build more pens. They are not show pigs, but they are brought there to sell. They help the show, it is true, but we don't know how to accommodate them. After you get used to it I think it will work nicely.

Mr. Gilmore. That rule prevailed at Chicago last year, and it worked badly. I think they will put the pig list in their premium list next year.

Mr. Williams. This thing of showing pigs four months old against eleven months' old hogs would be like showing a colt against a full grown horse. If we show a pig one year old, we would have to have the fair in September.

Mr. Dye. I am favorable to having two classes. It is not a fair show at all to show a small pig against one that is eleven months old.

The motion carried.

Mr. Mitchell. You can't tell anything about a hog until six months old. Then they begin to show pretty much what they are going to do.

Mr. Barker. We don't want to exclude any one. If a person has only one hog, let him show. Last year we were much crowded.

Mr. Williams. The breeder comes to the fair to buy. It won't do to turn a hog bought at the fair out with the other hogs. If he buys a pig at the fair he should take him home and feed as he has been fed, to be successful.

Mr. T. M. Reveal read the following paper:

THE RELATION OF FAT STOCK SHOWS TO SWINE BREEDING.

BY T. M. REVEAL, OF CLERMONT, IND.

Swine are the only kind of our domestic animals raised for meat alone, and statistics show that the amount of pork raised in our great corn belt is greater than the meat product of all the other domestic animals combined. In the development of this, as of all other branches of agriculture, the fairs and other shows have played a most important part. In the last score years the far-seeing farmers have made rapid strides indeed in the improvement of their live stock from poultry to horses; indeed, so apparent has this progress been that capitalists are being induced to make large investments in blooded stock. Now, for my part, I know of no other means so potent in awakening so general an interest and so much earnestness in the work as the county, district and State fairs. From year to year the progressive farmer, the stock feeder, the breeder has attended these fairs as a school wherein he may learn many valuable lessons in regard to his own business. Can we believe that the present high grade of swine would be found among the farmers, that the large herds of recorded swine now in our State would be in existence, were it not for these annual competitions which bring together under the scrutinizing glances of farmers and breeders, feeders and packers, the best specimens from their respective herds? At these exhibitions each notes the improvement made by others, and soon applies the lesson to his own herds. Indeed, I would say here that the prize money, compared to the other benefits derived from these shows, is a very insignificant item.

The cheapest meat is produced from swine. No other animal will, from so small a beginning, attain such growth in from five to nine months, and this from the direct products of every farm where mixed farming is practiced. According to the latest methods of preparing and curing pork, the most popular weights for pigs seem to run from 180 to 225 lbs.; these command the best prices for the greatest part of the season. With the most improved breeds of swine such weights are readily attained at four months, an average gain of between one and one and a half pounds per day, and it is generally conceded that the first 100 lbs. is the cheapest

It is said, on good authority, that the number of owners of thoroughbred animals to-day, by comparison with eight or ten years ago, is as ten to one; and to those who have not carefully watched the growth in this particular, the results of a comparison between 1874 and 1884 would be most surprising. Hardly a neighborhood but what contains some specimens of improved stock, and in many one can not pass a single farm of which the same may not be said. To-day, in Indiana, we have five hundred recorded pure-bred swine, where six years ago there were not ten. Evidence prevails everywhere that people are determined to test the value of blood in their domestic animals. This means encouragement to breeders. The first relief from financial depression will result in a large demand for breeding animals, and on a liberal scale, resulting from the conviction in men's minds that by thus improving their stock, they will be taking an important step towards the improvement of their own interests. It is not too much to expect that the progress of the next decade will be fully equal to, if it does not surpass, that of the last.

While the ultimate end of all meat-producing animals is the meat barrel, there are few of our farmers who have had an opportunity to compare the several breeds of swine when well fattened and dressed, ready for consumption. Now, if our State Board could be encouraged to hold a fat-stock show here in our midst, that would be an important step in the right direction. I have faith that the swine breeders of Indiana can make one of the finest exhibits of fat hogs ever held; the show of swine at our annual State Fair is one of the finest in the world. I have recently seen reported a paper, read at an Iowa stock meeting, expressing the view that there should be but one great national fat-stock show. I must say I can not agree with the speaker. A larger show might doubtless be secured in that way, but I am sure that, in the aggregate, the good effects of four or five shows in various parts of the country would be much greater. No reports, however fully published, can equal in practical benefit a personal inspection and study of the exhibits, and the further the reader is from the scene of the show the more slender his interest. A show at Indianapolis would secure a much larger attendance of farmers from Indiana, Western Ohio, and even Eastern and Southern Illinois, than the show at Chicago. I venture to say for the Indiana swine breeders, that they are thoroughly enthusiastic, and enthusiasm, as has been well said, is the locomotive that draws along the highway of progress the great ideas of civilization. We are organized, gentlemen, and organized enthusiasm is simply irresistible.

DISCUSSION.

Mr. Thomas. Is the first 100 lbs. the cheapest meat made? *Mr. Reveal* thinks it is; I do not think it is if we count the expense of keeping the sow.

Mr. Reveal. If he is going to count the expense of keeping the sow I am beat, and will give that up.

Mr. Williams. As to the cost of the first 100 lbs., I should look at it just this way: For instance, we have a sow weighing 400 lbs. when she has pigs, say six in number. By the time those pigs are weaned she has lost 150 to 200 lbs. There is that much loss to make up a gain on the pigs. If you get a pig at three months old to weigh 80 to 90 lbs. you have good pigs. They are now through with the sow,

getting 150 lbs. off of her, and feeding three times a day the last six weeks. Take these pigs and put another 100 lbs. on so as to make them weigh 180 to 190 lbs. at six months old; the second 100 lbs. is as cheap as the first.

Mr. Mustard. Will it pay to keep the sow?

Mr. Reveal. The question is, making the first 100 lbs. the cheapest. After a pig weighs 100 lbs. it eats considerable but not much before. If you go to 600 or 800 lbs. it will cost more, as the animal grows slower. The question is, which is the cheaper hundred. I claim that the first is the cheaper.

Mr. Mustard. I am feeding a little just now for fun. The first 100 lbs. won't pay at all, if you stop there, but the second will.

Mr. Barker. You want to know if the first hundred is not the cheaper. I am satisfied there is not much difference.

Mr. Mustard. We must take into consideration the keeping of the sow. It may be, Mr. President, that you and I are a little off, but I think that is the right way to look at this; after the pig weighs 100 lbs. the sow has nothing to do with it.

Mr. Dye. It does not occur to my mind that we should take out the real value of the sow for the first 100 lbs., but only the cost of feeding her while the pigs are growing the 100 lbs.

Mr. Beeler. We should take into account the time and expense of feeding and caring for the sow from the time she was served until the pigs are weaned; also of the boar which would serve many sows.

Mr. Thomas. I am satisfied that I can put on the second 100 lbs. the cheaper after caring for the sow and paying for a graded boar.

Mr. Williams. I can take a hog that has got its growth and in thin order, and put flesh on cheaper than on one that is growing. A pig that is growing you must have some feed for bone and muscle, while if it has its growth it fattens more readily.

Mr. Reveal. Do you advocate keeping hogs thin for breeders?

Mr. Williams. No. I can not sell thin hogs. I believe the best results in our herd have been from pigs under grade and left at home. They have made some of the grandest show hogs we have had.

Mr. Thomas. With sows and pigs running on grass, the sows will get thin by the first of September.

Mr. Williams. It takes more corn to make the sow, but all she has to do is to fill up.

Mr. Dye. I want to know if there is any breeder here that has experimented as to which would make the greatest gain, feeding in good flesh or a thin hog; I never read of but one experiment of this kind, that man moved on a farm and let a part of his pigs run on clover and did not feed any grain more than feeding in the fall. The others he fed some grain during the summer, and he stated that the hogs that were fed through the summer put on flesh more rapidly than the others.

Mr. Cook. I have had some experience in feeding hogs, counting the cost of feeding sows and boars the first 100 pounds is not the cheaper. In fact it costs considerable to keep a sow through the winter, and by the time the pigs are weaned they are ready to fatten. Counting the cost makes the second 100 pounds the cheaper, but if we do not count the cost of feeding the sow and keeping the boar, the first 100 pounds is the cheapest.

Mr. Barker. These fat stock shows are great educators. It would pay any man to cross the continent to witness that show at Chicago. He would learn more there in one week about meat producing qualities than he would in a year any other way. If we do not have one of our own I would recommend to go even as far as San Francisco to attend one. It is a grand affair.

Mr. W. E. Jackson. I am not going to bushwhack, from this fact, I hardly coincide with the fat stock show at Chicago. Last fall I was there. There is no one who doubts but it was a grand show. From the eastern part of the State there were very few breeders, and as a whole we were not well represented. It was a large exhibition, worth a trip to go and see, but it is a little out of our reach. If we had a fat stock show near home, we would be more benefited than to have one at Chicago, although a larger one. I am in accord with any movement that would tend to increase our knowledge and lead to raising more thoroughbred stock. Indiana, in proportion to size, stands first in the production of pork; why shall we not still hold our ground? There is no reason why we should not. If we met with reverses last year on account of the flood and the political campaign, we should not become discouraged. I favor starting on a small scale here at Indianapolis. We need not confine it here, but organize it in conjunction with other national shows. As we have other organizations I see no reason why we should not take steps in that direction, on behalf of the breeders of Indiana of the various kinds of stock, and start a small show this next fall.

Mr. Williams. Is it no use for us to undertake a fat stock show. There are thousands and thousands of dollars donated at Chicago to aid that show. When I went to Chicago I was surprised to see so few people there. Nevertheless the show was great. While there I saw the grand sweepstakes hog and also its owner. It was of the Poland China breed. He had been "trimmed," and a man paid ten cents a pound for every pound of flesh he put on. He was fed principally on milk.

Mr. Jackson. I would not have my friend Williams think that we intend to try to compete with Chicago the first year, but we can start with more hogs than they had last year. As far as those large premiums are concerned, we can not tell much about that yet. They started on a much smaller basis than they now are, and we can do the same. We can not pay high premiums, but we might pay enough to justify exhibitors to show. Our expenses here are not so great as there at Chicago, consequently we can show for less premium. In looking over this field it may be that we can not maintain one, but I think there would be nothing lost in the effort. "Where there is a will there is a way."

Mr. Reveal. There has one thought occurred to me since Mr. Williams spoke: I think he need not be afraid of the buttermilk man in Illinois. Mr. Williams can beat that man if he were to start out. Meat made from milk alone is not so good as meat made from some corn—this changes the quality as well as quantity.

Mr. Mustard. If I were feeding a hog for that show I would feed corn—by this you will test the quality of pork. I don't intend to feed milk, but am going to feed the very best of corn, and I will have the best of meat.

Mr. Jackson. That hog at Chicago which was fed on buttermilk presented a nice appearance, but I have serious doubts about the quality of the meat.

The following paper was read:

HOG FEEDING FOR PROFIT AND HEALTH.

BY I. N. BARKER, THORNTOWN.

When I feed hogs for health, as well as profit, I want the pigs farrowed early in the spring—say in March or April—for early pigs will grow faster and do better than late ones. I would feed the mother liberally on kitchen slops, and wheat shorts, and corn meal, together with a moderate allowance of whole corn, and always give her ample room to range around in a lot well set in grass so she can have a good supply of green food, which I regard as essential to health, both in mother and pigs. As soon as the pigs will eat, which will be at from two to four weeks old, I feed them separate from their mother in a pen where they can go in and out at will. Their food should be about the same I have indicated for the mother. I would wean the pigs at ten to twelve weeks old, and keep them on good pasture during the summer and fall, and get all the growth possible from grass and clover. Meantime I would give only a moderate supply of corn, for heavy feeding of corn is not conducive to health; and I must always be sure they have a good supply of pure water, for nothing is more injurious to the health of hogs than to be compelled to drink filthy, stagnant water. In September, as soon as new corn is hard enough to feed economically, I would commence feeding it very moderately until it is hard enough to shell. I would then increase the amount until they were nearly on full feed. By this time I would have a lot of ripe, sweet pumpkins, and feed liberally of these once every day, and, if I have plenty of sweet apples, I will give them a feed of these about three times every week; but never neglect to feed liberally of ripe pumpkins. Hogs *must* have something more bulky and less concentrated than corn if the feeder expects to keep them in a healthy condition for any great length of time.

I find pumpkins the cheapest and best feed to give in connection with corn of anything I ever tried, and hogs will fatten *much faster* when so fed than when confined exclusively to corn, and as pumpkins are so easily and cheaply raised, it will readily be seen that pork thus made is much cheaper than when produced exclusively on corn, and the hogs in a much more healthy and natural condition, hence more profitable; and as profits is what we are all after I would recommend this plan for health and profit. When hogs are so fed and have the run of a grassy lot or field, they will be in fine condition for market in November or early in December, and the pork thus made is cheaper and healthier than that made from hogs carried over winter and marketed at eighteen to twenty months. Pigs, when fed on my plan, will be eight to nine months old when ready for market, and if of a good breed (like the Berkshires) will weigh from 275 to 300 pounds each.

DISCUSSION.

Mr. Williams. I have two sows which had pigs in November. Cold weather came on, and they got constipated. I fed them one-half pumpkin every day, cooked, and they done well. I believe that hogs kept through the winter should have pumpkins. It is one of the best health producers we have, either cooked or raw.

Mr. Reveal. I have no criticism to offer on Mr. Barker's remarks. Mr. Barker advocated in his address feeding the cheaper food for making pork for profit. I would ask if those pumpkins would not have been more beneficial cooked. Is it not economy to feed some cooked food? I am inclined to think it is.

Mr. Mustard. I have been experimenting some with pumpkins. They are one of the best things to feed to swine there is. They relish them, and they keep the bowels in good condition, besides they are a cheap article of diet. We can grow a large crop on an acre of ground. I intend to feed more hereafter than I have done. They are good to feed to brood sows. You never see a sick hog if its bowels are in good condition; if sick, their droppings are not natural, but constipated.

Mr. Beeler. I would add my testimony to the benefit of pumpkins. They are of great advantage in the feeding of swine, and also good for cattle in the fall, preventing constipation. They are easily raised. A very good way to plant, is every seventh corn row, the space between the rows giving room for them to vine. As to cooking, I have never had any experience with that. However, I think it would be attended with considerable loss, as they are quite bulky, and would require much handling.

Mr. Mustard. Do you leave out the row of corn?

Mr. Beeler. Yes, sir; I leave it out entirely. I can not raise pumpkins in among the corn, very well.

Mr. Cook. I always cook my pumpkins. After the corn becomes dry feeding, I want to know if Mr. Barker fed his hogs all the pumpkins they would eat.

Mr. Barker. I aim for my hogs to eat their feed up clean. If I throw out corn first and then pumpkins, they would leave the corn and go to the pumpkins. This has been a good fall to keep pumpkins, and a nice time to feed them. I know that hogs are able to digest and assimilate food when you give some pumpkins. I have also given apples with good results. I want to give my brood sows some sugar-beets, apples or potatoes. I know nothing about hog cholera, and think as long as I am careful to feed on raw potatoes and beets, this time of year, we will have no trouble with the cholera. Vegetables of this kind are a change from dry corn, and a good tonic for toning up the appetite. A year ago I used a great many potatoes in that way. Our common purple strap-leaf turnip is also good.

Mr. Thomas. Three or four years ago one of the most successful hog raisers I know of told me that he had an entire crop of hogs destroyed with the cholera. He took notice that the cholera took his hogs when he had no pumpkins. I was at the Chicago Fat Stock Show last fall. An old breeder there told me that there was nothing better to expel worms from hogs than pumpkins.

On motion of Mr. Robe, the following committee was appointed on programme: Messrs. Barker, Reveal and Cooper.

Convention adjourned until 7 o'clock P. M.

EVENING SESSION.

Convention met at 7 o'clock, President Thomas in the chair.

H. McCord read the following paper:

CHARACTERISTICS OF THE CHESTER WHITES.

BY H. M'CORD.

In speaking on the characteristics of this breed of swine, it is hardly necessary for me to call your attention to their color, which is white. And such color and an occasional blue spot upon the skin are the first distinguishing features of a Chester White to be noticed. As to their make-up, I will describe them as having long bodies, deep and broad chest, large and full head in proportion to the body, with small ear, and face nicely dished. The limbs are of medium size, and such as will carry their bodies at any age or weight. Early maturity and unexcelled feeders are special characteristics of this breed to an extent which no other breed can surpass. But, bear in mind that "all white hogs are not eligible to the name *Chester White*." The country is dotted with white hogs, many of which have but one feature of a *true* Chester, and that is color. Inferior animals, in the hands of unwise and dishonest breeders, have, in some way in the past, detracted from the honorable reputation of this breed to a certain extent. But this will not be in the future. Color must be backed by the proper make-up, including a good quiet disposition, and the requisite qualities of breeding, feeding, and maturity, in order to be recognized as a representative of this breed of swine.

The Chesters are good breeders, young sow's litters ranging from six to eight and old sow's from eight to ten. As sucklers and mothers they have a world-renowned reputation, and as marketable hogs they sell in advance of colored breeds. The average weight of the Chester at maturity ranges from 500 to 800 lbs.

Health.—I am aware that such charges as scurvy, skin disease, weak constitution, and many others equally false have been hurled at the Chester with a view to injure his reputation. But a bit of experience with him always convinces the owner of the contrary. In my experience, I have found the Chester White to be as healthy a hog as could be desired. I have never had a case of thumps in my herd.

The Chester White makes one request, which the committee on premium list should not slight: Don't class him with *large* or *other* breeds, but call him *Chester White*.

DISCUSSION.

Mr. Williams. I like the the address well. There is one thing in which we should help the Chester White men out; that is, I think all swine breeders should act together. These Victoria hogs are a cross from the white hogs. When it comes to showing hogs without being recorded, those new-fangled hogs are brought in.

Mr. Dye. If we don't class the Chester White either large or small breed, but only Chester White, how are we to know what breed to go with.

Mr. McCord. Go by the record. It may be a little ticklish, perhaps, with a new breeder; with the Poland China it would be safe to go by the record. There are some in the National Record not "backed up" by facts.

Mr. Thomas. How will it be in the future; will they be continued in the record?

Mr. McCord. I suppose they will.

Mr. Thomas. Would it not invalidate the record to some extent?

Mr. Mustard. Mr. McCord, in what breed do you class your stock?

Mr. McCord. Large breed, and that includes the Jersey Red, if there are any shown.

Mr. Williams. At our State Fair, how do you class them?

Mr. McCord. The Victoria showed with them this season.

Mr. Williams. I think the Victoria should be excluded. I believe that all recognized breeds should have a fair show at our fairs. The Chester White is one of our large breeds. At the State Fair we should make every class equal, and favor all the general classes. If the Chester White men can beat us, let them take the ribbon, and if we can beat them, we will carry off the prize. We raise hogs for the flesh only, and we should raise only the best breeds. I think we should have a general sweepstakes for the best boar and sow.

Mr. Thomas. Do you think they should all be classed alike, or should there be as much money given to the Jersey Red as other breeds?

Mr. Williams. We have to do it. At St. Louis, three years ago, there were more Jersey Reds than any other kind. Last year there were more Berkshire, and this year more Poland China.

Mr. McCord. I do not know whether Mr. Williams aims to have a herd shown in each class, and then a general class, or not?

Mr. Williams. Yes, I do. They have this at Chicago, and this year I found the reason why it was so. The hog men got together at St. Louis, and held a convention, and did not invite the Poland China men to meet with them, and agreed to cut out all sweepstakes on them. This year, when we met to classify, I saw how the thing was worked. The Poland China men must work for this general sweep-stake.

DISCUSSION ON HOG CHOLERA.

Mr. Williams. I had a litter of sixteen pigs about the middle of April. At two months old they commenced scouring. I attributed it to getting frosted clover, yet they ate heartily. I tried every remedy I could hear of, but they scoured on until fourteen out of the sixteen died. I gave them milk, and it would run through them as white as when it was given to them.

Mr. Mustard. Was the sow running on clover, and did you give her buttermilk or pickles, anything of that nature?

Mr. Williams. Yes; but I gave no buttermilk, neither any spoiled pickles or sour slop.

Mr. Mustard. Your pigs could have been saved easily. My remedy is to take raw eggs; but if the pig won't eat the raw egg, boil some milk and after it cools put an egg in the milk, and for a severe case put in a little copperas. This remedy is a sure cure for the scours every time; will also have good effect on a colt or calf.

Mr. Williams. I never failed to stop scours with copperas.

Mr. Mustard. Milk and eggs is the best remedy in the world for sick hogs.

Mr. Williams. I have fed colts sometimes with this which done well.

Mr. Williams. I tried sulphate of iron with good success. I would like to hear something about feeding sour slop; I do not know which is best.

Mr. Mustard. Do you have reference to the best method of feeding sour slop? I mix mine up with water and bran; when it sours I put a tea-spoonful of soda to a bucket of sour slop and put it right in the trough while it is foaming. If you want to start the worms you can do it with that. I always sour my slop and put soda in it; but you don't want to feed this when the hogs are on clover or a wet time if the hogs are loose; but feed it in this way along in August. Some farmers seem to think that cholera is caused by turning on wheat stubble and the hogs eating an overgorge of wheat. It is no such thing.

Mr. Williams. Sweet slop don't do so well.

Mr. Mustard. It won't foam; you must have the acid in it.

Mr. Dye. My experience is very favorable to feeding slop, but if I feed sour slop to the mother when the pigs were under six weeks old, it was very apt to give them the scours. I have tried giving soda to prevent scours, but never aim to feed sour slop if I can avoid it. I would rather have sweet feed for pigs.

Mr. Mustard. I would use sweet feed until the dry months; when it is dry and hot I put in the soda. I have put carbolic acid in slop. With pumpkin feed and carbolic acid we can defy all those advertised medicines, which are not worth one cent. Carbolic acid is good used in the crude state to sprinkle the hogs' houses and bedding, say a teacupful of acid in two gallons of water, and keep stirring and sprinkling. I prefer the crystalized carbolic acid to use inwardly. If you can not keep the cholera off with this you need not send for a hog doctor, unless it be a man with a shovel to dig a hole for them. The reason I do not use the crude inwardly is because there is difference in the strength, while the crystalized carbolic acid is of the same strength. Should the acid be too strong it may be weakened with glycerine, and before using shake up well. The man who uses this remedy can pull through. The hogs of my neighbors have died all around me, and I have raised 200 hogs and not lost one.

Mr. Dye. I have had some little experience with carbolic acid, and some experience with patent medicines. While I used carbolic acid I never lost a hog with the cholera, and had cholera on three sides of me. I have had all the experience I want in patent medicines. I have used the preparation of Dr. Haas as a preventive, also Dr. Cline's "Hog Cholera Cure." I used Dr. Haas and Dr. Rogers for destroying worms. My loss resulting from the use of those patent medicines is in the neighborhood of \$600.

Mr. Mustard. I want to finish my remarks regarding the quantity of crystalized carbo'ic acid to be given. Ten drops is sufficient to physic a hog, and perhaps four or five drops would be about right for shoats weighing 100 pounds, and two or three drops for a pig. If you see a hog grunting around you may be sure it is effected with worms.

Mr. Williams. I agree with Mr. Mustard in his remarks. Take two gallons of water and add crystalized acid as you want it.

Mr. Mustard. In using crude carbolic acid, I take a two-gallon sprinkler and put a cupful of the acid in and pump it full of water. It is heavier than water, and sinks to the bottom, and will require shaking. I put it on the hogs when eating. It destroys insects, and if there are any sores on the hogs it will heal them up. Coal oil is excellent for killing insects, but will make the sores worse. I sprinkle the house and beds in the spring as soon as the sows farrow in the bed where they sleep. To clean these out, the carbolic acid should be administered a week before farrowing. If you put this in a day or so before the sow farrows, it does not have time to evaporate, and is too severe for the little fellows.

President Thomas. My observation about slop is, if you have hogs running on blue-grass or timothy the bowels become somewhat constipated, and sour slop is helpful, while those running on clover do not require it. I do not have any faith in those hog cholera remedies. It is money to the proprietor, and that is all there is in it. A druggist told me that a Detroit house analyzed this Haas remedy, and had it also analyzed by the chemist of the Agricultural Department at Washington, who said they had the right solution of the matter, and went to manufacturing the medicine, with the addition of carbolic acid, and put up packages just twice as large as Haas' \$1.00 package, which they sold for 75 cents, resulting in the reduction of Haas' price. These patent medicines are all humbugs.

I. N. Barker, of the Committee on Programme, made the following report:

PROGRAMME.

1. "Winter Management of Breeding Swine," James Mustard, Broad Ripple, Indiana.
2. "How to Secure the Best Growth on Pigs without Breaking Them Down in the Feet," S. E. Hollingsworth, Bicknell, Ind.
3. "A Breeder's Observation on Judging at the Fair," T. M. Reveal, Clermont, Ind.
4. "Swine Breeding in Indiana," James M. Dye, Sheridan, Ind.
5. "Is it Detrimental to Brood Sows to Run on Clover before Farrowing?" G. N. Helms, McCordsville, Ind.
6. "The Best Hog for the Farmer," Jasper Heck, Waldron, Ind.
7. "Value of Root Crops and Vegetables in Swine Feeding," W. C. Williams, Knightstown, Ind.
8. "What are the Successful Qualifications of a Successful Swine Breeder?" Thomas Moritz, Mt. Comfort, Ind.

ELECTION OF OFFICERS.

The balloting resulted in the election of the following officers for the ensuing year:

President—D. L. Thomas, Rushville.

Vice President—I. N. Barker, Thorntown.

Secretary—W. E. Jackson, Knightstown.

Treasurer—A. S. Gilmore, Greensburg.

Executive Committee—J. M. Dye, Sheridan; W. C. Williams, Knightstown; H. McCord, McCordsville.

Mr. Barker. I move that we request the State Board of Agriculture to put one man to award premiums instead of a committee of three. In support of my motion I wish to say that I have been an exhibitor for fifteen years, and have been a close observer of the manner in which committees are often selected, and the general satisfaction or dissatisfaction with the awards. I am more firmly convinced with every year's experience, that it would be better and more satisfactory by one man than by three. In the first place he will feel the whole responsibility, and nobody to dodge behind. Fair associations will feel the necessity of selecting a man of character and standing, who values his reputation. When he is selected and commences passing on animals, he is a man who is considered a good judge and will be pretty roughly handled if he don't do what is right. He can not, under any circumstances, shirk the responsibility, and I think he should be paid what we pay three men. He will get along fully as fast as three, because when there are three they disagree and divide up the responsibility and dodge behind one another. There can not be anything of the kind when we have but one man.

Mr. Dye. I must say that I have more confidence in the verdict of three men than one. Where we have three men, things will be looked after a little more particular than when there is but one. Every man has his favorite breed of hogs and it is very hard for him to be impartial.

W. E. Jackson. Never having shown hogs I have not the experience others have. At the same time I have seen some of the judging business. I must say that I prefer the one-man system. If you want more than one man, have two to act and the third to act in case those two disagree. This plan has been known to work to good satisfaction; perhaps it won't work well everywhere, but generally it will in all branches of stock.

Mr. Hill. I am rather favorable to the plan depicted by Mr. Jackson. In Iowa they decided to have the one-judge system, and, as far as I have been able to learn, it was successful. I would like to see these matters brought up at each meeting and discussed. You want to get a man for judge like Caesar's wife—above suspicion—to give a judgment that he can prove and swear to. We want a man who is able to point out his reasons for giving the premium to such an animal.

Mr. Williams. I am in favor of a committee of three, but would be willing to have them divided—two to act and one to serve as umpire. If we select three men to judge our hogs, we get them from different parts of the State. If we have a one-man expert, his idea is on a certain kind of hog, and if you are acquainted with his breed you know what kind of premium you will get, and if he is an hon-

est man, you know where it will go. If we have three men on this committee, I think the judging would be more satisfactory. On the other hand, it is impossible to get an expert unless you send a distance for one. One man might not be able to see all the points in an animal, while if there are other men on the committee, this might be obviated.

Mr. McCord. I am in favor of an expert. By selecting one person we get just what we want. I want every thing done fairly and honestly; if my hogs are worthy of a premium I want it, but if not worthy of anything, I do not want it.

Mr. Reveal. I am in favor of an expert of the one judge system. If we try to establish a scale of points to govern these animals, we have to make some improvement in our judging, and it appears to me we can get an expert—an honest man—and the awarding done in a more systematic manner than with three men. If there are three men selected, one may fancy a different kind of stock and the others something else. If there is one man selected to judge this stock, he should be selected before hand, and he will post himself up a little. In Ohio they expose them if they do not rightly judge the stock. The poultry shows have a fine scale of points, and an expert is appointed to pass upon them. It is certainly a step forward to have an expert. Three years ago the fair at Paris, Ill., employed an expert, and gave good satisfaction, giving the premiums where they belonged, and why they belonged there. I am decidedly in favor coming to the one-man system.

Mr. Jackson. I had a very good chance to observe the work of our committee business at our State Fair, especially in the Horse Department. It was not managed just to my notion. In the show ring for horses the judges were over run with visitors and friends. You could not tell who the judges were, on account of the crowd around them. It makes no difference how honest the judges are, it places them in a position to be doubted. Persons some times, with strict integrity, have blame brought upon them, when they are not entitled to it. The shows should provide a place of exhibition, and protect exhibitor and committee, and then you will obviate this difficulty, and expedite business. If we select a special man to judge on hogs, there should be a good ring, and make it clear, and have nothing to bother him. I want to especially urge this necessity in fair management of protecting exhibitors and committee men.

Mr. Williams. If a scale of points could be adopted, the one-man plan might do well enough, but it is hard to find a man without prejudices, and if the judge is himself a breeder, show me the animals he breeds, and I will tell you just the kind of hogs that will get the premium. As we raise hogs for the meat, when we get a big hog that will scale well, it is worth more than a little hog that will scale well.

Mr. Reveal. Have you ever seen a hog that would scale one hundred points.

Mr. Williams. No, I think not.

Mr. Reveal. I would pay a good price to see one that would scale one hundred points.

On motion it was decided to recommend a committee of three, two of that committee to pass on the animal and the third to serve as umpire, his decision being confined to the two animals in dispute.

Convention adjourned until 9 o'clock to-morrow morning.

THURSDAY MORNING SESSION.

Treasurer I. N. Barker made the following report:

Balance on hand January 30, 1884.	\$45 40
Received of W. A. Macy	2 80
Total receipts	\$48 20
Paid short-hand reporter	10 00
Balance on hand January 29, 1885.	\$38 20

Respectfully submitted,

I. N. BARKER, Treasurer.

A bill of \$3.50 for printing postal by the Morris Printing Company was allowed.

Mr. D. L. Thomas offered the following resolution:

Resolved, That we believe no absolute specific for swine plague has been discovered, and that we urge upon hog raisers generally the importance of giving closer attention to sanitary regulations in the management of swine, instead of spending money for so-called cholera cures after the disease has made its appearance.

Pending the adoption of the resolution the following discussion ensued.

Mr. Mustard. I think those specifics, so-called, are failures, and I have not used them for many years. As breeders we can do more with something else. I would not use any of them. Some years ago I lost one hog with the genuine Asiatic cholera. It is like small-pox or yellow fever—it has to have a start. When it does appear, it is best to quarantine, and not let the rest of the herd run with it. I am one who believes that a hog will not have the cholera unless it comes in contact with the droppings, or with other hogs. If you remove the affected hog from others, where they won't come in contact, it may be the only one you will have so affected; but don't wait until it gets nearly dead. Remove it at once on the appearance of the disease. I had a doctor to come and doctor my hogs many years ago, and all died that he doctored.

Mr. Mitchell. Are you feeding stone coal to your hogs? Some of my pigs, this fall, got to coughing, and I have been feeding them twice a week on stone coal. They eat it with much relish. I want to hear from others on this point. I sprinkle a little salt over it. Since I have been feeding this, I notice the cough is disappearing.

Mr. Mustard. I fed that a great deal, until I found it was carbolic acid in the coal that done the work. Stone coal is fine for hogs to eat while on clover.

Mr. Martin. I use charcoal instead of stone coal. They do better all the time. Carbolic acid is always good.

Mr. Barker. Stone coal is of some benefit, but I think more of charcoal. **Is**

the soft coal there is some sulphur, which is good. I would feed charcoal in preference. I like the resolution, because it strikes at the bottom of every imposition in the hog business. This sanitary care is necessary.

Mr. Mustard. I feed a little bran slop every day, unless the temperature is lower than twenty degrees below zero. They go through the winter nice, and are always ready for their feed.

Mr. Martin. How do you get them to eat bran?

Mr. Mustard. You have to make it up thick and good. Perhaps some of your bran is like some I got at the mill once—stood a week and did not color the water. Some won't put but a quart of bran to a bucket of water, and they have to drink the whole bucket of water to get a quart of bran.

Mr. Williams. For old sows this time of year there is nothing better than a bran mash with a little salt.

Mr. Thomas. I am utterly opposed to all patent nostrums.

Mr. Baker. We must keep hammering at this if we expect to accomplish much good. If we have this matter advocated through the agricultural papers it would be to the swine interests of the country.

Mr. Mitchell. Proper treatment and feed has more to do with the health of the hog than all the nostrums in the country. There is no good results yet from it as far as we know, but we are not ready to say there is no specific, because we don't know that.

M. Williams. Suppose some good doctor comes here and gets all the ideas advanced here on this subject, and makes a medicine and declares it will cure the cholera, shall we come back here and denounce it as being a fraud? I don't believe, while we have many frauds among us, we have any right to say all are impostures. There are some nice points in this question we should not overlook.

Mr. Mitchell. There are no people so easily gulled as the farmer, and the bigger the humbug the easier gulled. Experience is the best educator. The idea of Mr. Williams is a good one. It is widely different regarding horses and cattle, for we do have good veterinarians for that stock.

Resolution adopted.

W. C. Williams presented the following concerning the death of Samuel Drago, which was adopted:

WHEREAS, In the death of Brother Drago this association has lost one of its first and best members, and one of the early advocates of thoroughbred stock; being a man of strict integrity, closely adhering to all the principles of right toward his fellow man. His character was above reproach. While bold to denounce the wrong, yet he did it in a kind way, so that he endeared each member who knew him to himself. He was a consistent member of the M. E. Church, and practiced what he preached.

Resolved, That we tender the family of the deceased brother our heartfelt sorrow and condolence in their sad bereavement.

W. C. WILLIAMS,

W. D. COOPER,

I. N. BARKER,

Committee.

Hon. Robert Mitchell offered the following resolution:

WHEREAS, The French and German governments, under the pretext of sanitary reasons, alleging infection of American cured pork by trichina, have prohibited the importation of the same into those countries, to the great detriment of the agricultural interest of the United States, and

WHEREAS, The facts do not warrant the exclusion of the cured pork of this country for this reason, therefore be it

Resolved, That the Indiana Swine Breeders, assembled in annual convention, respectfully ask the Congress of the United States to take such prompt action concerning this matter as, in its judgment, will relieve this important industry from this unjust ban, and that copies of this resolution be forwarded to our Senators and Representatives in Congress.

Pending the adoption of the resolution, Mr. Mitchell said: This is something that the swine breeders are interested in. It is evident that the embargo which the French and German governments have put on American meats is unjust. The American meats, as a rule, will compare favorably with any meats in the world so far as health of that meat is concerned. It is simply done by that government to give protection to the industries of that country. Do they expect of us to admit their exports when they protest against American meats? It is the sentiment of the swine breeders of this country to urge Congress to take some steps in this matter, but I am opposed to recommending retaliatory measures at this juncture. The swine breeders are unanimous on this subject, and I am anxious to see this go out as the sentiment of this body.

Resolution adopted.

Mr. Gilmore submitted the following resolution:

Resolved, That all sows of breeding age which have not farrowed and raised a litter of pigs within twelve months prior to time of exhibition, will be excluded from the breeding rings.

Pending its adoption the following discussion ensued:

Mr. Williams. This fall, as well as last fall, at the National Swine Breeders' Association, Chicago, we adopted that rule. If we have a national association we should endorse what it does, if it is right. After a sow has raised a litter of pigs, you can not show her as well as one that has never had pigs. Moreover, it is best for breeders not to feed and exhibit young sows before they have raised a litter. It is too risky.

Mr. Thomas. How does this rule in the premium list work at thirteen months old.

Mr. Williams. We don't generally want to show thirteen months' old; we show under a year.

Mr. Mitchell. The tendency of fairs, and a very popular one, is, not to encourage the showing of young animals before they become breeders. Fairs are held to encourage the breeding animals especially.

Mr. Gilmore. Where a sow is twelve or fifteen months old, and has not raised a litter of pigs, they are excluded from the ring.

Mr. Barker. I have, many years ago, ceased to exhibit old hogs. I exhibit only young hogs, and in a general way have experienced the same difficulty as Mr.

Gilmore. A fifteen months' old sow can not raise a litter of pigs and get in good condition for the ring. I do not exhibit anything over a year old.

Mr. Helms. Breeding at an early age, the sow never comes to maturity, as well as when older. At St. Louis, I saw a sow ruled out when in pig, and due to farrow in a few weeks.

Mr. Williams. You can not always tell when they are with pig.

Mr. McCord. I favor letting sows run a little longer, and at sixteen months old they could not have farrowed, and raised a litter of pigs.

On a vote the resolution was lost.

On invitation, Gov. Gray appeared before the Convention, and on being introduced by the chairman, spoke briefly, as follows:

“Mr. President and Gentlemen of the Association: I am very happy to meet you on this occasion. I don't think I could say any thing that would enlighten you on the objects for which the association is formed, although raised on a farm in my boyhood days; have forgotten all I knew, if indeed, I knew anything of stock raising. I have no doubt of the necessity and the laudability of the Association, and hope your meeting will be pleasant and largely enhance the live stock interest in Indiana. There has been a rapid improvement with cattle and hogs in the last fifteen or twenty years, which is largely due to the associations organized by the farmers of the State. I hope to meet you often on occasions of this kind. It would be a pleasure to remain and hear the discussions, but I have a pressure of business which urges me to make my stay brief.”

The Association then took a short recess, to afford opportunity for personal introduction to the Governor.

Mr. Williams. I move that the State Board be requested to offer a grand sweepstake premium on the best boar, sow, and herd.

Mr. Barker. I favor the motion only on one condition, and that is, if the financial condition be such, that similar premiums be offered on other stock.

Mr. Williams. We would rather have the premium offered, if there is no money to it. It is the honor, as much as anything, we contend for.

Motion prevailed.

Mr. Williams. I move that no hogs should be admitted to exhibit where the breed has a herd book, unless the animal or its sire and dam have been recorded.

Mr. Mitchell. Then all animals that do not have ancestors recorded would be ruled out. I have seen animals exhibited that were better than those recorded. The State Board should try to regulate the premiums for the State and not for the herd book. The day is not far distant when the record of hogs will be required. I think a resolution of this kind should not prevail at present; it will have a bad effect.

Mr. McCord. I wish to know what the breeders can rely on if they don't go to the herd book.

Mr. Mitchell. The Poland Chinas were in existence long before the records were in existence, and you don't dare to dispute anything about that breed. The hog records can not last; in my opinion, it would soon be too voluminous.

Mr. Cooper. We need a resolution to have all breeders to record in the herd

books before selling. There is not one pig out of a hundred that is so recorded. The pig is sold, and the buyer must have it recorded, or it is not done. I don't sell a calf before it is recorded, and believe something as suggested should be done by this meeting.

Mr. Williams. If I sell Mr. Cooper a pig, and it is elligible, he can pay his dollar and have it recorded.

Mr. Cook. I am in favor of the herd book, and I aim to keep my hogs recorded. I am not favorable to excluding any hogs from showing for the reason they are not recorded. If any man wants to take anything to the fair we should be willing to allow him to show. It looks as though half breeds are better than recorded hogs. We had better let this alone for the present.

Mr. Mitchell. The Poland China is graded. It can not produce its type like the Berkshire, which has been bred pure for one hundred years.

President Lockhart, of the State Board. I want to know what you are afraid of by asking the State Board to take this position?

Mr. Williams. We want to have the grades brought up.

Mr. Reveal. I am astonished that Mr. Mitchell is favorable to only graded hogs.

Mr. Mitchell. The gentleman has misunderstood me. The adoption of this resolution will have a bad effect on the swine interests of Indiana. There is not a Berkshire in the country that if the sow and boar are put together but will produce the same type. The Poland China can not do this. You seem to be afraid to meet the half-breeds. This thing of recording will have to be worked up gradually.

The motion was very warmly discussed by several others, the majority of the breeders being evidently on the side of the record books, and when in the midst of earnest discussion Mr. Beeler, General Superintendent of the fair, pointed out that the ruling asked for by Mr. Williams was actually in the State Fair Premium List itself, the merriment was general and prolonged.

Mr. Mitchell said he feared that, like some other rules, it was a good deal of a dead letter, and Mr. Williams withdrew his motion.

On motion of W. E. Jackson, the thanks of the Association were tendered to members of the press, including the Indiana Farmer, National Live Stock Journal, Kansas City Indicator, and the city press.

Mr. Goodwin, of Kansas City Indicator: Notwithstanding the distance, Kansas City and Indianapolis clasp hands with each other. The man that publishes the paper which I represent is a hog man himself. There was such a thing when live stock and agricultural papers were run by men who sat in their office, and when they did see a hog or pig they wanted to know what the dickens that was. Those who are now conducting papers over the country are men of practical knowledge. I am very glad, indeed, to be with you on this occasion. I have enjoyed this meeting with the Indiana live-stock men very much, indeed. I assure you that the farmers of Kansas and Missouri will be interested in reading the proceedings of this meeting. I thank you, gentlemen, for the privilege of making these few remarks.

The convention adjourned *sine die*.

MEMBERS INDIANA SWINE BREEDERS' ASSOCIATION.

- J. W. Conway, Sullivan.
 T. M. Reveal, Clermont.
 F. McKeever, Antioch.
 W. A. Macy, Lewisville.
 J. S. Meek, Spencer.
 Robert Mitchell, Princeton.
 A. S. Gillmore, Greensburg.
 J. P. Forsythe, Franklin.
 S. R. Quick, Columbus.
 Samnel Hargrave, Union Pike.
 J. B. Freeman, Franklin.
 I. N. Barker, Thorntown.
 Manlove & Bro., Bentonville.
 J. Y. Demoree, Franklin.
 J. W. W. Craig, Greensburg.
 W. D. Cooper, Cadiz.
 Fielding Beeler, Indianapolis.
 Francis Mathews, New Augusta.
 B. Booker, Whitestown.
 E. F. Norwood, Indianapolis.
 John Welch, Lewisville.
 Alex. Heron, Indianapolis.
 W. T. Evans, Romney.
 Milton Edwards, Knightstown.
 Isaac Solden, Acton.
 Dick Jones, Columbus.
 I. N. Cotton, Trader's Point.
 O. P. Hatfield, Lewisville.
 C. B. Jackson, Centerville.
 W. T. Manning, Greentown.
 J. C. Claypool, Rob Roy.
 Wm. S. Smith, Lewisville.
 W. H. Morris, Indianapolis.
 G. N. Helms, McCordsville.
 J. G. Hayes, Oakland.
 H. B. Newlin, Malott Park.
 Cyrus C. Nixon, Greenfield.
 Frank Tyner, Morristown.
 Jasper Heck, Waldron.
 Frank Parker, Greensburg.
 Lloyd Mugg, Center.
 W. E. Jackson, Knightstown.
 J. H. Long, Sheridan.
 T. S. Reveal, Sheridan.
 E. Barker, Westfield.
 Joseph Gilbert, Terre Haute.
 W. C. Williams, Knightstown.
 L. A. Banks, Lafayette.
 James Mustard, Broad Ripple.
 J. Taylor, Spiceland.
 Nelson Barber, Washington.
 W. O. Reveal, Clermont.
 T. M. Sunnman, Spades.
 J. W. Furnas, Valley Mills.
 A. W. Wiley, Augustine.
 J. H. Quick, Clifford.
 Pearnell & Bro., Waterloo.
 J. B. Gilbert, Lewisville.
 Daniel Royle, Lafayette.
 James Kennedy, Lizton.
 M. C. Ensminger, Danville.
 J. A. Perry, Columbus.
 A. S. Stanton, Greenwood.
 S. E. Hollingsworth, Bicknell.
 C. E. Finley, Indianapolis.
 Z. Barker, Eagletown.
 Wm. Baker, North Madison.
 Emsley Wright, New Augusta.
 I. J. Forkner, Trenton.
 John A. Deem, Spiceland.
 Johnson & Son, Dunreith.
 M. Fentress, Greensboro.
 I. W. Harryman, Landersdale.
 Allen Gwin, Kokomo.
 J. M. Dye, Northfield.
 J. W. Robe, Greencastle.
 D. L. Thomas, Rushville.
 George Thomas, Homer.
 J. W. Eller, Noblesville.
 Davis & Frazier, Moreland.
 E. J. Howland, Indianapolis.
 W. A. Smiley, Milligan.
 E. E. Elliott, Knightstown.
 T. W. Cochran, Spiceland.
 C. W. Fisher, Noblesville.
 H. A. Haverstick, Nora.
 W. H. Scoville, Noblesville.
 S. W. Cook, Sheridan.
 J. S. Kercheval, Sheridan.
 I. N. Henshaw, Baker's Corner.
 W. E. Jackson, Secretary, Knightstown, Ind.

BEE KEEPERS.

The Indiana Bee Keepers' Association held its sixth annual session in the rooms of the State Board of Agriculture, in the city of Indianapolis, January 22, 1885, at 1:30 o'clock P. M., with President Mrs. Irvin Robbins in the chair.

The Secretary and Treasurer made their annual reports, which were approved.

The Secretary read several communications, which were referred to appropriate committees.

The President read her annual address, as follows :

Ladies and Gentlemen :

This is the sixth annual meeting of this society, and with all the varying scenes of life during the past year, there has not been one member of this society, to our knowledge, removed by death.

It was my pleasure, during the past year, to visit three of the societies of our State. The officers of this society were at the organization of the Johnson County Society, which met at Franklin, April 5, 1884. I was well pleased with the attendance at the first meeting, which spoke well for the spirit of progress in that part of the State.

April 24th I visited the Eastern Indiana Bee Keepers' Society, which met at Richmond. I was surprised to meet so many extensive bee keepers who had never been known in this society. I felt that this society had met with a loss in not having secured the attendance and coöperation of so strong an organization.

June 19, 1884, Mrs. Stout, Mr. Daugherty and myself attended that famous Hendricks and Boone County Joint Convention, that met near North Salem, at Messrs. Davis & Gully's apiary—a city of bees, that tolerates nothing but brick residences, which were arranged as accurately as the streets of a city. These gentlemen have fully realized the value of the industry, and have turned their attention to planting such crops as figwort and alsike clover, as food for their bees. A report of the result should be made to this convention.

Indiana has eleven societies, representing fifteen counties out of the ninety-two in the State. There is plenty of work yet to do, in the way of bringing bee keepers together, for by organization we hope to educate the old gum out and the new improved appliances in.

Statistics of April 1, 1884, show 131,139 colonies of bees, and that they gathered 1,878,393 pounds of honey—an increase over last year (1883) of 52,613 colonies and 1,080,025 pounds of honey.

Indiana has 21,637,760 acres of land. With the above number of colonies of bees this would give us about one colony to every 164 acres of land. So with the figures before us it would seem a waste of time to discuss overstocking.

While our winter losses have been very heavy, we should be very thankful that that dreadful scourge, foul brood, has not as yet entered the State.

When we think of how many fruit trees of every kind, also the vast quantities of small fruit blossoms, the great number of forest trees that produce nectar, and the acres of red, white and alsike clover, and the countless millions of wild flowers, we wonder that the honey yield is so small. The fact leads us to investigate the many causes of failure to secure a larger crop. Whether for lack of bees, or mismanagement in not having our bees ready to gather the nectar when secreted, or many other reasons, the several members of this society will discuss and decide according to his or her locality.

I believe every year the bees have been able to board themselves and yield a small surplus. We have had but one bountiful harvest since the organization of this society. Although the bees have failed to store a bountiful harvest of nectar, the bee keepers, I am happy to say, have not failed to store away an amount of knowledge for future use, that we can not estimate. The field being our most excellent literature, Professor Cook's Manual takes the lead in books, *The American Bee Journal* in the numerous journals that are edited solely for the bee keepers. The fact that the bee keepers support a weekly journal is an evidence of the extent of the industry. Whilst our literature is making great progress and imparting knowledge, I take it that our conventions and fairs are reaching the masses that know nothing of the literature. In our conventions we hear of the successes and failures of the professional and amateur, the experienced and novice, and can glean valuable lessons from all. At our conventions we educate our producers. *Of what use* if we do not adopt some scheme to educate the consumer in like ratio. What better opportunity can we have than our county and State fairs? At our last State fair we had for space 16 by 32 feet. There were ten exhibitors out of all the bee keepers of this State. The show consisted of honey plants, honey in comb and extracted, beeswax, honey vinegar, honey cake and bee keepers' supplies of all kinds. The exhibitors were Mr. and Mrs. A. Cox, Mr. and Mrs. A. S. Lane, Mrs. E. Stout, Mr. F. L. Daugherty, Mr. Raab, Mr. Hutchinson, Mr. Brown, and your President. The display was creditable to those that made the exhibit. The premium list is all that can be asked for until we work up to the one now in existence. Bee keepers, there is no better way to bring your business before the people than at these fairs. It should be a matter of pride as well as profit to every bee keeper, to have quantity as well as quality on exhibition. I think it would be advisable to secure the right from the State Board to sell honey at the fair, and each exhibitor to come with his or her honey put up in the most convenient way to sell, and with a price that would induce people to buy. I wish every apiculturist would think well of the subject and prepare his or her crop next season with the express purpose of making an exhibit at the State fair, and in so doing you bring your crop up to a

point of excellence that will insure you a good price that will amply repay you for your extra care.

While it is interesting to note progress in bee keeping in general, it is something of vital importance to know that so many women have become interested in apiculture; it is one of the occupations that women are engaged in that she receives the same compensation that her brother does. But to a great many women that engage in bee keeping, the dollars and cents do not comprise all the compensation. The fact is that to be successful in apiculture, requires study, thought and investigation. And while the housekeeper is going through the monotonous and never ending routine of her home duties, a routine that in many, breeds discontent and disgust, and often causes insanity. Happy is the woman that can break up this monotony by turning her attention to bee keeping; it is then a blessing that a money value can not be put upon. It compels her to read and observe; to be out in the open air, to commune with nature; brings her nearer to her God. She often gets stung by the little industrious insect, but a mere physical pain of a few moments, and the mere fact that her time and attention was taken up in manipulating her apiary has saved her from stings that never heal and are as lasting as life.

Ladies and gentlemen of this Convention, whilst we are happy to say that perfect harmony has prevailed ever since the organization of this society, we think we have made some progress. But is there not room for greater advancement? Your President would recommend a stronger financial basis.

You have heard the report of our Secretary, Mr. Daugherty; also, the report of our Treasurer, Mrs. Stout. I would suggest that we raise the annual dues from fifty cents to one dollar. I think with the increased dues that each member will have a money value that can not be overlooked. I would recommend this society to appoint an efficient committee to memorialize the Legislature for a small appropriation. What is now an uncertainty will be a certainty, and something that every bee keeper will be proud to have known, that he is identified with such an organization. We can have our reports out on time, and not have to wait and wait until we loose all interest, and do not care whether we have them or not. We can not do anything, as it is now, in the way of getting up something interesting for our annual meetings, unless we meet the expense with personal funds, and I know if the members of this society would think for one moment how much work your worthy Secretary does gratuitously, you certainly would not allow him to advance money necessary for what is as much interest to you as to him. It is not to our credit as bee keepers to manage thus. I hope this subject will receive your earnest attention.

Brother and sister bee keepers, I fully realize the honor conferred upon me as a woman, in placing me in the chair as your President. I thank you cordially for your sympathy and support and patience with my inefficiency, and for your kind attention.

Which was referred to a committee of three, consisting of Messrs. Johnson, Scholl and Muth.

The convention went into the election of officers, resulting as follows:

President—Jason Scholl, Lyons Station.

Vice President—C. F. Muth, Cincinnati, Ohio.

Secretary—F. L. Daugherty, Indianapolis.

Treasurer—Mrs. E. Stout, Indianapolis.

The President-elect, on being conducted to the chair, spoke as follows :

My Friends and Bee Keepers :

I feel truly thankful to you for the honor conferred, yet, at the same time, I think you could have selected one who would fill the position as President better than I, but you will find none who takes more interest in furthering the cause for which we have gathered here. I hope you will not look for any set speech, but proceed to business at once. There is much to claim our time, and we want to employ it to the best advantage. As brother Bee Keepers we come here to further each other's interests. I hope a spirit of good feeling will prevail through your discussions. As a society we have reason to be thankful for the fact expressed in our worthy President's address, that there had no death occurred among our number the past season, and grateful for the half crop of honey this season. Perhaps we make it in other things, and I see no reason for discouragement. From the best knowledge I can gain throughout the State, the crop is less than one-half ; but none seem to be discouraged and drop out of the society, but keep on, with the assurance, as promised, that "Seed-time and harvest, summer and winter should never fail," and look for a honey season again. We come here to gain all the knowledge we can, and should put our light on a candlestick, that all may see.

On motion, the following committee was appointed to prepare a programme for the next meeting ; also to extend an invitation to Governor Gray to address the convention, viz. : I. N. Cotton, J. Kennedy, and Mrs. E. Stout.

Professor H. W. Wiley, United States Chemist, Washington, D. C., read the following address on "Composition of Honey and Adulteration" :

THE COMPOSITION OF HONEY AND ITS ADULTERATIONS.

BY H. W. WILEY.

Chemist, U. S. Department of Agriculture, Washington, D. C.

Honey has been the theme of the poet rather than of the chemist. Sugar made from starch has been considered legitimate prey for the crucible, but a certain sacredness has enshrouded honey as "divinity doth enhedge a king."

The bee and the flower, from time immemorial, have been the theme of dancing dactyls and stately spondees, and the hand that tries a dull prosaic polemic may well hesitate before the risk of being called impious.

But although the chemist may not be as felicitous as the poet in the language in which he describes honey, he certainly will be more truthful. Poets and politicians, by common consent, are allowed certain liberties with the truth which chemists and other church goers are not permitted to enjoy.

Virgil, however, is the only poet who has condescended to devote a whole book to bees and their products. His fourth book of the *Georgics* treats of the culture of bees, and indulges in some side remarks on the composition of honey. He regards it as *ærii mellis celestia dona*, "the celestial gift of aerial honey." In this he did not intend to be scientific, but he was more so than he knew.

Flowers do not get the sugar from which the honey is made from the soil, but they build it of the gases in the air.

Virgil continues by giving directions for building the hives and managing the swarms, and describes a battle between two discordant kings, forgetting that they are always too lazy to fight.

But lately on re-reading the lines of this ancient poet, I was overcome with the suspicion that he was not so anxious to tell us about honey as to find some excuse for describing the matrimonial troubles of Orpheus, and his descent into hell in search of his semi-plutonian wife. Just what this story has to do with bee culture I am told can only be appreciated by the unfortunate apiarist who has incurred the vindictive enmity of a belligerent swarm.

CONSTITUENTS OF HONEY.

Honey is composed of several kinds of sugars, water, certain acids and various aromatic substances derived from flowers. In addition to these are found, also, particles of pollen and other fragments of flowers, bitter alkaloidal principles, and always an alcohol.

The question is often asked, "Does the honey in the hive have the same composition as the sugar in the flowers?" No satisfactory answer has yet been given to this question. Certainly the change which is produced in the organism of the bee, if any, is a slight one. Cane sugar, at least, is somewhat changed by passing through the organism of the bee, and emerges therefrom largely as a kind of glucose.

SUGARS OF HONEY.

The principal sugars found in honey are as follows:

(a). *Dextrose*. This sugar is a kind of glucose which twists a plane of polarized light strongly to the right, whence its name. It crystallizes in tufts of fine needles, and it is this constituent which is most active in effecting the solidification of honey. It reduces alkaline salts of copper to a sub-oxide, and is easily changed into alcohol and carbonic acid by fermentation. The chemical structure of dextrose is C. 6, H. 12, O. 6.

(b). *Levulose*, a kind of glucose which twists a polarized plane to the left and also reduces the solution of copper. Its chemical composition is the same as that of dextrose.

(c). *Sucrose*. This is ordinary cane sugar. It is yet doubtful whether it exists in normal honey. It turns the plane of polarized light to the right, and has no action whatever on solutions of copper. Its chemical composition is C. 12, H. 22, O. 11.

(d). *Mannite*. Not a true sugar, but a saccharoid. It is not certain that it exists in all honeys; when present it is not found in great quantities. The chemical composition is expressed by the symbol, C. 6, H. 14, O. 6.

(e). *Dextrine*. This is a product half way between starch and dextrose. It polarizes strongly to the right, is not fermentable, and does not act on solutions of copper.

Of these sugars, dextrose and levulose are the only ones of commercial importance. These two sugars appear to exist in about equal quantities in honey. This is shown by the fact that when solutions of genuine honey are examined in the polariscope, the plane of polarized light is either not turned at all, or if so, towards the left. Since levulose has a slightly stronger left handed power than the right handed dextrose, this fact shows that they exist in honey in almost equal quantities. If either of them is in excess it is the dextrose. The total percentage of these two sugars in honey, varies greatly. In English honeys it has been found as low as 68.4, and as high as 79.4 per cent., a difference of 11 per cent.

In the analyses lately made by the Bureau of Chemistry of ten samples of honey purchased in open market at Washington, and given below, it varied between 57.40 and 74.75. But it should be remembered that nearly all these samples were spurious.

Water. The average percentage of water in honey appears to be about 18. In English honeys it has been found extending from 12.4 to 23.04 per cent. In my own analyses given below, from 16.9 to 23.90. It is probable that the state of the weather, quantity and duration of dews and the temperature, have much to do in determining the percentage of water. It is but reasonable to expect that a hot, dry season, almost devoid of dews, would give a honey with much less water than a season of an opposite kind. In perfectly normal honeys, therefore, a variation of five per cent. in the amount of water which they contain, need not excite surprise. Water is generally considered a harmless substance, but we don't care to pay twelve cents a pound for it. A honey with fifteen per cent. water is, therefore, more valuable than one that has twenty per cent. in it.

Color and Odor.—The color and odor of honey are due to the character of the flowers from which it is taken.

In Vermont, I have seen honey as clear as pure water. This honey is justly celebrated, and is taken from white clover.

The honey of Mount Ida, in Crete, and that of Merboune and Chamone, in France, are justly much esteemed for their whiteness and delicate perfume. The connoisseur of odors and taste is able to tell by these the character of the flower that furnished the honey.

Perhaps the day may come when honey, like wine, will be sold according to its brand. That gathered from every source would correspond to *vin ordinaire*.

The golden aster would furnish the honey clarets. The clover clad hills of Vermont the White Rhine sweets, while that gathered from the orange groves of California would be the delicious Tokay, to be used only at wedding feasts. These elements of color and odor exist in honeys in such small quantities that it is impossible by any chemical or physical means to estimate their value.

Some times poisonous particles are taken from the flowers, and find their way into honey. It is well known that headache and vomiting often follow the use of ordinary pure honey. The caution of the economical host, therefore, was not wholly out of form when he placed his honey before his guests with the invitation to eat freely, but he added, "Remember, if it makes you sick, it is the worst sickness in the world."

In these cases economy, if not wealth, is certainly health. The honey derived from a species of rhododendron, the *Azalea pontica*, is said to produce these toxic effects. The soldiers of Cyrus appear to have met with a honey of this kind, the effects of which are described in the following selection from Xenophorus Anabasis:

"And there was in a village near Trebionde a number of bee hives, and as many of the soldiers as ate of the honeycomb became senseless and were seized with vomiting and diarrhea, and not one of them could stand erect. Those who had swallowed but little looked very like drunken men; those who ate much were like mad men, and some lay as if they were dying. And thus they lay in such numbers as on a field of battle after a defeat, and yet no one was found to have died. All recovered their senses about the same hour on the following day. And on the third or fourth day thereafter they rose up as if they had suffered from the drinking of poison."

This description is mildly suggestive of the possibility that a band of hungry soldiers might, by free access to a supply of ordinarily good honey, eat of it with such intemperance as to produce effects which the facile pen of the great Grecian historian has described as the results of toxic action, just as sometimes in eagerness to serve a good cause the unsuspecting victim may consume such quantities of the harmless circus lemonade as may make him a subject for a newspaper article and an undertaker.

Acids.—Honey is always slightly acid. This acidity is due to organic compounds derived from plants and to an acid furnished by the bee itself. The kind and quantity of these acids have not been accurately studied. The conversion of the cane sugar into glucose is due to the presence of these acids. The fact that this change goes on more rapidly in the organism of the bee than in the honey after it has been deposited is presumptive evidence of the activity of an acid in the bee. On the other hand, certain species of pine and some other plants are said to furnish formic acid, and therefore the detection of this acid in honey would not be positive evidence that it was derived from the bee. The whole subject of honey acids is an inviting field for chemical study. The quantity of acid estimated as formic in honeys is given in the following table.

PRESERVING POWER OF FORMIC ACID.

It is asserted by a late German writer, quoted in the *Deutsch Amerikanische Apotheker Zeitung*, 5, 21-664, that the formic acid which honey contains tends to preserve it from fermentation.

Honey syrup, on the other hand, from which the greater part of the formic acid has been washed out, or expelled by heat, does not keep so well as the normal product.

The latest researches have shown that this acid is deposited by the bees themselves by means of their stings. The stings of the bees are not only used for defense, but also serve in a very marked way to introduce into the honey a substance which hinders both fermentation and decay. The observation has lately been made that the bees in the hives, although they are undisturbed, apply from time to time to the walls of the cells the tiny drops of poison (formic acid) that ooze out on the ends of their stings.

Sooner or later this remarkable antiseptic is incorporated with the honey. The more excited and enraged the bees the greater will be the quantity of formic acid added to the honey. On this supposition, it is easy to understand why the stingless honey bees of South America collect so little honey. Why should they bother themselves to collect stores which would not be preserved? Formic acid fails them entirely.

Of eighteen different kinds of North Brazilian honey bees with which we are acquainted only three have stings. These observations are of great interest, and the phenomena which they describe are worthy of careful study.

I hope that those who are devoted to observing the habits of bees will pay particular attention to this alleged application of formic acid. Although it is generally understood that formic acid is found in the poison bag of bees, yet all the standard chemical authors are strangely silent on this point.

Rosce and Schoerlemmer, Miller, Naquet, Gruelin, Gorup, Besanez, and others of minor note never mention the bee in giving the natural occurrence of this acid. The German chemist, Wise, however, in a very rare paper in *Schleiden and Foreys, Not.*, 1848, September, p. 17, distinctly states that he has found the active principle of the poison of all hymenoptera to be formic acid.

The preservative power of this acid is said to be greater even than that of pheno*. All things considered, therefore, the function of formic acid in honey seems pretty well defined.

Pollen and Wax.—Even the best strained honey will contain particles of pollen and fragments of wax. These exist in varying proportions; sometimes as much as two per cent. in all. From the pollen the bee gets those nitrogenous parts of its food which are essential to its growth and health. Pollen, therefore, must be regarded as a necessary constituent of normal honey. The skilled botanist is able to identify the kind of flower or flowers from which the honey has been derived by a study of the pollen present. In this way a valuable indication of the source of the honey is obtained.

In strained honey particles of wax may be regarded as a mechanical impurity, but where it exists in small quantities it can not be considered as objectionable.

*Jodin C. R. LXI, 1179.

ANALYSES OF HONEY.

In the following table are given analyses of ten samples of honey purchased in open market in the city of Washington:

DESCRIPTION OF SAMPLES:

No. 1. Choice Golden Rod honey, price 25 cents per pound, from Wm. Thompson, Wayne county, N. Y.

No. 2. Choice comb honey, price 25 cents per pound, from Githuns & Examiner, Philadelphia.

No. 3. Choice extracted honey—strictly pure, 25 cents per pound, from McCone & Hildreth, New York.

No. 4. Pure white clover honey, 30 cents per pound, marked G. R. X. X. Pennsylvania.

No. 5. Pure extracted honey (crystallized), 20 cents per pound, from R. F. Weir, South River, Md.

No. 6. Pure extracted honey (liquid), 20 cents per pound, from R. F. Weir, South River, Md.

No. 7. Honey in comb, 30 cents per pound, locality not given.

No. 8. (No brand), from J. Herspberger, Md., 25 cents per pound.

No. 9. Choice clover honey, 25 cents per pound, from Chas. Israel & Bros., N. Y.

No. 10. (No brand), from Chas. S. Duval, Spencerville, Md., 20 cents per pound.

SERIAL NO.	Number.	Per cent. Water.	Specific Gravity.	Per cent. Ash.	Per cent. Albuminoids.	Mean Reducing Sugar.	POLARIZATIONS.				H. Sugar after Inversion.	Sucrose by Copper.	Sucrose by Polariz.	Per cent. Acids of Formic.
							Direct.	Temp'r'ture.	Invert.	Temp'r'ture.				
3629	1	19.79	1.3949	.359	.262	60.18	+52.25	30.5	47.00	30.5	1.09	3.99	.0115	
3630	2	16.93	. . . .	.210	.068	57.40	74.5	21.5	. . . .	. . . .	2.33	. . .	. . .
3631	3	20.90	1.4060	.159	.175	69.48	-2.5	25.0	-3.5	24.	2.17	.76	.021	
3632	4	23.90	1.3896	.175	.175	58.85	1.3	25.5	-16.5	24.	14.46	13.49	.021	
3633	5	22.76	1.4096	.060	.156	72.12	-14.5	26.0	-16.	26.	1.33	1.14	. . .	
3634	6	19.35	1.4130	.043	.087	73.78	-13.	25.75	-17.	25.	.77	3.03	.023	
3635	7	16.09	1.4223	.120	.175	69.02	-2.75	29.5	-12.25	30.5	8.22	7.37	.019	
3636	8	17.77	1.4235	.097	.243	74.75	-14.25	24.5	-14.5	25.	.97	.20	.051	
3637	9	19.07	1.4132	.180	. . .	65.23	26.38	25.5	23.5	25.	. . .	2.18	.01	
3638	10	17.84	1.4188	.413	.262	68.55	-1.95	25.0	-4.25	25.	4.37	1.75	.012	
+3630 2d	11	. . . .	. . . .	. . . .	. . . .	51.99	74.00	24.5	73.8	24.	. . . .	.10	. . .
=3630 a.	12	. . . .	. . . .	. . . .	. . . .	60.91	9.5	25.0	16.52	24.	. . . .	. . .	. . .

REMARKS ON PRECEDING TABLE.

Of these ten honeys only one is certainly genuine, viz.: No. 3. A solution of it in the polariscope turns the plane of polarized light slightly to the left. Its reducing action on the copper salts is sensibly the same after and before heating with an acid. It has a small content of ash and nearly 21 per cent. of water.

Sample No. 4 is either adulterated with cane sugar, or else the bees which made it were fed on solution of glucose. But a honey made by artificial feeding is just as much adulterated as if it were made in a glucose factory. Pure honey is gathered by bees from flowers; all other kinds are adulterations. Samples 5, 6 and 8 are adulterated honeys, made by mixing some genuine honey with invert cane sugar syrup, made by heating ordinary sugar with an acid. This kind of adulteration is a very popular one, because certain books have said that a honey adulterated in this way could not be identified by an analysis; but this is a mistake. The fact of the twisting the plane of polarization strongly to the left is sufficient to detect the spurious character of these so-called honeys.

No. 9 is a mixture of about equal parts of invert syrup and starch glucose. The entire absence of albuminoids shows that it contains only enough genuine honey to give it a flavor and odor.

No. 10 can almost be classed as genuine. I would not be able to call it spurious before a court. Yet the high percentage of ash is a suspicious circumstance. The percentage of reducing sugar also is lower than a genuine honey ought to have, especially when it is considered that the content of water is not high.

Sample No. 1 is almost pure starch glucose. The most curious sample was found in No. 2. This honey (?) was put up in a glass vessel, like ordinary jelly packages. The center of this contained a piece of honey comb. The analysis No. 2 was made by squeezing the honey from this comb and mixing it with the glucose that filled the rest of the glass. Analyses Nos. 11 and 12 were made on another sample of this honey. No. 11 is an analysis of the syrup in the glass, and No. 12 of the honey in the comb. The external syrup is almost pure starch glucose, while the honey in the comb is almost pure honey. This honey is therefore made by pouring about six parts of glucose around one part of honey in the comb. To recapitulate: Of the ten samples analyzed, one is certainly genuine, one is probably genuine, three are adulterated with glucose, one with cane sugar, and four with syrup of inverted cane sugar.

Perhaps honest bee keepers in this country have not heretofore recognized the kind of competition with which they come in contact.

Milk is sold in our cities deprived of half its cream, butter is fabricated from beef fat and cotton-seed oil, maple syrups are made in Buffalo, and honey is not any longer much more than a name.

All this illustrates the sublime patience of the American people, which is so perfect that it might well be taken for criminal indifference.

Some men cultivate bees for the love of it. They are not injured by this almost universal counterfeiting. But I dare say there can be found among you some mercenary souls who dream of profit as well as of flowers and bees, and here you are brought face to face, if not with highway robbery at least with mellific piracy.

OTHER SOURCES OF HONEY.

The *apis mellifica* is not the only insect that secretes honey. There is an ant in Mexico which produces a honey of great purity. This insect is known to entomologists by the name *Myrmecocystus Mexicanus*. This honey is of an acid reaction, and this has the chemical properties of formic acid, doubtless derived from the ants themselves. Like most sugar substances it is used for the fabrication of an alcoholic beverage which the Mexicans make from it in considerable quantities.

The honey furnished by a species of wasp, *Polybia apicipennis*, found in Central America, is said to contain large quantities of cane sugar, which is often found in beautiful crystals.

ETHIOPIAN HONEY.

There is found in Ethiopia, in subterranean cavities, a honey made without wax by an insect resembling a large mosquito. The name of this honey in the native language is *tazena*. The natives use it as a cure for diphtheria. M. Bertholet, the renowned French chemist, has analyzed this honey, with the following results:

Water	25.5 per cent.
Dextrose and levulose	32. " "
Mannite	3. " "
Dextrine	27.9 " "
Ash	2.5 " "
Undetermined	9.1 " "
	100.0

In general, the composition of this honey resembles that of the manna of Sinai and Kurdistan. It is, however, distinguished from these substances by the entire absence of cane sugar.

QUANTITY OF SUGAR IN A FLOWER.

Flowers of different plants vary greatly in the quantity of sugar which they contain.

The lowest observed quantity of sugar in a single flower has been in that of the *Claytonia Almoides*, viz.: .413 milligramme. The highest has been found in some kind of peas, viz.: 9.93 mg. The bee, therefore, must extract the sugar from 200,000 to 500,000 flowers in order to obtain a kilogramme of honey.

In most flowers a little cane sugar is found; indeed in some kinds of fuchsia this variety is in excess. Since, at most only small quantities of cane sugar are found in honey, it follows that this substance is changed into invert sugar in passing through the organism of the bee.

ADULTERATION OF HONEY.

The traveler in Switzerland is struck with two remarkable facts, viz.: the abundance of honey and the absence of bees. This would not be so curious were it not for the fact that all this honey is said to be indigenous. Subjected to chem-

ical examination, however, the suspicion is aroused that much of the pure native Swiss honey could trace its origin directly to Buffalo, N. Y.

I can only find a record of the analyses of two samples of Swiss honey, and both of these are made up mostly of starch syrup.

It is a genuine pleasure to abuse the foreign dealers who thus abuse the public confidence and empty the private purse. But I fear denunciation, like charity, ought to begin at home.

So extensive has the use of substitutes for honey become in this country that our honey has acquired a reputation in the markets of the world which is a continual injury to the honest men engaged in producing the genuine article.

Blyth, in his work on the "Composition of Foods," page 131, says: "There is indeed a commercial American artificial honey which is entirely composed of glucose syrup, while the comb is also artificial and made of paraffine."

Hehner says in the *Analyst IV.*, 103, p. 183: "In America especially, the production of starch sugar has been developed to perfection, and even as substitute and adulterant for cane sugar the article is used to a large extent. As was to be expected, corn syrup is actually most frequently found in honeys imported from America, although Switzerland is striving hard to carry off the 'honor' attached to the production of artificial honey.

"As far as my experience goes there is no regular English factory of spurious honey; only when the American element asserts itself corn syrup may be suspected. As to Swiss honey, I have seen it stated in corroboration of my results, that every exporter of Swiss honey adds to the natural product a more or less considerable quantity of starch syrup, the alleged philanthropic object being to obey the desire of the public for clear and uncrystallizable honey.

"Of forty-two samples of honey obtained by purchase from retail dealers, twenty-six were English, nine American, and four Swiss. Of the nine American samples, seven were adulterated, while of the four Swiss samples not one was genuine."

So much for the opinion of Mr. Hehner.

The trouble is that we can not object to these statements because they are backed up by the chemical analyses. To the scientific aspersion of the honor of American honey I am compelled to add its legal condemnation.

At the central police court of Glasgow, lately, Malcolm Campbell, grocer of 89 George street, was charged with having, on the 22d of August, sold to Alexander Johnson Walker, three jars of honey, which were not of the nature, substance and quality demanded.

The samples were taken to Dr. Clarke, public analyst, who found that they contained fifty-seven per cent. starch glucose. Campbell said in defense that the honey was sent to him warranted to be genuine American honey, and he believed it to be so.

The magistrate, however, found the charge of selling adulterated honey proven, and imposed a penalty of £2, with an alternative of seven days' imprisonment.

The report does not say whether Mr. Campbell paid the fine or went to jail.

I fear that if in this country we had an adulteration of foods and drugs act, and it were enforced as against the innocent Mr. Campbell in Glasgow, there would be an awful commotion among the retail grocers.

I confess that it is with a feeling of shame that I recite these condemnations of American products; but I know of no way to awaken the public conscience on such matters and thereby prevent them in the future, except by bringing before the public statements showing the magnitude of the evil that besets them.

Every adulteration of honey is not only a fraud upon the purchaser, but is downright robbery of the honey growers.

The peculiar fecundity of commerce that makes ten pounds of honey for the consumer for every one that comes from the apiary, cheapens and vulgarizes the most delicate sweet that a generous nature has produced.

How much more profitable it would be for the apiarist, how much more satisfactory to the consumer were the people to rise in the majesty of public opinion and of law and say to the world "the adulteration of American honey is a thing of the past."

KINDS OF ADULTERATIONS.

Three methods are commonly practiced in the adulteration of honey. One is the admixture of starch glucose.

The glucose that is made from starch is a mixture of dextrose, maltose, and dextrine, and I have nothing to say against its wholesomeness when it is pure.

The dextrose which it contains is identical in composition with that of real honey. The maltose is a kind of sugar, isomeric, with sucrose. The dextrine is a kind of soluble starch or mucilage. The quantity of the adulterant added is generally large, only enough genuine honey is left to give flavor and odor to the mixture.

Of the ten samples of honey analyzed in the foregoing tables, Nos. 1, 2, and 9 are adulterated with starch glucose. By the polariscope this adulteration is most easily detected. Pure honey either has no effect on polarized light or else turns the plane of polarization to the left. Dextrose, maltose, and dextrine are on the other hand strongly dextrogyratory. This is seen by referring to the table above.

Another method of adulteration is the admixture of cane sugar syrup with honey. This adulteration is also easily detected. Such a honey will turn the plane of polarization strongly to the right as in the case of glucose. But after heating this syrup for a short time with hydrochloric acid and repolarizing, it will be found that the plane of polarization is turned towards the left. When treated with copper solution, moreover, such a honey will give very little reduction to suboxide, whereas, after treatment with the dilute acids, it will give an abundant one. In the table, sample No. 7 has been adulterated with cane sugar, and also with inverted cane sugar syrup.

The third method is to mix the honey with cane sugar syrup, which has already been inverted by warming with an acid.

This adulterant is also easily detected. It will turn the plane of polarization strongly towards the left, and the more so as the temperature is lower.

By polarizing, therefore, at a low temperature and afterwards at as high a one as possible, the character of the adulterant will at once become manifest.

There are other methods by which the spurious articles of honey are discovered, but I have mentioned the best, and an account of the others would have no inter-

est except from a scientific point of view. But I want honest honey makers to know that science is ready and able to protect them in the production of their goods whenever the public and the law are willing to help her.

Just at this moment the carrier brought me the Indiana Farmer for January 17th, and I stopped writing to read the agricultural news from home. In the second paragraph in the column devoted to the Apiary, I read as follows: "Honey is selling to-day as cheap as a good quality of molasses, yet there are thousands of children throughout the land who have never had a taste of honey. We find the children a very good advertising medium, especially for the home market. Try it."

- But why is honey so cheap? Because much of it that is sold is nothing more than molasses. I am no opponent of cheap honey, but first of all let us be sure that it is honey. It is to the interest of the bee culturist as well as of the children to secure this first of all. Concerted and energetic action on the part of the bee keepers of the country will speedily bring this result about, and then the brand of "American honey" will be a token of purity in the markets of the world as it is now a sign of adulteration. The unjustly accused and condemned may appeal in vain to Cæsar, but I feel that it will not be a useless task to have made this plea before such a tribunal as this is.

DISCUSSION.

I. N. Cotton, of Traders Point. Is there any bee keeper that has had any experience with comb produced artificially and honey put in it?

Secretary Daugherty. Comb foundation is sometimes made out of paraffine. I have experimented with some made with paraffine, but never have been able to work that made with paraffine but slightly. Mr. Root tells us such is done sometimes, but it won't stand heat, but will drop down.

Mr. Scholl. The Professor's address has been interesting to us, and I hope it will be discussed some before leaving it. This artificial honey is manufactured in the east. We don't find much of it further west than Pennsylvania. If the Professor should test honey, be sure you give him sauples of the right kind. We should send samples to him direct from the hive, and not let it pass through other hands.

Mr. Muth. It is not the producers but Eastern dealers, as far as we know. There is a great deal of it manufactured in Buffalo, New York and Chicago, and even in Louisville, and we know something about it in Cincinnati.

Mr. Cotton. The Professor made a statement that the bee could not live without this pollen in the hive, and found that after extracting all this from the hive the bees would live.

Mr. Muth. Some claim that bees do better without pollen. Some feed sugar syrup in winter with success, but not more so than we do with honey and pollen. Honey left in the hive induces them to breed, and some think that pollen is the cause of diarrhoea. It is not so with me. I leave all the pollen in, and winter well. A number extract honey and give them nothing but sugar syrup to young bees. The larvæ feed with pollen and honey.

Mr. Kennedy. If Mr. Lane, of Boone county, was here he could tell us something on the subject. He is wintering bees on sugar syrup with all the honey out.

Prof. Wiley. Anything else than pure sugar contains albumen, and acts just the same as pollen. It is only the pure sugar that is pure.

Mr. ———. I would like to know if the Professor can detect this quality from the plant that is in the honey.

Prof. Wiley. Often I can.

APICULTURE AS A BUSINESS.

Mr. Scholl. I do not know as I can give you much information on this topic of bee keeping, compared with other pursuits, as for a living. As far as my information goes it compares favorably with the ordinary pursuits of life, especially with farming. I have, for twenty-five years, followed the business, in connection with farming. I was asked that question last year by the Governor. He hinted that bee business was a by-business; that is, very few men follow it as a business to itself. Before we got through he was informed that men made it a business and were successful; but the majority of us here have to deal with this business in connection with other business, and most of us have found it to compare favorable. This business has poor seasons as well as other crops, as wheat and corn. Notwithstanding the drought, we had a reasonably fair crop of wheat, but a poor season for honey; yet I say, without boasting, that my honey brought me handsome returns.

Secretary Daugherty. What kind of a wheat crop had you, and what kind of bees?

Mr. Scholl. I had twenty-two acres of wheat and realized 450 bushels. I had sixty colonies of bees in the spring to begin with. Another point I want you to bear in mind, the bees did not receive more than one-third of my time from the first of May to the end of July; the balance of my time was on the farm. I would average five days a month the balance of the year. The returns from my bees were fully as well as that of my farm crops, such as wheat, hay and corn. To get this result it must be understood that bees must be well managed, and have them in good hives ready for work to catch the honey-flow when it comes. Take it for the last ten years on an average, bees have paid me a better per cent. than any farm crop.

Mr. Hutchinson. How many colonies of bees would it take to support a family of five persons, depending wholly upon bee keeping for a living and money for the family?

Mr. Muth. How many acres of land would it require to support a family of five persons? It is entirely dependent on the year. I am very sure it compares as favorable as any pursuit; at the same time, to depend on bee keeping alone and say how many stands would be required for a family, it is impossible, but take it as a pursuit it pays splendidly. We have not got but five or six weeks for a honey season, and the best food for bees is white clover, but if the wind blows from the wrong direction we won't get any honey. A stand of bees will cost you five or six dollars and bring you in a few years more money than a good cow.

Mr. Hutchinson. I took thirty pounds to the colony last summer and some had as high as eighty pounds, yet I should not like to support my family on bee keeping alone. The work for bee keeping is of short duration, and so is molasses, but each one pays well for the work put in.

Secretary Daugherty. I am not prepared to give anything of an accurate statement of profit so far as a special business. There is not so much of a bonanza as our friend thinks. The question is: Shall we keep bees in connection with other things, or seek something else. I have been keeping bees for several years, but have not given my time wholly to it; I have had other things to interrupt. At the same time I have watched closely, and I am satisfied that there is nothing we can give our time to that is more profitable than bee keeping, if we have any other pursuit with it. Some years the yield of honey has been enormous. My profits one year was \$35 a colony, and had thirty-two colonies. Five or six years ago the price was high and the yield bountiful. Bee keeping pays, and pays well in connection with other employments.

Mr. Muth. If we expect bee keeping to support us we may be disappointed sometimes. If we go to work and raise corn, wheat and fruit to support us they will sometimes fail, and so it is with bee keeping. Some think it don't pay when we have a failure. The farmer don't get rich in a year, neither does the bee keeper.

Mr. Kennedy. I have been on fifty acres of land, and trying to make a living at several things. For the past fifteen years I have been raising bees. If we depend wholly on bees I think it would be a bad job in this country. I am pleased to have bees with other things. I am engaged in the poultry business also. A man can get a good living on fifty acres of land if he has as many bees as he can attend to, as the attention comes at a time when it don't interfere with the poultry business. There is no better way to raise large crops on a small piece of land than to sow it down in Alsike clover. Bees never fail to work on the clover, and cattle like it. I never kept any statistical account, but plod along and live as well as my neighbors who have 200 to 300 acres of land.

Mr. Bull. I never bought but three colonies in my life. I have universally wintered my bees well, and have had but little expense in that direction.

Mr. Leming. What amount of capital do you have invested in bees?

Mr. Bull. The number of colonies I have are worth \$1,000 or more.

Mr. Davis. My friend says his stock is worth \$1,000. Can you tell what the average profit is in ten years, allowing an average of about six dollars to the colony?

Mr. Muth. If he gets \$5 worth of honey out of a stand, that is big profit. We can not do as well out of corn and hogs.

Mr. Davis. You say your bees are worth \$1,000; if you put the same amount of capital in land, you can not make half as much as you can off the bees.

Mr. Cotton. The business is one that we can take on a small piece of ground. There are many pursuits in life that we can use all our efforts in. A man with a small farm well stocked and a few bees here and there, can make a profit. A few years ago I had eighteen colonies, and I made more profit than on my land.

Mr. Anderson. More profit can be derived by using these vocations of life,

adapting them to the bee business, also to the poultry business. I have attempted something of that kind, knowing that I can divide my time when not with the bees. I am also engaged to some extent in the small fruit business, which furnishes blossoms for my bees; and again, I am in the sorghum business, and actually experimenting with queens and feeding sorghum syrup to my bees. I had one neighbor who fed 125 gallons to his bees. If I can feed my bees with this I make considerable; however, some think it won't do. I am in charge of a farm that needs bringing up, and clover, I think, will do it—the Alsike clover is good for this purpose. A man may run his bees in such a way as to make much money with his other interests.

Mr. Kennedy. How do you prepare the sorghum, and do they live on it as well as sugar syrup?

Mrs. Harrison, of Illinois. I live in Peoria, Ill., and have three lots with 150 feet front. I am engaged somewhat in bee culture. My idea is that every hive shall pay its rent. I do not want hives to stand all the season without any increase. Some seasons we have taken 5,000 pounds of honey. The Illinois river bottom has an abundance of flowers and foliage which is excellent pasture for bees. I often say that I could support myself at keeping bees. It seems to me that bee keeping is an industry in which we could employ all our time.

Mr. Muth. Sometimes we make money and other times not. Last year I was foolish enough to buy clover honey from Kentucky, Ohio and Indiana to the amount of \$20,000 worth, and have \$5,000 or \$6,000 worth on hand. We paid higher than it is now. The dark honey which I have on hands goes all the time for manufacturing purposes, and we can buy it cheap. Clover honey is much higher.

Mrs. Harrison. I find the grocerymen don't want extracted honey. If we sell our honey around at private houses it creates a demand and takes a great deal of time, yet we get more money by retailing it.

Mr. Muth. I am sure I coincide with Mrs. Harrison. We should all take pains to sell to consumers. We get higher prices by so doing. Some folks can't take time to go around from house to house, but the more we do the better. We should try to get better prices; the only way is to show pure honey and expose adulterated honey, and show it in what manner it should be shown. There is little cane sugar used for mechanical purposes now. If we get folks to use honey the price will raise. It costs us money to make an effort.

Mr. Bull. I sell much honey at home and usually sell it in the case. I think the demand is increasing every year.

HOW BEST TO BUY BEES.

Secretary Daugherty. It is expensive for beginners to buy and transfer them. He can buy a little cheaper, but not in the end, after the work is done. Half the colonies he buys and transfers, the comb will not pay him for the transfer. It is better for the beginner to buy bees in the movable hives, even at double prices, than to buy in box hives and transfer at this late day.

Mr. Leming. The inexperienced man, to go and buy bees and transfer them,

runs many risks. In transferring he is liable to get the combs in such a shape as to be worthless to him. It would be much more profitable to the new beginner to go and buy his bees ready to go to work. But for practical bee keepers it would be better to buy in box hives and use such combs as are fit to go into the hives. Drone combs and ill-shaped combs should not go in, but be made into wax. I would recommend them to buy the bees ready for work, if they can get them cheap.

Mr. Anderson. I got Mr. Kennedy to assist me in transferring six hives. I did not know much about transferring, hence I sought the assistance of Mr. Kennedy. I do not know which was most valuable to me, the hives or the day's experience. There is another point in which beginners are liable to commit an error: We may invest our money in what we don't want. He had better know what he is doing before he goes into the business. I have not sufficient experience to speak with much authority, but every beginner ought to transfer bees in order to induce his neighbors to get theirs out of those box hives and not starve them to death. For this reason it is best for every beginner to transfer bees, but always get some good bee man to be with you in your first attempts at transferring.

Convention adjourned until 7 o'clock P. M.

EVENING SESSION.

Convention met at 7 o'clock, with President Scholl in the chair.

BEST RACE OF BEES.

Mr. Anderson. Mr. Allen, I believe, on queen rearing, thinks the best cross possible is the cross between the Italian and Holy Land bees, crossing virgin Italian queens with the Holy Land drones. I have some excellent Italian queens by crossing with the Holy Land bees. Would you advise me to make that cross?

Mr. Muth. Yes, make that cross. We like a bee that is gentle and industrious. I have the Cyprean and Holy Land. The Egyptian is a cross that I do not want. I want some that I am not afraid of and look pretty. I like the Italian queen crossed with the Cyprean drone. They are almost as gentle as the Italian. The Italian is very prolific, as much so as any. It is quick motioned and nice indeed. You will always find the black bees getting out first to gather the nectar. The Italians don't go out in unpleasant weather, but when a certain time comes the Italian will make up. I prefer an Italian colony. Prof. Wiley was wrong when he said when the bees are irritated they produced more of the formic acid. Irritation has nothing to do with it. The formic acid comes from the honey sack of the bee and not the sting.

President Scholl. Irritate a colony of bees and they will throw out their sting, leaving a drop of poison.

Mr. Muth. You can smell the formic acid before they sting.

Secretary Daugherty. The Italian is the model for me, and I have ceased hunting after other kinds. If others can find anything better I will leave them. I

tried the Cyprean and left them on the spot. I query whether the Holy Land is different from the Italian. It was difficult to point them out at Cincinnati, and I have quit searching for fine bees.

COMB FOUNDATION.

Secretary Daugherty. So far as my knowledge is concerned there is not much difference. It depends on circumstances and condition of the colony. The Dadant foundation is the nicest in the world, without any exception. I can not say that I am favorable to the Vanduzen, neither am I satisfied with the foundation made on the average rolls. The Dadant foundation is my preference.

Mr. Muth. The Vanduzen is good enough for anybody. The Dadant is also a good foundation. I use both.

Mr. Leming. I have been using the Dadant foundation. I regard it the best I have ever tried. I have also used Root's. The Saulsbury stands up well and don't break down, but when it comes to the color the Saulsbury foundation was not nice, frequently dark.

Mr. Scholl. Has there been any improvement in fastening the foundation to the frame, so that there is little or no sagging?

Secretary Daugherty. No improvement has been made outside of fastening with wire. It is a question, in my mind; when we use wire frame exclusively, a sheet of foundation will hold it perfectly, and is done with just as much ease as fastened to the top bar, and will not fall off.

Mr. Scholl. Did you experiment with the wire lengthwise?

Secretary Daugherty. No, sir, I did not.

Mr. Muth. I would prefer to have them lengthwise.

Secretary Daugherty. Mr. Muth would not use wire frames if we were to give them to him.

Mr. Muth. My frame is a beveled one to which I fasten the foundation and frame over a board. We then put another on the board which sticks and makes it solid. If there is a space three-eighths of an inch open it will settle that much, and if it is a Vanduzen foundation it will settle more. I do not see why we should go to the expense of wiring frames, for others are strong enough.

Mr. Leming. I take the foundation and fasten it in the frame in the way that Mr. Muth speaks of. It would sometimes bulge a little. My plan never bulges. I take a sheet of foundation and lay it in the frame, and have a thin strip, one-sixteenth of an inch thick, laying on the case, and with little tacks fasten it to the frame. I raise my frame, the foundation bends down and hangs in the center, which gives three-eighths of an inch from the bottom bar. By the time you draw out it will fill to the bottom bar without sagging whatever. Those strips hold it solid and prevent sagging.

Mr. Anderson. I have been very much interested in this discussion, and if we could have a little more I think it would set me on the right track. I have visited the apiary of Gully & Davis, to ascertain if they had any trouble on account of not wiring.

Mr. Davis. If we have any frame that is wired I do not know it. I don't object to wire if anybody wants it, but I don't want it. I can produce just as good comb as you can with wire. I have helped to extract several thousand frames, and have the first to break yet in extracting. I never have much trouble with foundation sagging. Sometimes when it is put a little too close to the edge it will double over, and I take my knife and trim it a little. I have tried several plans for fastening foundation in frames. For the last year I lay my foundation down so the sun will strike on the edge, and when the foundation is a little soft I press it in with my thumb. I can put in several in a minute and not break them.

Mr. Cox. I once thought I had no use for wire frames. After I put some in without wire I tried wire, and it gave better satisfaction. Hereafter I shall use wire, it will sag a little if you don't. When putting in comb foundation in general for working bees I don't want any drones in there.

Dr. Minnick. I put a swarm of bees in a new hive and was not very careful, and the foundation sagged considerable. I consulted my friend Daugherty about it. I had watched it very closely; there was not a drone hatched out in that colony of bees. Those cells were oblong and curled at the bottom, and not running octagonal shape. There will be no drones in that colony where they sag down that way.

Mr. Bull. I use a small castor for putting in foundation. I have a board one-half inch thick frame, and run the castor along on the frame a few times and it is hard to pull off. I don't use wire.

F. L. Daugherty. There was a time when foundation was sought after as wire frames are to-day, and just as hard to induce people to take hold of them; they were objecting to foundation then as people are fighting wire frames to-day. Our friend Muth is an exception in handling bees. Not one man in a hundred can clean a frame as Mr. Muth does. We are making frames for everybody. In extracting honey there is danger of breaking the frames if there is not something to solidify them. I have tried to handle foundation and shake the bees off without damaging the comb. The majority of practical bee keepers of the land to-day are looking forward to wire frames, yet it is more expensive than common frames. We are all slow to adopt it. I have satisfied myself that the wire frames are superior to anything else we can get.

Mr. Muth. I do not want my friend to entertain the idea that I am fighting the wire frame. I can shake the bees off without breaking the comb. Combs without wire are strong enough for me.

Mr. Kennedy. The practice of shaking bees off the foundation is worthy of some attention. I would ask if it is right to shake them off in front of the hive. I brush my bees off in the hive with a goose quill, and leave the bees in the hive. If that is not the best plan I want to know something about the shaking business.

Mr. Muth. I don't shake the bees off in front of the hive, but I stand behind the hive, take the frame out and give it a gentle shake on top of the hive. If any remain brush them off gently, and clean the frame. If you shake them on a hard board it may hurt them.

Mr. Scholl. There is an objection to shaking the bees back into the hive. When you have forty of fifty pounds of honey in the upper story, I have found it

is not good policy to shake them back into the top of the hive. You have to brush them four or five times, and this is just what would irritate them. After you brush them off once, next time they are hard to brush. I always have my blankets lined with cotton on which to shake my bees.

Mr. Muth. I take out the first frame, and brush them off and set it out, then take the next one, and so on until all are out. Once out I put the frames in again.

Mr. Davis. The first comb I took out, with a quill I brushed the bees off. Commence at the top, brush the bees off the comb in the upper story down into the lower story, brushing down from one cap to another, until you reach the bottom of the hive. You can get the bees off quicker by brushing than shaking, and have no flying of the bees. They go down into the lower story, and there is no danger of hurting the queen.

Mr. Cox. Some don't understand it. They get up and shake all the honey out instead of the bees. We should understand how to shake those foundations before leaving the subject.

Mr. Leming. I practice shaking off in front of the hive for several reasons; one is this: time is money to me, and I take the quickest way possible. I use my extractor in the rear of the hive, take the lid off and shake a little, and the main bulk of the bees are off. If they don't shake off sufficiently, I use a brush of broom-corn.

Mr. Scholl. Is not a broom-corn brush too rough?

Mr. Leming. I take the fine broom-corn. The feathers are too irritating to the bees.

Mr. Scholl. I use a brush made out of blue grass with the seed off. I tried feathers, but they did not work satisfactorily. I think broom-corn is too rough. Take blue grass, cut it when just heading out, lay in your honey house until you get time to make it, tie it in a brush as large as your wrist, and let it spread out some. It is soft and not irritating to the bees. It should not be used endwise, as it would then brush out the honey.

Mr. Muth. Some have the brush on the side, but I prefer to have it on the end.

Mr. Catterson. A certain lot of foundation I purchased would sag and get out of shape. I think the quality of the wax has something to do with the ill-shape of the comb.

Mr. Daugherty. The quality of the wax has something to do with the sagging, but the time of year has more to do. At certain times of the year it can be used without difficulty, while at other times it will hardly hold together at all.

BEE PASTURE.

Mr. Davis. We have been experimenting some in the way of bee pasture. We have the alsike clover and have good pasture, but it comes along with white clover, and doesn't benefit much. If it came some weeks earlier or later it would benefit greatly. If I could have something to bridge over from apple bloom to white clover, I could get along well. I can bridge over from white clover to fall, but there is nothing comes in between apple bloom and white clover. The wild cherry

and some other kinds of bloom come in, but they don't amount to much. Last spring we had to feed our bees after apple bloom, and also after white clover was gone, owing to the drought. Everything else was shut off about the time of the clover, except the Simpson honey plant. The alsike clover yielded more honey than white clover this year. It failed about the time white clover failed. The Simpson honey plant came in and ran on until frost. We had two acres of it; cultivated it, and it bloomed right on. During the time we had from three to five bushels of bees gathering honey from this plant. Go anywhere in the patch, it was like a swarm of bees. This continued on for six or eight weeks, and our bees bred on until cold weather. My bees are in the best condition we have had for many years at this time. There is a new clover which blooms on up to white clover. I have forgotten the name of it. We don't have enough of it, and don't know how to get it. It runs on the ground for four feet, and takes root at every joint. It has a flower similar to the white clover, only larger, and brown in color.

Mr. Leming. In filling up the gap between apple bloom and white clover, it can be done with raspberries. They are profitable, and make fine honey. Bees work on this and do well.

Mr. ———. Did Mr. Davis try cutting alsike clover the first of June?

Mr. Davis. No; I pastured it about four weeks; it came on and bloomed about as well, anyhow. This Simpson honey plant contains much nectar. Of a morning a single bloom has a drop of honey; when the bee lights on that he fills himself; when it is empty they go to another, and in this way they secrete honey all the day long. They work on them from before it is light until after dark. We expect to have three acres of this plant next year.

Mr. Anderson. I have frequently read the statement that it does not pay to raise the Simpson honey plant. I want to know if he is going to enlarge on this plant.

Mr. Davis. I am going to enlarge it one acre next spring. My reason for saying they are in better shape is that they bred right up to cold weather. When bees die out in winter with plenty of honey, it is evident they went into winter quarters with old bees. The old bees are the cause of it.

Mr. Minnich. How does the Simpson honey plant stand the drought?

Mr. Davis. We cultivate it, and it blooms right along.

Mr. Kennedy. I have noticed it some and am well pleased with it, but I can not favor it quite so much as Alsike clover. I want to induce every farmer in my country to sow Alsike clover in order that bees might get plenty of honey and cows get plenty of grass, for making of milk and butter. Mr. Goodspeed, of New York, says his Alsike clover is worth \$60 an acre, counting it for seed and hay. If we can sell it for that we can make more money from it than we can in raising wheat, and the bees never go hungry. We should convince the farmers that they can make money out of this clover for stock purposes. I am satisfied you can convince him that there is more money in it than red clover. This clover has from three to five tap roots, and not so easy to freeze out as red clover. The bees visit this clover all the time and every flower has the honey extracted from it. The honey bee can not penetrate the red clover on account of the petals. Every flower of the Alsike clover has seed and will yield seven or eight bushels to two or three

of the red clover. One ton of the Alsike is worth more than four tons of the best red clover we have. I am satisfied this Simpson honey plant is a most valuable plant.

Mr. Gully. The Alsike clover is good for feed and also for honey. Every man who owns a farm and has an orchard on it should sow this Simpson honey plant in his orchard; it is a good place for it to grow. It grows under the shade of the apple tree. We have got two acres of it in an old orchard.

Mr. Catterson. I have ten acres of Alsike clover. My experience is contrary to that of Brother Davis, though from the same county. I pastured mine early in the spring with sheep. The Alsike clover don't fill out ready for bees until after a portion of the white clover has turned brown; that clover continued on until frost last fall. The soil was comparatively new, having been cultivated six or eight years perhaps. There was one place in that field on which I could not get anything to grow, but Alsike clover grew on this particular portion of the field, and done better there than in any other part of the field. It will grow on ground where red clover will not take hold at all. I never had a better stand of clover than I had with the Alsike.

Mr. Kennedy. It only requires one-half as much seed to the acre as the red clover. I have eight acres sown and only took one-half bushel of seed. In setting out my raspberry patch I put my rows five feet apart and four feet in the row, in between the rows I have planted the Simpson honey plant.

Mr. Cox. I have been raising Alsike clover for eight or ten years; it is the best I can get hold of. The bees will leave the white clover and go to the Alsike. If it is sowed on damp ground it will be rank, but on poor soil not so much. Stock will leave red clover and go to it.

Mr. Smith. If you had fifty or sixty acres would you sow all in the Alsike, or only a part?

Mr. Pope. There is no better pasture than Alsike, or for hay.

Mr. Moulten. I agree with the brother on that question. As to pasturing red clover, it often causes us to lose a cow. The Alsike does not produce a gas. It is more like white clover in that respect.

Mr. Pope. It won't slobber horses, and I don't think it will hurt cattle.

Mr. Cotton. The black locust comes in after apple bloom, and is fine for producing honey.

J. Kennedy. The timber of the black locust is superior for fence posts. Where a farmer wants a line where it is not to be moved, he can better plant a row of wild locust, and nail his wire to those posts. Black locust may be raised as timber, for fire wood, fence posts and honey.

Mr. Anderson. My opinion, there is nothing better than wild locust. However, there is one trouble in connection with the cultivation of this tree—if they are cut down they sprout badly. We want them on the line permanently. If you find any danger of sprouting, cut a ditch beside your locust trees and you will not be troubled with anything passing that ditch. At first you will have some sprouts, but in a few years it will stop. Chestnuts have spreading tops, and throw a considerable shade, and we can not raise anything there; but locusts—I can raise anything right up to them.

Mr. Pope. Borers destroy my locust trees; I can not raise them.

Mrs. Harrison. In the early time of Peoria they were bored to such an extent that all were killed. There are a great many locust bloom, as well as dandelion, from which bees extract much honey.

Mr. Daugherty. I would like to ask Friend Muth if we have foul broods in this State?

Mr. Muth. I think not. They have had some in Kentucky, and it may spread some after this.

DISEASES OF BEES.

Mr. Catterson. A friend of mine west of Indianapolis said he had only one stand of bees alive. Quite a number of bees in the vicinity of Danville are dead. There is considerable complaint of bees dying of diarrhœa. The bees seem to be cold and damp, and don't fly out of the hive to die.

Mr. Cox. Has there been any remedy for destroying foul brood without burning them up?

Mr. Muth. You all know what foul brood looks like. The larvæ begins to die after the cells are capped. Foul brood is occasioned by spores and is carried on the legs of bees and spread over the entire hive. When this dead larvæ formation appears in the cell, it is a brown, ropy mass; when we find this mass sticking there it is foul brood. The smell is the dead larvæ, and smells worse as the dead larvæ increases. I have observed a nice remedy and good, as far as I know. I had to hive a fine queen and did not wish to kill the bees. The idea struck me to let them fill the brood cells before it was filled with foul brood. I put them in the lower story; honey came in fast for a couple of weeks and every cell was filled with honey, the brood entirely covered up with honey and capped nicely. I took the new hive and honey in their ten new matted combs and put this foul comb down. The next day my bees were down mainly, and what were not I brushed down. The spores of the foul brood were down, the hive was disinfected and cured, no doubt. I had two last year in the spring about the time of the honey harvest. I put them in the lower story and kept feeding, when at last the bees filled it with honey. The hive got strong, and after all the cells were filled and capped, I, in the same manner as the other, put bees on the new comb and disinfected the bottom. Those two hives are clear of foul brood. If foul brood comes up during the honey season, we can easily get rid of it by using disinfectants.

Mr. Cox. This question of foul brood is one in which we should all be interested. I want some light on the subject.

FRIDAY—MORNING SESSION.

The convention met at 9 o'clock, President Scholl in the chair.

On motion of I. N. Cotton, Secretary Heron was made an honorary member.

Mr. Heron, in a few words, thanked the Association for honors conferred.

Mr. Verne, of Purdue University, read the following essay:

THE BEE STING.

Bees and a few kindred species possess the most formidable weapons of defense of any of the hymenopterous insects. And it is well that they do, for none are surrounded by a greater host of enemies, nor do any have a more tempting treasure to guard. In the hive, on the wing, and in the flower, they are subject to the stealthy attacks of man, and birds, and insects—murderers and robbers of the most cruel type. At all times it must be ready for mortal combat, and to sell its life as dearly as possible. Drilled in this savage warfare, for its very existence, can we wonder that many a bee culturist, actuated by the kindest intentions toward the bees, should occasionally fall a victim of their vengeance?

Let us take a careful view of the structure and action of the bee sting. In the first place, only the females (*i. e.* workers and the queens), possess stings. The drones have no fighting weapons whatever. Hence, the sting is usually considered a modified ovipositor. But in the queen, which is an especially personage, we find both the sting and an arrangement for laying eggs. The various parts of the sting consist of a brown, horn-like substance called chitine, which in the same as that of which the segments of the body are made. The whole apparatus is attached to the last segment of the body in two places, which serve as fixed points for the levers of motion. All these levers are well supplied with muscles which give the sting its rapid movements.

To facilitate the description of the sting, its parts may be divided into three groups, according to their functions:

- 1st. The sting proper.
- 2d. The operating machinery.
- 3d. The poison sac and gland.

The sting proper consists of the central shaft and two lancets. The central shaft was formerly called the "sheath," from the supposition that it was a tube and the lancets were held within it. It is now well known, however, that the lancets lie in a shallow groove on the under side of the central shaft, and all three fit together so nicely as to look like a solid piece.

The central shaft is somewhat conical in form. Its point is not so much a point as a very sharp cutting edge. From the point of the sting about one-half its length forward is needle-shaped. At this place it suddenly enlarges and becomes cylindrical, forming a chamber which receives the poison from the poison sac. The shaft is hollow for purposes of strength, possibly, as the poison does not enter the wound through it. It is entirely smooth, having no barbs.

As before mentioned, the under side of the shaft is grooved. Lying in close contact in this groove, and along its margins, are the lancets. They are long and slender and gracefully curved at their base. The point is very sharp, and about one-fourth their length is armed with strong hooked barbs, nine on each lancet, pointing forward. These barbs project over the sides of the shaft, and, while they offer no resistance to the entrance of the sting into the wound, they take such a

strong hold on the flesh as to make it generally impossible for the bee to extricate its sting when deeply imbedded. The lancets are attached to the shaft by a very simple, yet perfect, arrangement. Along the inner margins of the groove extends a ridge, or guide-bars, shaped very much like the ordinary railroad iron or T rail. These guide-bars fit into grooves in the lancets of exactly the same shape. By this arrangement the lancets are held firmly to the shaft, and at the same time given considerable freedom of motion longitudinally. The lancets can be protruded beyond the end of the shaft, thus making a deeper wound. The lancets are tubular, and through them the poison is carried into the bottom of the wound. It escapes by oozing from little pores opening under each barb. The liquid enters the lancets from the enlargement of the shaft. This enlargement very much resembles the piston chamber of a force-pump in function. Attached to each barb is a stout membranous flap, or valve, and these work back and forth in the chamber, forcing the liquid down through the tubes into the wound. These valves receive their motion from the lancets, which in the act of stinging are rapidly thrust back and forth with a dart-like motion. This motion serves the double purpose of forcing the poison down into the wound and of working the entire sting deeper and deeper into the flesh.

The machinery for operating the sting consists of three flat pieces, so attached to fixed points as to form very perfect levers of motion. Their motion is somewhat complex, and can best be explained from the drawings.

The poison sac is very large, comparatively, and is readily seen with the naked eye. When filled it will hold a miniature drop. The gland is situated among the abdominal viscera, and is connected with the sac by a long convoluted tube.

The stings of wasps, bumble bees, yellow-jackets and hornets all bear a general resemblance to that of the honey bee in structure and action, the striking difference being in the greater curvature of the shaft and lancets, and in the fewer number of barbs. In these species there are only three barbs on the sting, and these usually very small. This accounts for the fact of the wasp being able to extricate his sting and repeat the process several times. When the bee loses his sting it can never sting again, since there are no organs to produce a second one.

The sting of the queen is considerably longer than that of the worker, and does not seem to be so well armed with barbs. The queen is said to be very docile, and can rarely be induced to use her sting, even in defense of her life.

Mr. Cotton. I believe the general opinion is that the bee in stinging loses his sting. Is that the case?

Mr. Verne. The poison gland is generally pulled out, losing the whole sting.

Mr. Anderson. You say the sac contains a minute drop of poison. I would consider a minute drop a poor description.

Mr. Verne. I measured one. It was about one-fourth of a rain drop, which we considered a fair sample.

Mr. Anderson. Do you know of any use for the sting except as a weapon of defense?

Mr. Verne. No, sir, I do not.

F. L. Daugherty. Prof. Wiley says the bee use the sting in sending out formic acid. This is added to the honey by the use of the sting.

Mr. Cotton. I understood Prof. Wiley to say, when the bee becomes excited it dropped this formic acid on the honey.

Mr. Leming. Prof. Wiley said that if the honey was about to spoil formic acid would preserve the honey.

Mr. Scholl. Do I understand that the sting is inserted by a weaving motion? We used to think it was by a direct thrust.

Mr. Verne. It is a little of both.

Mr. Scholl. We can be stung sometimes by a bee and forget it in a moment, and there are times when one may receive a sting that is troublesome, and almost dangerous. I have seen children stung with bees that their life was really in danger. According to this, if that sting is allowed to work deeper it is that much more poisonous.

Mr. Muth. We learn that the sting consists of two parts, each of which has a purpose, and works in from one side to the other, and these barbs stick, and from the point of each little barb there is a little poison works its way in as it goes, and until the poison sac is exhausted it adds more poison. This tells us that we should try and get that sting out as soon as possible. If you get hold of the sting to pull it out, you squeeze the poison in the wound and make it worse. The sting should be rubbed off, not pulled out.

Mr. Cox. Stings give greater pain in different parts of the body.

Secretary Daugherty. The closer to a vein, the worse the effect. A bee will sting when it is almost dead, laying it on and working until it makes an entrance to the hilt.

Prof. Troop, of Purdue University. Not only after the bee is almost dead, but I have experienced the fact after the bee had been dead twenty-four hours.

Mr. Anderson. In cold weather they don't sting so bad as in warm weather. The energy of the bee has something to do with it. I have been stung one hundred times in an hour in cold weather, and experienced no trouble, but in warm weather it would give pain.

Mr. Leming. There is another thing in connection with this which causes the sting to be more poisonous. A person stung, if he becomes enraged and pulls at the sting, more of the poison is carried in and makes it worse. We should keep quiet.

Mr. Scholl. Does drawing the sting from the bee cause certain death to the bee? Some deny this.

Mr. Verne. I have tried this on one or two. After putting them in a close case they were dead the next morning. It is not immediate death. The tearing out of a portion of the abdominal tissue causes death.

Mr. Anderson. It is impossible to get anything to penetrate the wound made by the sting. I want to know if it is possible to suck the poison out and thus avoid any serious effect.

Mr. Pope. A strong decoction of lobelia will take all the poison out and you won't feel it.

Secretary Daugherty. One thing will affect one and not another. It depends very much upon the condition of the system as to an antidote. Some simple remedy will sometimes take it out.

Mr. —. A sting near an artery will often cause them to turn sick. I have tried this. The flow of blood carries the poison into the system and produces sickness. A distance from the artery does not produce the same effect.

Mr. Verne. I have not had experience in giving an antidote, or in drawing the sting from the wound.

Mr. Anderson. Do you think the wound would be large enough to cause an antidote to enter?

Mr. Verne. The liquid in the wound would most likely cause the antidote to be rejected.

Mrs. Harrison, of Peora, Illinois, read the following address on "Work for Women:"

WORK FOR WOMEN.

BY MRS. L. HARRISON, OF PEORIA, ILL.

Women have made great advancement in the way of obtaining lucrative employment during the last quarter of a century. They are now ably represented in the ministry, law and medicine. And lately a petition has been presented to the President of the United States, and favorably received by him, requesting the appointment of a woman to fill the gubernatorial chair of Washington Territory. The idea of woman taking part in the government of this nation was no doubt obtained by studying the economy of the bee hive. Here it was learned that females wisely rule, and maintain order, peace and prosperity.

During the great rebellion, in the absence of fathers, husbands and brothers, women, no longer the pet and toy, girded on her armor. She grasped not the bayonet, but held firmly the reins over fractious horses, driving not in luxurious carriages, but seated on loads of grain, reapers and mowers. She followed the desolation of war with her soothing appliances of lint and bandage. Women who, before this time, had never had a practical idea, put aside frivolous things and took up coarse knitting and sewing, saying, "for our poor soldiers," knitting stockings and making garments by the thousand for the army in the field. They prepared tons of sanitary stores; they went down to the camps, and on the battle-fields they bound up the wounds of the soldier; in the hospitals they tenderly nursed the sick, cheered the despondent and downhearted, laid their cool hands upon the fevered brow of pain, and closed the eyes of the dying. Names like that of Clara Barton, Dorothea Din, Mrs. Cordelia Harvey or "Mother Bickerdyke" have become historical.

Work was fashionable then, and has not gone out of style. Women found out that there was more happiness to be had in living if they were independent, self-reliant and useful. Many women stood by the smoldering ruins of their homes, with the cry, "What shall I do? I can not live upon charity, or put my children into an orphan asylum." Brave woman could not take up the spindle and distaff, as in days of old, but she "sought out many inventions" of which necessity is the

acknowledged parent. The price for women's work was so low—down among nickels and pennies, like the money in a church contribution-box—that help could not be obtained here. She must seek relief elsewhere, and she timidly knocked at the door of the bread-winners. Her reception was not cordial, but in she came, and took her place at the case in printing offices, at the book-keepers' desk, always ready to take advantage of any opening in the ice floe around her, and finally sailing into the pulpit and rostrum.

An instance of woman's ability to do mechanical work occurred lately at an organ factory. The men complained to the proprietor that the women had spoiled the instruments. They were silenced by the wily manufacturer, who assured them that in their absence he had exchanged their work, and that the instruments they complained of being spoiled by women were made entire by themselves.

Women are now on the *qui vive* to obtain employment to be performed in the seclusion of their own homes, and in the fresh air and sunshine, which means life to many. She is especially adapted to the rearing of plants, flowers, and small fruits; she is an adept in rearing the downy chicks, and is now occupying front rank as a producer of honey and wax by the culture of the honey bee. The time is not far distant when she will be arrayed in robes of her own production, by the cultivation of silk worms.

It is an old saying that "He is a benefactor to his race who causes two blades of grass to grow where only one grew before." There is satisfaction in being a producer, adding to the wealth of the country and the world. The production of honey and wax saves to the world a healthful sweet, which would soon have passed away, benefiting no one.

The adaptability of woman to and her interest in bee culture is manifest in the presiding officer of this State convention. It is owing in a large degree to her indefatigable pluck and energy that so many of us are here to-day, many States being represented. She put aside excuses and regrets with a magic wand, and, woman-like, had the last word, but worked early and late to accomplish the desired end. Many women have been and are successful apiarians. Mrs. Tupper's name is familiar to nearly every bee keeper in the land, and the largest honey producer in Illinois in 1882 was a woman. But the road is broad enough for us all to travel therein, brothers and sisters, without jostling each other. And, wishing each of you, individually, the fullest measure of success, and hoping for a cordial coöperation for the good of our fraternity, I extend to each and all of you the right hand of fellowship.

On motion, Mrs. Harrison was made an honorary member.

Mrs. Noe, President of the State Fair Association, being present, was invited to address the convention, and responded as follows: "I stand before you as a representative of a society coming to the front as fast as this Bee Keepers' Association. As President of the State Fair Association, many of you know that some seven years ago we began in a small portion of the Exposition building, and for two years it was recognized by our worthy State Board of Agriculture, and had one of its members as superintendent. They have come to the conclusion that women were capable of carrying on that themselves, and year by year they have shown us more confidence, giving us every opportunity to bring the women of the State, in

their varied industries, to the front, placing them on the same footing with themselves, and to-day the Indiana State Board of Agriculture is the only State Board in the Union that has thus given the women these opportunities, and I feel that all honor should be given to them. This year our department has grown so as to occupy one-half the upper floor, and at the next fair will probably use all the upper floor of the Exposition Hall. I aim to ask an appropriation from the Agricultural Board at their February meeting. A large number of women are employed in various enterprises, and we ask for a separate appropriation for a display of their business with others. I would like a lady bee keeper of this Association be appointed to aid in this work, that those who are not here may be informed; that they be invited to begin to make arrangements for an exhibit of this industry that may be worthy of the Association."

The following delegates were appointed to attend the National Bee Convention at Detroit, Mich.: C. F. Muth, J. Scholl, I. N. Cotton, F. L. Daugherty, Mr. Leming and Mrs. E. Stout.

C. F. Muth, J. Scholl and I. N. Cotton were appointed to attend the Bee Congress at New Orleans as delegates.

FEEDING BEES.

Mr. Barker. There is good in feeding, if done judiciously. Feeding too early stimulates them to brood, and if a cold snap comes it chills the brood.

Mr. Davis. We practice feeding our bees in spring. I do not think it is advisable to feed very early, not before along in March, to excite them to brood raising. About the time it is warm enough for them to fly, then begin and feed regular a little molasses, and you will find your bees increasing very fast. If you commence they breed up fast, and if they get out of honey or molasses they take the young brood out and ruin your colonies. My opinion regarding spring dwindling is, that it is occasioned by old bees, but if your colonies are made up of young bees you won't have so much spring dwindling. When you commence feeding to stimulate brood raising give molasses or honey every day and a little rye meal, and let them run to it. If my colonies have plenty of honey I prefer to feed but little, and that in the last of March, to stimulate the spring brood.

Mr. Anderson. How long before apple blossom?

Mr. Davis. The last of March. If they get short of honey and stores you had better feed now.

Mr. Scholl. This question means stimulating feed to increase brood, and not to prevent starving. Where they have an abundance of honey additional feed will not be of any advantage.

Mr. Muth. As far as I am concerned I have never yet done the matter justice with stimulating food. A hive is in good condition when they have plenty of honey, capped or uncapped. The hive should also be dry and warm.

Mr. Leming. I believe that stimulating food will increase brood faster than sealed honey. If you give your bees a thin syrup it is more like the natural honey from the flowers. You notice whenever the honey comes in the spring they go to

breeding right away, more rapidly than if they had been on sealed honey. As to the point of paying, that depends on conditions: If you have a good honey crop coming on it would be well to brood up and have your bees at a proper age when the honey-flow comes.

Mrs. Harrison, of Illinois. I have had some experience in feeding, and my opinion is that it don't do so much good to feed weak ones as strong ones. I have done more harm feeding than not to feed.

Mr. Leming. I have been three years past trying to get the best yield of honey out of bees that can be got. In the spring, if you are going to have a good crop of honey, and if your bees are weak, it don't pay to feed them, but if you will double your weak ones up, and then keep that colony breeding until clover comes, and you get a good crop of honey, if the honey flow is good.

Mr. Bull. I have fed at different times. I have also noticed that colonies which had no attention got along just as well as those that were fed. I did not feed last spring and they done well.

Mr. Scholl. There are many beginners who want to know something about this matter. At the National Association, which met in the halls of the Legislature in 1872, Mrs. Tucker remarked in that convention as her experience: "We used to practice spring feeding with stimulating food, but it does more harm than good, and we now depend on early spring flowers for food." I practiced it ten or twelve years ago, and found it did not pay. We want to keep them warm enough, and move all the division boards until the space is full of bees. Let there be as much honey in the hive as is needful; they will not commence breeding until they gather natural pollen. I have fed gallons of diluted honey in the spring, and pick out a few colonies from which I wished to get early colonies with good success. When the honey season commenced the first of June, the other colonies in the yard were just as strong as those which had been stimulated. Localities may differ.

Secretary Daugherty. I am an advocate of spring feeding, but not so extensive as is advocated in some of our books. Either stimulating food or work of some kind is beneficial in the spring. We usually take the thin colonies to feed in the spring. Several years since I doubled up colonies, but it don't pay in the spring. I succeed better feeding colonies with more stores in the hive than with those which had little. The result is much better by feeding in quantity, than to feed little at a time. I don't feed daily, as is recommended by our books. I have tried feeding for special purposes, but always made a failure.

Mr. Muth. It pays to unite colonies in the spring, but not early. If you unite them, most assuredly two weak ones will make one strong one. One good strong hive will produce more honey than two weak ones.

Secretary Daugherty. Early spring doubling is when we commence spring feeding, before feeding from locust and raspberry. We double back colonies to make good working colonies.

Mr. Kennedy. I am satisfied it is a mistake to stimulate the weak ones.

AFTERNOON SESSION.

Convention met at 1:30 o'clock, President Scholl in the chair.

Mr. Nowland, of Iowa. I am glad to meet so many who are engaged in the same business that I am. We have a county association in our county which is doing well. I think our honey crop was about one-third of a crop.

On invitation, Governor Gray appeared before the convention and entertained the meeting a few minutes as follows:

Mr. President, Ladies and Gentlemen of this Association:

I am here in response to an invitation extended by your committee, and pleased to meet you and thank you for the invitation. I must confess, however, my inability to say anything to you in regard to the objects of your association. I know nothing about bees, except from my youth up I have been afraid of them. Neither do I know the best means of increasing the production of honey or variety, but I do know that the hand of Divine Providence has filled the land with flowers and the busy bees, for the production of honey, and can understand how any association, having for its object the protection of this industry, is a laudable one, indeed. When I speak of protection I allude to one of the growing evils, that is, the adulteration of almost every article of food, and hope the time will come when we will have laws with severe penalties attached, that we can, at least, prevent adulteration of food; that the manufacturer who offers an article for sale, will be compelled to brand it in the market just what it is, so the purchaser may know when he is buying a pure article or a substitute. There is little inducement to engage in the production or manufacture of a pure article when, after the production, he finds in the market an impure article so similar to his own that the difference can not be told in many instances, except by chemical analysis. I hope your meeting in Indianapolis will be a pleasant one, individually, and a success so far as your Association is concerned, and that you may have many meetings like this convention. I thank you again for the invitation to appear before you, but owing to pressing business engagements I shall have to bid you good day.

Mr. Scholl. I am glad the Governor has been with us. We are trying to do all the good we can. Adulterations have not been carried on to the extent as represented in the public journals. We are doing all we can towards counteracting influence by placing on the market a pure article.

Mr. Cotton. The adulteration takes place from the second class of dealers, and not from the bee keeper.

Mr. Muth. It is a known fact throughout, that bee keepers produce only pure honey. Adulterations are carried on only by dealers, and especially by Eastern dealers. They damage our business; we are the ones that produce pure honey. It is sometimes misunderstood by our agricultural papers regarding this adulteration. We should beware of Eastern honey, as it is more or less adulterated.

Gov. Gray. From the remarks just made, I may have been misunderstood. I did not intend to infer that any farmer or other person keeping bees adulterate honey. I think this is not done. This adulteration is done by persons who do not have bees.

INCREASE OF BEES.

Mr. Anderson. Was not this year poor for swarming?

Mr. Leming. The fore part of the season was good; up to the 5th of July, I took 140 pounds of honey from one colony. The honey crop was good up to that date, but after that it was not so good. Our bees extracted a great deal of honey from boneset and red clover; they work on red clover well, notwithstanding some think they won't. The Italian can perhaps extract from the red clover better than some other race. We have also considerable smartweed which yields some honey.

Mr. Scholl. Mr. Leming's idea is to place sealed brood in the surplus chamber so as to draw the bees up there to work; but the majority will not go, the queen would follow as fast as the bees came out.

Mr. Muth. I have been successful in controlling swarming; my plan is to increase the swarm by the division board as friend Leming related.

Mr. Leming. This thing originated with the Quinby hive. I am satisfied that swarming can be controlled.

Mr. Muth. I have had no swarms for fourteen years, and you might think I can control swarming.

Mr. Leming. There are certain things which govern the strength of the colony and queen. I have been puzzled sometimes how to control swarming when the bees were ready; I have went so far as to jerk the lid off and taken the water can and sprinkle on the top to cool the heat down.

Mr. Bull. I have been successful in swarming. If my bees get too strong I give them plenty of room, and have no trouble in that respect.

Mr. Scholl. Do you practice clipping queens?

Mr. Bull. No, I do not.

Mr. Leming. There are natural causes for swarming. Where the hives are in the open sun it will help swarming, but if kept cool eventually the heat will pass out above. I think it can be prevented to considerable certainty.

Mr. Davis. I would like to know what is meant by the swarming fever. Is there anything of that kind? Is it contagious?

Mr. Daugherty. It is impossible to prevent swarming. I had few swarms last year, and none the year before, but it is not because I can control swarming. I can not control it. When they have a disposition to swarm, it is called swarming fever. When I find that, I know if I don't have a remedy they are going to go out. It is their nature to swarm, and when they get so far as to produce that fever they are going to swarm. The principal cause of swarming is the lack of room for storing honey and for the queen to lay. When one colony starts, it will cause others. Bees will swarm without the sign of a queen cell, sometimes

Mr. Fulton. Some are worse than others. I would like to know if this has been the observation of others. Some will swarm three or four times, when others will swarm only once.

Mr. Scholl. It is not always desirable to prevent swarming. There are now large apiaries, and a large per cent. of queens beginning to fail, especially so in the spring of the year, and bees should be made to supersede the old ones at as early period as possible, and you will find, when this is the case, it is not best to try to control swarming. You find, sometimes, hives building cells and preparing to swarm when the honey flow is poor, and unless you allow them to raise a new queen as the old one is failing, you will not get much honey from that colony.

Mr. Muth. I keep queens but two years. I think it is best to supersede, but once in a while a mistake is made. A queen that has laid off a year is fertile no more, and the colony knows it pretty quick.

Mr. Gulley. I do not want to kill any queens. A year ago last fall, when putting our bees up for the winter, I had a queen three years old. I thought I would kill her, but my friend Davis begged me not to. She is now four years old, and has done good work for me.

Mr. Davis. Mr. Gulley's bees ran down very low. That colony was strong. I helped him take a brood from that colony two years ago, to build up the other colonies. I can corroborate his statement as to the age of his queen.

Mr. Bull. If you have a young queen at the right age when the first swarm comes out, let the young queen run in there. She will take care of the queen cells.

Mr. Daugherty. I wish to spring before the convention the idea of establishing a Chair of Bee Culture at Purdue University. I have renewed my promise to donate a colony, with other persons, for that University. If we would donate five or six Italian colonies, it would be a step in the right direction.

Professor Troop, of Purdue University. Purdue University is the State Agricultural College of Indiana, and should work with the State Associations as much as possible. The Agricultural Society, Horticultural Society, and Bee Keepers' Association are seriously needed, as well as those other industrial associations of the State, and we must have them there to do efficient work—to illustrate the various operations going on. In my work this fall, in order to give some appropriate illustrations, I had to borrow a stand of bees for a short time, while studying bee keeping. Next spring we want to start in a small way. I suppose four or five colonies would be sufficient.

Messrs. Cotton, Daugherty, Davis, Gulley and Johnson were appointed to revise the constitution and ask the Legislature for an appropriation to carry on the bee industry.

Convention adjourned *sine die*.

INDIANA CANE GROWERS.

The third annual meeting of the Indiana Cane Growers was held in the rooms of the State Board of Agriculture, in the city of Indianapolis, January 21, 1885, at 11 o'clock A. M., with President Dr. A. Furnas in the chair. The tables were well filled with specimens of syrup from various parties interested in the cane industry. The question arose as to what was the cause and remedy of the jelly substance so frequently apparent in some specimens of syrup, which elicited quite a spirited discussion. It was decided that it was caused by the impurity of the cane, either by improper culture or by fallen cane. The remedy was the use of lime and the settling tank. Mr. Anderson thought it was due to starch, and by the use of lime it would raise with the scum, and could be removed.

AFTERNOON SESSION.

The convention met at 1:30 o'clock, with President Furnas in the chair. The President read his annual address, as follows:

PRESIDENT'S ADDRESS.

GENTLEMEN: By the blessing of a kind Providence we are again permitted to meet, in this our third annual convention for the promotion of the interest of the Northern cane enterprise.

We assemble under peculiar circumstances. To the labor of advancing and completing our work we have to contend with unlooked-for and unexpected financial stress. Overproduction of sugar and syrup has had a depressing effect on the market, alike felt by all, and disastrous to many. This must sooner or later work its own cure; I say this in all due deference to those who look for legal remedies. Yet it must be confessed that *home protection* in a given interest will promote the financial standing and success of that business. The propriety of such protection depends on its cost to all other outside interests. This overproduction is not only felt by us of the Northern United States, but also by the sugar makers of the South,

as well as of Europe. In our recent visit among the sugar makers of the lower coast of Louisiana, we took occasion to inquire as to the desirableness of the business, and was assured that it was indeed very fascinating—that a sugar maker was never known to sell out his plantation; and then our informant facetiously remarked, "The sheriff always saves him that trouble." We were then assured that not one planter on the coast was doing a paying business, and that many of them were irretrievably ruined. It is therefore obvious that the depression felt in the Northern cane industry is also shared in by the South, as well as Germany and France, including the sugar-producing island with which we have commerce.

For the benefit of protectionists, I quote from the Sugar Bowl of January 3, 1885:

"The population of Kansas, in 1883, was 1,028,729, and her proportional sugar tax would be two and three-quarter millions of dollars, but by growing her own cane she was enabled to save all but the fraction of a million, putting the round two millions into the pockets of her farmers. About 50,000 acres of sorghum was grown for syrup, yielding over four and a half million gallons, or about four gallons to each inhabitant of the State.

"The prospect for profitable sugar making is so good that a refinery was built last year that cost \$125,000, and which gave employment during the busy season to one hundred and sixty men and fifty teams. The company last year grew 1,500 acres of cane, with an average yield of from ten to twelve tons per acre. The price paid for unstripped cane delivered at the factory was \$1.75 per ton, and farmers regard the price so remunerative that it is expected that the amount furnished may soon be enough, so that the company will go out of the cultivation."

This is a favorable showing for Kansas, and yet it now turns out that all the large sugar factories in the State of Kansas have failed to pay the expense of working, to say nothing of dividends on capital invested. At a rough estimate, the whole amount thus invested will not exceed half a million of dollars, while the annual saving is estimated at two millions!

It appears that at a recent meeting of the "Hawaiian Commercial and Sugar Company," held at San Francisco, that company, representing ten millions of dollars, is also embarrassed. To make some much needed repairs, its President borrowed a million dollars, which the stockholders refused to indorse. This, with a sudden drop from \$120 a ton to \$87 a ton for sugar, is assigned as a reason for the embarrassment. These examples and figures are introduced here to show that the sugar and syrup business is also under a cloud in other places besides with us.

Wheat has for some time past been selling at a ruinous figure. The bottom seems to have fallen out of wool, and all of us can well remember times when pork was sold at a loss. What, then; shall we strike wheat from the list of farm products, abandon sheep and wool, and neglect our swine? You negative the proposition at once. And the same will hold good with reference to our sweetening, which is not only a luxury, but has grown in the estimation of our people to be a positive necessity. And in reference to overproduction of this staple, what other infallible means of knowing how far to go had we, except by actual trial? Previous estimates, founded upon arithmetical calculations, all failed to give the necessary warning, and with one common consent we all entered the "overflow" and

must suffer. In this trial we have the surest guarantee against a like occurrence. Our bought wit will be long remembered. It will teach us that *caution* is the parent of safety, and with this experience and prudence as our guide, we have already passed the Rubicon, and the future will dawn with brighter auspices. The conclusion of this whole matter can be summed up in a nut-shell. First, sugar and syrup have become staple articles. Our people must have them; and this being true, can not we supply our own wants cheaper than by procuring them from other hands, paying them a living profit, to which must be added transportation? I believe the question as to the capabilities of our soil in a general way for producing sorghum is an admitted fact. The next, and what most concerns us here in this latitude, is sufficient length of time in which to mature the plant, and allow sufficient time to work it up.

So far as I have been able to calculate on the matter, our average work season is thirty days. It is often much longer, but frequently short of that length. My observation goes to show that we lose more by not commencing promptly, and hinderance by inefficient machinery, than we do through actual want of time. An important matter with us, then, is to begin our work as soon as it will do, and be able to prosecute it without interruption until completed.

This implies the best of machinery, the most efficient mills, and (right here I wish to say) the more complete extraction of the juice, as well as the best methods of defecation and evaporation.

In justification of some of the foregoing remarks, I wish to quote a much better authority in part of a letter written by Prof. H. W. Wiley, published in the *Sorghum Growers' Guide and Farm Journal* of the present month. He says:

"I have been criticized by the over-zealous friends of sorghum for admitting the possibility of failure in the sugar industry. But what could you expect in an import industry still tottering on its first legs, when the full-grown ones in Germany and in Louisiana are tottering on their last ones. The sorghum sugar maker who has lost money may console himself with this thought, viz: That his cane-sugar brother in Louisiana and his beet-sugar cousin in Silesia have not done much better. But sorghum syrup has not proved to be a failure when the industry has been conducted in a small way and by the best methods. It is true that many who have gone into the syrup business on a large scale have felt most seriously the tremendous fall in prices and the overstocking of the market. Three years ago I helped make about 200 barrels of syrup which was sold readily in Chicago at nearly 40 cents a gallon. This same syrup could hardly be disposed of now at 20 cents.

"When it is remembered that it costs quite 20 cents a gallon to make the syrup, it is only seen that there is little prospect for a profit. But in a small way much better results are obtained. I suppose that even during this season it is no unusual thing for the small manufacturer to have received an average of 40 cents for his product. The sorghum syrup industry is the true democracy of manufacturing and so far has not done well as an aristocratic monopoly. The chief thing to be looked at in the future is to secure the production in a small way of the best grades of table syrup. A syrup of proper density, clear and translucent, of a light amber color, and free from all sorghum taste, is the syrup of the future. Such a syrup can be made in a small way. Not that every farmer should have his own appara-

tus—that is not desirable; but in every neighborhood there should be one good sorghum mill and maker. I think plants which will make from seventy-five to one hundred and fifty gallons per day are best suited to neighborhood needs. Such a plant can work from fifteen to forty acres in a season, according to the character of the crop. It is too early yet to tell how the best sorghum can be made. That I may write about early next spring, when a more active interest will be taken in the matter. What I wish to emphasize in this communication is, that the energies of the friends of sorghum for the present should be directed toward an improvement of the syrup. It will be time enough to look out for sugar when the present crisis has passed.”

It is generally the case with other industries, that the more extensive factories can produce a given article at less expense than the one on a limited scale. In the manufacture of syrup, with us, the small works at least have one prominent advantage, namely, that of having the material in the immediate vicinity of the mill, thus avoiding the necessity of hauling cane long distances. I do not know of a neighborhood where a good palatable article of syrup has been made for some time, where the demand for it is not rapidly on the increase; and yet, reasoning of others from my own experience, there is not one of us but is conscious that we ought to make a more uniform as well as a better article.

Let me enumerate. First, we do not get all the saccharine juice out of the cane; second, our defecation is not as complete as it should be; and third, we should be able to reduce evaporation to a demonstration. It will not speak well for the enterprise and intelligence of the sorghum worker if he continues to throw away 30 or 40 per cent., and perhaps more, of the sucrose of the cane; neither will it do for him to adopt a doubtful mode of defecation. He should *know* that the method he adopts is practically complete, and he also should be able to demonstrate that his system of evaporation is as near perfection as possible. I take this occasion to urge upon this convention the consideration of these features of our work. There are other considerations which I hope this convention will not neglect. Among these are evaporation in deep pans, against thin films; the use, or non-use, of chemicals as bleachers; the necessity of the settling tank, or can it be dispensed with? Which is the best and most economical, steam or fire pan, for evaporation? Is there a loss in quantity or quality in syrup where cane is not worked for some time after it is cut and ready for milling? What is the value of the by-products—the skimmings of the defecator, the fodder and seed of the cane, and the bagasse for manure or fuel?

Other questions of equal importance, I have no doubt, will be suggested by you.

As before remarked, where good work has been done, the demand for our products is steadily on the increase; the people want them. The almost universal verdict of physicians is that it is the most healthful sweetening now in use. With this view—I might say, this *demand*—is it possible that this fair and fertile country of ours, taken with the intelligence of the people, is not capable of producing eventually an article of syrup that can compete with any imported product, both in quality and price? I have faith in the success of our enterprise; though the field is large and may take some time to work, yet of the ultimate triumph I have no doubt.

DISCUSSION.

W. L. Anderson. There is one idea contained in the address, regarding the outlook of the sorghum interest, that should not be overlooked. It is of practical importance that we should not only know the future, but what hopes of success we may expect by using our money in this direction. I have been studying the matter considerably, and don't like to pass any cloud over the meeting, but I feel a little blue. I do not think, if things continue as they now are, that sorghum would be as profitable a crop as corn. I can make a sugar syrup at 40 cents a gallon, and granulated sugar at 6 cents per pound. You can see at once that it does not pay our farmers; and they would not continue to use sorghum at 50 or 60 cents a gallon. I am satisfied that sorghum syrup in a few years can be bought at 20 cents a gallon.

Prof. Wiley. I think we have no cause to fear a syrup which is the refuse of the sugar factory. When the sugar is properly made it is so largely composed of sodium and potassium it is not fit for table use, and never can compete with pure sorghum syrup, because in that we have the natural juices.

E. W. Deming. I am sure I do not know what to say in this matter. I believe that hard times and depression of business has done more damage to the sorghum interest than any one thing else. I know very little of those small factories. I am in a large one, and engaged in making syrup largely. I think this business is going to be carried on by keeping a number of hogs, to which the low-grade syrup may be fed, and utilizing the seed for feeding purposes.

Mr. McQuistin. The times are better now than a few years ago. A number of those factories in the South have broken up, and all of those large factories in the North are more or less financially embarrassed.

E. W. Deming. Those small works make better and brighter-colored molasses, and find more favor on the market. But it does not stand to reason that any locality will continue to pay forty cents to fifty cents for syrup from small works when they can buy it at on-half of that from large works. Those large works have to contend with the groceries. They will take from the farmers because they will frequently take it in trade or apply it to some store account.

Alonzo Chapman. Some of the gentlemen seem to think the sorghum outlook is blue; perhaps it is, in a large way. Some in our portion of the State have been selling it readily at not less than forty cents, and some as high as fifty cents per gallon—making an average of forty-five cents. I have known some who have made considerable money at it. The sorghum by-product is going to be the profit in manufacturing. We can raise sorghum for the syrup, and utilize the fodder and bagasse, while the skimmings are excellent for hogs. So I think a great many persons look at this thing wrongly. When we come to investigate closely it is not so bad as many think. Yet, many farmers have lost money in a greater or lesser degree. Last year we took some sorghum to Louisville, for which thirty-five cents was the best offer we could get, at wholesale. They told us that our molasses must be graded before they could handle it. This is where we make a mistake in working up little lots of cane; to-day one grade, and to-morrow another grade.

Mr. Rabb. Sorghum seed is valuable for feed. It is worth one-half that of corn by getting it ground and feeding it to cattle.

Dr. A. Furnas. I have come in competition with Tennessee syrup. When I went to Plainfield last fall to introduce my syrup, I found this article on the market. They told me they could buy Tennessee syrup from twenty-five to thirty-five cents per gallon, and did not want to pay from forty-five to fifty cents for sorghum; yet they admitted that if it looked well they would rather have it, and finally did pay me from forty-five to fifty cents per gallon. I think we should endeavor to make a better article, all of the same grade, and the results will be more satisfactory. The best yield of syrup I have made was out of the Red Imphe, a yield of two hundred gallons to the acre; it is always a red color, easily made, thick and heavy. As the professor says, we have been throwing away too much; we must save more, and grind more closely. My son-in-law had thirty-six acres in wheat last year, and I had nine acres in sorghum, and I made more money than he did. This year he concluded to try the sorghum, and it brought him profitable returns. The inference from this is, that sorghum is a profitable crop. I have not sold a single barrel for less than forty-five cents per gallon. We are not compelled to stick to a profession that does not pay. Here in the North we can raise stock of various kinds and practice farming, while in the South they have either cotton or cane, and have to stick to it.

W. F. Lietzman. "Every cloud has a silver lining," but very hard to discover sometimes. There is good going to grow out of this business; it will learn us to economize. As far as one thing is concerned, I want to remark that if any of us live to be as old as the "hills," we never will be able to make a uniform product from the cane that grows in this country, unless we mix it and make a uniform product. After experimenting with it for thirteen years, I find it is just as impossible to make a uniform article from the sorghum we have to handle, as it is for the millers to make a uniform grade of flour from the wheat of this country, unless we employ an experienced chemist—which is impossible for a small worker to do—to inspect the cane brought to our factories. We work from almost nothing up to one hundred gallons in each lot, and sometimes as high as two hundred lots in one season. And who is able to employ a chemist to analyze these crops? And unless we do this, we never can make a uniform grade of syrup. If we had vats that would hold it all, we could draw from that, and get a uniform article.

W. L. Anderson. This year I took a large steam boiler, cut it in two parts, and put heads in them, holding from four to five hundred gallons each, into which I ran my syrup, and virtually had one grade; yet I think there is no advantage in it, and some disadvantages. You will have a nicer lot of molasses by leaving it out. I have sold as high as thirty-five barrels in a single lot, and had no trouble because it was not equally graded.

Mr. Saterthwait. As far as the syrup is concerned, I have had no trouble in disposing of it, but could not supply the demand. I fell 1,000 gallons short of the demand in two weeks after I was done work. I sold at fifty cents per gallon, and, considering the price of corn and other syrups and sugars, it was a fair average. As far as my evaporator is concerned, I am satisfied with it, and do not wish to exchange it for another. It is very rapid and thorough, purifying and cleansing,

and, to my notion, better than any other process I have ever seen; and it is quite easily handled. My coils are 8 feet long, 6 pipes in a coil, which lie in a box 14 feet long, leaving 3 feet at each end; a scum board at each end, set sloping, and one foot wide, into which the scum is carried. After turning in the cold juice, you must keep your steam and juice regulated. It requires but a short time to convert it into syrup. It requires nearly an inch stream to supply the evaporator. The coils are inch steam pipes, lying flat on the bottom. My box is of wood, with three strips horizontally between the pipes, so there is no heavy body of juice under the pipes not entirely covered. In the evaporation and cleansing, the scum is continually going each way, and never reboils, and never comes back. The scum boards are continually passing it away; they are arranged with one end stationary at the box, and the other end swings with wire rope, one swinging to the right and the other to the left.

A Member. What kind of a mill have you?

Mr. Saterthwait. My mill is of the Star pattern. We grind until noon and get our tanks full, and from 1 to 5 or 6 o'clock in the evening make from 150 to 160 gallons per day.

The election of officers resulted as follows:

President—Dr. A. Furnas, Danville.

Vice-president—E. W. Deming, West Point.

Secretary—W. L. Anderson, Ladoga.

Treasurer—W. F. Lietzman, Center Valley.

ADDRESS BY PROF. WILEY.

Prof. H. W. Wiley, U. S. Chemist, Washington, D. C., being present, was invited to entertain the convention with a few remarks, and responded in substance as follows:

MR. PRESIDENT: I do not know what theme would be most agreeable to the convention, and I can speak but briefly. Responding to the invitation of the State Board of Agriculture of California, for the purpose of investigating the sugar beet in that locality, I visited the Pacific coast. I received an invitation from Oregon and Washington Territory to also visit those countries; but unfortunately my engagements in Louisiana were so near at hand, I could not look over more than one State—that of California, which is almost an empire of itself. My attention was directed into two channels—one of climate, rainfall, and temperature, and the soil, and the culture of the beet. The interests of the sugar men are together everywhere, and there should not be any rivalry and jealousy against those who are engaged with the sugar cane of the South and those who raise the Northern cane and sugar beet. That which will promote one will also promote the other. It was not necessary to go to California to investigate the climate and rainfall; the explanations from the United States signal office extended back for fourteen years, and from this I could compute the average rainfall and distribution of it, as well as the maximum and minimum, without visiting that locality. My attention was chiefly directed to the adaptation of the soil for the production of the sugar beet. The beet is a plant which will grow over a very wide area of territory, but yields sugar under certain climatic conditions, and this under certain temperature. It

will grow quite large in size in warm climates, but no sugar is found in it. The maximum temperature suitable for the production of the beet is 60° Fahrenheit. The temperature of California may justly be divided into two localities. In one locality the temperature of summer was above 70°, and in the other region 70° or below. The whole region of California between the coast range and sea down 2,000 miles has an even temperature of less than 70°. That country comprising the great valley of California, which begins at the source of the Sacramento river and extends to San Francisco Bay, is one of the most remarkable valleys, the temperature being so high it is not worth while to try the sugar beet. Between the coast range and the sea it is mostly hilly, and it is only in the valleys of this region that the soil is suitable for the beet. The area found in California is small in proportion to the size of the State, embracing only about two million acres.

From San Francisco to Oakland, passing down eighteen miles to the west side of the bay to a little town called Elbrith, twenty-four miles in a southeast direction, there is situated the only beet sugar factory in the United States. It has been many years since the first attempt to manufacture sugar from the beet. One was established in Illinois, Wisconsin and Delaware, and also in Massachusetts. The factory in Massachusetts was equal to the best in Europe, and cost \$140,000; this, like all its predecessors, went into bankruptcy. In California \$500,000 was lost in attempting to establish this beet sugar interest. The very spot of ground on which the present factory stands marks the ruins of two previous ones. One single man has finally conquered, and made a success financially. The area of the United States suitable for the culture of the beet is considerable, as shown in the Bulletins of the Chemical Bureau. There are certain tracts of country that are suitable for the cultivation of the beet, but its manufacture is not understood. To manufacture when first ripe would not be profitable for the outlay in money. The beets are kept through the winter in open piles, with a little straw thrown over them to avoid the danger of freezing, while occasionally they are put in siloes to preserve them from frost. It is always spring there, which enables them to plant early—sometimes in February—and the crops are ready for the factory from the 1st of August till December. They can store their beets with safety and continue the making of sugar until late in the spring. This company does not produce their own beets, but engage the farmers to raise beets for them; and it is quite profitable, as the price per ton delivered at the mill is \$4.50, and they raise from fifteen to twenty-five tons per acre. Up to the present year the trouble has been to get enough beets to run the entire work season. Owing to the low price of wheat, a great many farmers raise beets who never raised them before; the result is that the company has been overstocked with beets. The total number received up to the 5th of December was 27,000 tons. This company makes pure granulated sugar. Their machinery is somewhat imperfect, but serves the purposes of the factory, and works eighty tons of beets per day. The analysis of the beet shows that it contains about fourteen pounds of sugar to the 100 lbs. of beets. The purity of the beet is remarkable, as they grow beside tide-water, and come in contact with the salt of the sea, where you would say we could not raise beets, yet it is a beet that makes a good yield and a fine article of sugar. Mr. President, there is not an area in the world better adapted to the production of the beet than the area running up

through San Diego to the British possessions. When a crop yields twenty tons to the acre, there is a possibility of that coast making its own sugar and supplying other parts of the country. In the county of Los Angeles, which is dry, it grows and seems to do well, and in spite of the small rainfall the beet flourishes. The rows are made eighteen inches apart to prevent them from growing large, as they lose their sugar quality in a greater or less degree when they attain a size larger than one and one-half pounds. If you give a beet a chance to grow there, there is no limit—it will grow winter and summer. There is another important thing connected with the climate: if you slice them and spread them in the sun they will dry out, and with a slicer the cost of transportation is small, and they could easily be shipped to a central factory. There are dozens of these little valleys containing 400 to 500 acres, and can not support a factory, but could slice them and dry them. I brought samples of them, and found upon analysis that they have the pure sucrose, and contained all they ever contained. A great deal of interest is excited over this industry in California. As soon as the tariff legislation is settled in this country, and we know with reasonable certainty the future outlook, I shall expect to see this industry expand rapidly. At present no one will take hold of it, because they do not know what policy Congress may yet pursue.

A Member. What is most commonly used for filtering, Professor?

Prof. Wiley. The juice is generally passed through bone black, which causes it to be limpid like water. When it comes from the press it is absolutely black, on account of tannin and iron, which forms an ink. It passes a filter a second time, and passes through an instrument made of parchment paper, with pure water on the outside and chambers on the inside, and, by the use of soda, the crystalline sucrose is removed, and a pure white sugar is obtained.

Dr Furnas. How about the skimming?

Prof. Wiley. This is done in the filtering process. All the impurities are taken out by the filtering process and lime. They make a fair article of beet sugar in California. The pulp they feed to the cattle; the pulp keeps remarkably well piled up in ricks, and cattle eat it with a good relish. The beet pulp contains all the nitrogenous portion on the beet. It is better fit for a work animal than to fatten; the tendency is to make muscle. They feed it to cows for dairy purposes. Albumen is found largely in this, and is a very important constituent of butter and cheese. They have also 1,000 hogs, and throw out the large beets to them, which are not so suitable for sugar as smaller ones. In Louisiana they are very much discouraged. In looking about; I was surprised that after 100 years they were throwing away the fruits of their labor. I told them unless they changed their method they need not hope for salvation. They are using no modern improvements, and getting results almost the same as seventy-five years ago. It is strange those people have remained stationary as they have, yet it is true. I have brought samples of cane from the South for your inspection, which are an average under the treatment they receive.

Dr. A. Furnas. How do you make cuttings for planting?

Prof. Wiley. The top of the cane is the bud, and the joint at the side is the eye. The least frost will injure these eyes so they wont grow. Governor Warmouth don't plant in the spring. They begin planting in the fall, as soon as the cane is ripe. They put an average of three stalks in a row. The rows are eight feet apart.

Some stalks are laid down whole, and long ones they cut in two. They make a perfect jungle, if planted closer. A great many put their cane in siloes, and plant in the spring; but it don't do so well. They have planted crops and stubble crops; the stubble crop is stronger than the planted crop. They have to replant once in three years. Sugar cane does not seem to impoverish the soil very rapidly. In the West India Islands land has been in cultivation for fifty years, and is rich yet. The land is bottom. The soils of Ohio, Pennsylvania, Indiana and Illinois have washed down there, and they are raising sugar on it. Governor Warmouth plows by steam, both breaking and cultivating, which is very economical. In February he will take his plow and throw the dirt away from the roots to the center, there being ridges against the roots, leaving the row to the light and heat; then when it gets started he throws it back on the roots. He brings his cane to the mill on the tramway. One mule will bring in ten loaded cars at a time. He gains much by the use of the tramway. Another improvement which he has introduced is the crushing of the cane. Before it goes to the mill it passes through a shredder. The mill runs at a high rate of speed. You would think a pulp would not pass through the mill, but stick on the turn-plate; but it gave no trouble whatever. The best result is the extraction of 70 per cent of the juice from these mills. I think the shredder would be of advantage to you here; you would get 10 to 15 per cent. more juice with it than without it. It saves labor in feeding. They use settling tanks similar to those used for sorghum. After defecation it is allowed to settle, and the juice is run through bone black, and then goes into the double effect vacuum, and is run again through bone black and turns back into the vacuum pan and directly into the centrifugal. When they use bone black they do not use sulphur, but in the absence of bone black they use it.

A Member. We find it does not do to grind too closely.

Prof. Wiley. There is little basis for that. I have tried a number of experiments, and in Louisiana on Southern cane, as well as sorghum. I have had sorghum ground and 56 per cent. of the juice extracted, and then run the bagasse through again and realized 15 per cent. The first was a little purer than the second, but not enough to make much difference. If I filter the second juice and get out the mechanical impurities, it is as good as the first.

W. F. Lietzman. Do the properties contained in bone black have any effect on the cane juice?

Prof. Wiley. No, I think not, as far as a color is concerned. The lime and glucose make it dark, but filtering it through bone black makes it light.

Dr. A. Furnas. Can we reburn animal charcoal profitably without a retort?

Prof. Wiley. I think not, sir.

W. F. Lietzman. Is bone black good after reburning?

Prof. Wiley. It is better. It can be burned a great many times.

A Member. How long would it have to burn?

Prof. Wiley. About thirty hours. When we first use bone black it is not good. They have to refilter it. The quicker we put the syrup through, the better, if we want good color, and good color is mostly required. Hence, boiling in a thin stratum and rapidly, is the *ne plus ultra* of a first-class syrup, and my observations prove it to be so.

A Member. What is the cause of some of the juice having so much gum, even among the water swung out in the centrifugal?

Prof. Wiley. This is one of the peculiarities I spoke of awhile ago. I can not tell. This gum that comes in sorghum is identical with the sugar-cane of the South, but is different in property.

Dr. A. Furnas. What would a shredder cost for one of our factories, with a capacity of 150 gallons of syrup per day?

Prof. Wiley. I do not know what they would cost, but they will not be costly. They make them now as low as one-horse power.

Mr. Saterthwait. The doctor spoke of rapid evaporation after defecation. This season I had a small tank that would hold a hundred gallons of juice. I heated the juice about milk-warm, and then applied the lime, and beat it ready for skimming. After removing the first scum another coat would raise, and sometimes as high as four; then I would draw into the settling-tank. As soon as leaving the settling-tank it went into evaporator, and was evaporated rapidly. I used no sulphur fumes. Would it be better to run into fast evaporation without defecation?

Prof. Wiley. No sir; make defecation always. The boiling makes the color.

Mr. Saterthwait. Suppose you have thirty minutes to stop and let it cool down; would it make it too dark? When we clean out the tank you would be surprised. Some of my people got hold of some Orleans molasses; a good portion of it went to sugar, and it was good quality. They got me to work it over with my fire-pan, but I found I had something better than my fire-pan; I put my steam pipe right into the barrel and boiled it about three minutes and drew it off. I worked this in batches; I like a continual flow best. If you get your juice regulated and an even body of steam, you have nothing to do but to pass around and take the scum off.

Query No. 1: Will the skimmings of the pan be detrimental to hogs from the large amount of lime used?

W. L. Anderson. I use bisulphate of lime and lime both. I do not believe it is deleterious, but advantageous, as starch has much to do in furnishing fattening qualities. The starch is in the scum, and the hogs get that which is valuable to them.

W. F. Lietzman. I have used lime for a number of years, and for the last two years bisulphate, and have had no bad results. My hogs fatten faster when we make molasses than any other time. My opinion is that skimmings are not injurious.

Dr. Furnas. We don't have enough hogs to feed it to. One of my neighbors comes and gets it for his hogs, and thinks it is very beneficial.

Query No. 2: Does bisulphate of lime injure the manufacture of cake? Or, in other words, what does bisulphate have to do with soda?

W. L. Anderson. There are persons in my settlement who buy sorghum because it makes better cake. I have never heard an objection of that kind.

The convention adjourned until 7 o'clock.

EVENING SESSION.

The convention met at 7 o'clock, with President Furnas in the chair.
E. W. Deming read the following address :

PROMINENT FEATURES OF THE RECENT SUGAR-
GROWERS' MEETING AT ST. LOUIS, WITH
OBSERVATIONS ON GOV. WARMOOUTH'S
PLANTATIONS.

BY E. W. DEMING.

The attendance at the St. Louis Convention was not as large as the meeting preceding, yet it was the most interesting meeting ever held by that society. The meeting was opened by the President, N. J. Colman, in a very able and interesting address, in which he urged members not to become discouraged; that we were not more oppressed than other branches of agriculture, and asked if we should cease raising wheat and corn now that it had become unprofitable. A. S. Folger, of Washington, Iowa, exhibited a model of a finishing pan, invented by John Stuart, of Iowa. It is a low-sided, evenly-proportioned, open pan. A reel, similar to that used by reapers, extends lengthwise and over the pan, with arms extending to within one inch of the bottom of the pan. Secured at the ends of these arms, parallel with its axis, is a piece of large tin gutter-pipe, the bottom having many perforations. This reel is turned by a belt—the tin gutter-pipe entering the liquid upside down at one side of the pan, and leaving at the other right side up. This carries cold air into the liquid, that expands, escaping with some of the moisture. It disturbs the contents and gives a greater heating surface, and therefore, an easy escape for the steam globules. Its main features are rapidity and the low temperature at which the syrup is finished. From fort-nine tons of cane Mr. Stuart produced 4,900 pounds of sugar with this pan. The past season has been the most favorable ever known for cane in Wisconsin and Minnesota. Reports of tonnage and yields of syrup per acre are really remarkable. The opinion of the meeting was in favor of planting dry seed. In Minnesota extraordinary large yields of wheat are reported from land on which cane was grown the previous season. Wisconsin and Minnesota delegates favored planting cane in hills, while the members to the South advocated planting in drills. It was the general opinion that the past season has been a most disastrous one for large works, while small works with an established local trade are generally but little affected by the depressed condition of the syrup market.

Prof. Scovell, of Sterling, Kansas, reported a disease among cane when nearly ripe. The leaf turned yellow, then red; the roots died, the stalks withered, and, in some instances, fell over. This disease is found only on alkaline soils. Sugar in the diseased cane is inverted. The cause is supposed to be lack of cultivation. Much complaint was also made by Kansas delegates of the deterioration of cane by hybridizing with broom-corn. In some localities the seed would not answer for planting. The utilization of the by-products of this industry received more attention than at any previous meeting. The reported yields of seed ranged from eighteen to forty-eight bushels per acre. The hog product of the Rio Grande Works, in New Jersey, last year brought them \$12,000, without the loss of a single hog.

DISCUSSION.

A. Chapman. Does the Professor give any cause for this?

E. W. Deming. In that one case, the analysis showed lack of cultivation.

Mr. Bennyworth, in Kansas, had 500 acres of cane, and never cultivated it at all, and 150 acres that he never planted, which was a volunteer crop. The sugar cane is in demand in that country for fodder. He sold it in the fall at \$5 an acre, and 5,000 sheep were turned on when we were there.

Cane needs to be planted away from broom corn, as it will hybridize for a distance of two miles.

In regard to planting cane on Governor Warmoth's plantation, Prof. Wiley did not fully explain. They estimate the cost of planting an acre of cane to be \$30. It requires fifty men and twenty-five mules to plant ten acres. When I was there three years ago, I thought one ordinary man in the North would do as much as three down there. When I saw forty persons putting cane on the carrier, I thought they had made a mistake. I told them in the North it would be considered little work. I grabbed up some cane myself, but before I got to the carrier I was down to the ground. They are very heavy. I had about a dozen canes when I started. In taking up the cane they strip it after cutting, taking the leaves off one stalk at a time. It is of rank growth, the canes are crooked and uneven in length, and slippery to handle.

Dr. Furnas. It becomes tangled very much. To facilitate business, they have a hook on the back of the knife, with which they reach down and catch one of the down canes, raise it up, and cut it off at the ground.

A Member. I would like to know how they handle those tramways.

E. W. Deming. They are tracks laid down on which the cane is conveyed to the mill, having ties a short distance apart, to support the rails from sinking in the ground, and fish joints to keep the rails together. These tracks are movable and are moved for every through of cane.

Dr. Furnas. I noticed that it was universally twelve rows of cane and then a ditch. They have to cultivate that way there, on account of the marshy nature of the ground. Nobody lives behind the man who lives on the river. Governor Warmoth has so many arpents of river front, and then extends back quite a distance inland. The water that collects in these ditches is pumped out.

E. W. Deming. The only land that can be cultivated is in close proximity to the Mississippi river, and will include about one-twentieth of the State. They can't get back in the woods to get the timber out only in the driest months of summer. When a man buys a plantation, he buys so much river front, and runs back as far as he wants—200 miles if you want. Many of the farms around New Orleans have not more than fifteen arpents of river front, running back and widening out.

E. W. Deming read the following on

CANE SEED FLOUR.

Having received many letters seeking information in regard to the conversion of cane seed into a flour, I take this opportunity of replying.

Having nearly 3,000 bushels of cane seed, no stock to which we could feed it, and believing its sale for planting would be limited, we very naturally concluded to test its flour as a substitute for buckwheat. Our first experiment, that of removing the bran by a buckwheat huller, was a failure, because of the bran adhering so closely to the meal and the general hard nature of the seed causing it to break straight across. Our second experiment, on a wheat buhr, resulted in grinding much of the bran fully as fine as the meal, making a thorough separation by bolt impossible, and its oily, heavy nature, gummed the stone and soon rendered the bolt useless.

Our third experiment was with a sharp feed stone. This gave better results. The seed was ground midway between buckwheat and cornmeal, and bolted, giving four pound of flour and two of offal. Still there was sufficient bran in the flour to give it a reddish cast; not enough to interfere with its use, but quite sufficient to deter the trade from investing. Owing to the large per cent. of offal that had no value whatever, unless it be to the tanner, this experiment was also a failure. I may now add that this seed is very hard, difficult to grind, and damaging to bolts, because of its oily nature and tendency to ball up. The millers generally are fast learning this, and their experiments in this line will probably soon cease. After much persuasion we induced the millers to test the seed on a set of rolls. The first break gave one pound of flour from ten pounds of seed, bolted from the sample now on the table. The second break has not yet occurred. According to the miller's judgment, at least three breaks, with bolts after each break, would be necessary to properly reduce the seed. As his machinery was not adapted to this work, and the prospective profits not justifying us in the outlay for machinery, experiments in this line have ceased for the present.

By the use of rollers, the bran of the seed is left in large flakes, and, therefore, can be easily removed, while the flour is coarse, and there is less danger of injury to the bolting cloths than when ground very fine. This leaves a pure white flour.

For individual use, a sharp chopping stone and a buckwheat bolt will give a cane seed flour that will be far superior to the trade buckwheat for griddle cakes,

but owing to the fine particles of bran that the bolt does not remove, the flour will have a reddish cast. Owing to the low price of wheat flour, I do not believe cane seed can be properly ground and profitably introduced on the market, especially until its use shall be fully known, whether used as a substitute for buckwheat, as corn flour, or as an adulterant for spice mills.

DISCUSSION.

Dr. Furnas. Friend Cleland, how much seed did you get ground?

Mr. Cleland. I had four bushels ground and realized forty pounds of flour. The miller ground it on a pair of corn buhrs and ran through buckwheat bolt.

W. L. Anderson. I ran out of buckwheat and tried cane seed. It seemed to me it had the essence of smart weed in it. It was ground and bolted the same as wheat. I realized more than forty pounds out of four bushels.

E. W. Deming. I have realized as high as 100 pounds from two bushels, but had to get another miller next time.

W. L. Anderson. I would like to have some of those samples of machinery on the table explained. If we would bring more of our machinery here it would be more profitable. Last year there were some models on exhibition, but no mention made of them. We did not give an opportunity on them.

Mr. McQuisten then explained his model of an evaporator, the distinguishing feature of which was the dead sea in the middle of the pan. He was eagerly listened to in his minute details, and plied with many questions. He says with one man to grind, and one other assistant, he can make on his pan 150 gallons of syrup per day and wait on customers in the bargain.

Mr. Horton then proceeded to explain his evaporator. He insisted on complete filtering of the juice before entering the evaporator, which was mainly constructed to favor complete filtering. Those who have tried his pan say it does good work.

Mr. McQuisten. In weighing molasses I have my scales fixed perhaps differently from others. I have a bell attached, so if I want to put so much in a barrel I set my scales for that amount, and the bell rings when that amount is in. It is a handy arrangement, and there is no danger in letting the molasses run over.

Mr. Porter. In weighing small jobs, how could we arrange it so as to get so much molasses in weight?

Mr. Cleland. I run the juice into a measuring tank, and have a glass indicator similar to those on steam boilers, which tells just how much there is in the tank.

Mr. Porter. Suppose a man brings in a little load of cane, and I want to know how much molasses to give to the hundred pounds of cane?

Dr. Furnas. You can not do that without grinding it all at once.

E. W. Deming. I hardly know how we could arrange it by weighing the cane and give the right amount of syrup.

Mr. Porter. It don't amount to much with large operators, but the difficulty is with the small ones.

W. L. Anderson. I allow twelve gallons of molasses to the ton of cane, and charge twenty-five cents a gallon for making.

W. F. Lietzman. I do not pretend to keep the small jobs separate. There is a

rule to go by to ascertain the amount of molasses made from a given number of gallons of juice. Take the number 60 and divide the percentage on the saccharometer; if it stands at nine it will give six and one-half gallons.

Dr. Furnas. We aim to keep the run of each man's job, and we get confused sometimes.

W. L. Anderson. We have put up an evaporator that evaporates very rapidly, making forty gallons of syrup in forty-five minutes, with twenty-five pounds of steam. Last year it was a matter of theory; this year I have experimented sufficiently to know, and test what I know by facts.

Dr. Furnas. How large was the evaporating surface when you made the forty gallons?

W. L. Anderson. The pan was fifteen feet long and three and one-half feet wide, and an inch and a quarter pipe. The pan was made with flanges on each side. The juice boils up high in the center and rolls to the sides. The heat is in the center; as it boils, the scum is scraped off into the scum-pockets.

Dr. Furnas. How do you get the molasses out from those coils on the bottom?

W. L. Anderson. We have a chain that holds the pipes, and the syrup goes down. In my pan I have to clean my pipes every week to remove the scale.

E. W. Deming. The mode of clarifying the juice of the Southern cane is similar to our method. They have large pockets on the sides of the evaporator, into which the skimmings are kept swept off. Before skimming, it is not the intention to boil it, but merely bring it to the boiling point and allow it to stand.

Alonzo Chapman. I do not come here to make any advertisement of our evaporator. We have an evaporator we got up three years ago—a self-skimming evaporator. It is nothing more than the Cook pan. Instead of having six-inch sections, we have eighteen-inch. There is a trough fixed along each side of the evaporator, one end of which is inclined. As the juice boils, the scum flows to the side and runs into those troughs, and flows to the other end, where there is a spout made of tin, which enters into the pocket. In our experience with sorghum, we find that the quicker we convert it into molasses the better the molasses will be, and the smaller the pan is the better; if it gets out of order it is easily adjusted; for that reason we make our pans small. The ledges are three inches high, and higher than the edge of the pan. The Cook pan is a good one, but the ledges are too close together. In ours they are eighteen inches wide, so we can use an eighteen-inch skimmer.

A Member. What are your prices?

Mr. Chapman. A pan six feet long, \$15; seven-foot pan, \$20; seven feet four inches, \$25. Nearly all those pans are improvements on the Cook pan.

W. F. Lietzman said he only made his pan for his own individual use. It was somewhat on the plan of the Stubbs, with a pocket over the fire-front in which to catch sediment. It did good work, and he had no model.

Dr. Furnas. I fear the pocket would be in the way, coming down before the fire.

W. F. Lietzman. It stands up six inches above the door-shutter, and we have no trouble at all.

Dr. Furnas. If we undertake to use sulphur, what would be the best plan for introducing it?

E. W. Deming. They have boxes on the plan of a smutter, which are horizontal, with long cylinders, with closely fitting caps on it, used mostly in the South. The best way we can apply it is with sulphur boxes and paddle-wheel for breaking the sulphur up. I have little faith in bisulphate.

The convention adjourned.

THURSDAY—MORNING SESSION.

Convention met at 8:30, President Furnas in the chair.

DISCUSSION.

Mr. Porter. I think we should invite manufacturers of sorghum machinery to meet with us, and give them an opportunity to explain the merits of their pans and other apparatus. I therefore offer a resolution tendering invitation for such exhibits.

W. F. Lietzman. I do not want to turn our association into a place for advertising machinery. It is the business of the manufacturers to advertise through circulars sent to us, and we can open a correspondence with them. If we bring these machines here, there will be little room left for the transaction of our business. I am not in favor of that motion.

Dr. Furnas. I do not feel a spirit of jealousy in this matter at all. The models on exhibition here have been interesting, and we have learned much by seeing them. It seems to me that the exhibition of machinery would be a good school.

W. L. Anderson. I want to know the virtue of every pan in existence. I have received numerous inquiries as to the merits of different pans, and I had to reply that I did not know, not having investigated. I think it would be not only a benefit to those who manufacture, but also to those who come here to learn. I am in favor of the motion to let every man who has something that is important to the sorghum industry exhibit it here.

Mr. Pope. What good would it do to come here and talk about molasses, if you did not bring samples and demonstrate it?

A. Chapman. I agree with the gentleman that it would be right to show certain kinds of machinery, that we may infuse knowledge; but we should use caution, and not run it into an advertising concern.

The resolution was adopted.

A. Chapman read the following essay :

BY-PRODUCTS OF SORGHUM.

BY A. CHAPMAN.

Time, practical experience, and scientific research have proven that these once despised by-products are of the most vital importance to the sorghum industry. By by-products we mean the blades, the seed, the scum from the evaporator, and the bagasse, or crushed cane.

First, we consider the blades as fodder, for which they surpass corn in fattening qualities, which no farmer in the present age would think of allowing to go to waste. We even remember, when but a little boy, in the wilds of Illinois, assisting our father to carefully gather the corn blades, with which we covered our pumpkins kept in the pumpkin-house, constructed of cornstalks with the blades on. As the pumpkins were fed to the stock during winter, the fodder was fed also. True, the labor of gathering the sorghum blades is considerable, and care has to be taken in curing them; but there is an old proverb particularly adapted to the farm, that "Waste makes want." It is not what we make, but what we save, that constitutes our bank balance at the close of the year.

The second and most important by-product of sorghum is the seed, much of which is now left to rot in the field. The seed, next to the saccharine productions, is the most valuable product of the plant. Prof. Wiley, in his valuable and comprehensive report on sorghum, which we feel justified in quoting as the most reliable authority obtainable, says: "The sorghum plant is a true cereal. The seeds have starch, albuminoids, oil, sugar, and fiber in such proportions as render them suitable for animal food." He says further: "In the one item of seed alone, the sorghum cane possesses a by-product more valuable than the by-products of all other sugar-producing plants combined." He gives the average yield of wheat at 720 pounds per acre, corn at 1,456 pounds, and sorghum at 1,250 pounds—nearly as much as corn, and nearly double the yield of wheat; and yet this is but a by-product, and one that many of our farmers have cast away as worthless. In food value the seeds, when properly fed, are nearly equal to corn, and for some kinds of stock superior to oats. Mr. Henry Porter, a Jefferson county farmer and a pioneer sorghum grower, recently informed us that since harvesting his cane he has fed his hogs nothing but cane seed and the skimmings from his evaporator. He has some of the finest porkers in the neighborhood, many of them tipping the beam at 350 pounds and upward. He will feed cane seed all the winter, considering it little inferior to corn for stock of all kinds. His hogs are doing better on the seed than his neighbors' hogs on corn. For chickens there is nothing better than cane seed. When fed to horses and cows, especially those confined and having little or no exercise, the seed should be boiled or steamed, and to cows should be fed with some good wholesome slop—skimmings from the evaporator are good—as the hard,

uncooked grains are of a binding nature. Sometimes stock will refuse both seed and skimmings; but when once accustomed to them, they eat with avidity, and, if judiciously fed, with perfect safety and good results.

During 1883 and 1884, wishing to gain all the practical information possible on the subject, we mailed broadcast throughout the Union, wherever a sorghum man could be found, a circular letter asking various questions pertaining to the sorghum industry. One of those questions was, "Your opinion of sorghum seed as a feed for stock?"

We have received some hundreds of replies to these letters from all parts of the Union, and some from Canada, many of which we published in the *Sorghum Growers' Guide* last year; and invariably all who answered the seed question favored it as a stock feed; such answers as "I think it good for stock of all kinds," "It is equal to corn," "It is almost equal to corn for stock," "It is superior to oats," "The seed will pay for cultivating the crop," and many other commendatory answers, being almost as numerous as the letters received. The seed, well cared for and rightly used, will pay the actual cost of planting, cultivating and harvesting under ordinary circumstances.

A fair average yield we believe to be about 25 bushels per acre—at least, Jefferson county can produce that; which, estimated at the price of oats, 32 cents, would be \$8 an acre—as much as many farmers make from their corn crops; and we believe it to be superior to oats as a general utility feed. The seed has also been found an excellent substitute for buckwheat; and where is the American farmer that don't like buckwheat cakes and 'lasses?

Its present exclusion from the breakfast table as a substitute for the time-honored buckwheat is due partly to lack of knowledge of its excellence, partly to lack of facilities for converting it into flour, but principally to prejudice, often coupled with pride. We don't want to say to our neighbor, "we had sorghum cakes for breakfast." It don't sound so high-toned as "buckwheat cakes" does. If we cultivated with a view to seed for table use, as we do other cereals, we could produce a grain as fine and white as our finest corn—as a sample of seed sent me by that pioneer sorghum grower of Tennessee, Ephraim Link, will show. The future possibilities and probabilities of sorghum seed are great indeed.

Our third, and one of the most important by-products of sorghum, is the scum taken from the seething mass in the evaporator during its course of manipulation into syrup. Prof. Wiley says:

The scums are rich in albuminoids, and, with the precipitates, containing lime, phosphoric acid, etc., make a good fertilizer. These scums also make a valuable slop, being rich in qualities necessary to food for stock, especially hogs, which many farmers feed upon these skimmings during making up time. I have often watched the hogs with amusement. How eagerly they fight for a big share of the trough when the skimmings are given to them hot from the evaporator, and when almost scalded they run squealing around the pen, and, rubbing their snouts, return to the fight, still eager for the fray, and determined to have both feet there, or capsize the trough. Hogs fed with the scums, mixed with cane seed or other good grain, are found to produce the finest and firmest of meat, equal to the famous Irish bacon. For cows it is excellent, and, once accustomed to it, they eat with a relish, and with good effect on both butter and milk.

To throw away these scums, as we have often seen farmers do, is wasteful in the extreme.

The fourth and remaining by-product is the bagasse, and though generally considered the most unimportant—many manufacturers considering it a detriment piling up in the way—yet, if properly utilized it is a valuable by-product. As a stock feed we fear it is of doubtful utility, especially if run through a good mill, but as a bedding for stock, especially hogs, it is found to be excellent, and, after serving its time there, is valuable as a manure. Thrown into the compost pile it admirably serves the same purpose. When fuel is scarce it can be dried and profitably used for that purpose, serving to heat the boiler, and its ashes used as a fertilizer, returning to the ground much that has been extracted from it by the parent plant. It also makes a paper stock of fair quality, and no doubt when its good qualities become known will be largely used for that purpose.

DISCUSSION.

Dr. Furnas. Being an old horticulturist, I find bagasse is good for manure. It requires about two years to rot sufficiently to be suitable for spreading on the ground. If we don't put it in the garden we put it on the wheat land. I have put some around my pie-plant, which I believe will be beneficial as a mulch. It is also good for raspberries. It makes a clean bed through the strawberries and raspberries. I propose to try this under my apple and pear trees.

Mr. McQuisten. I have a small vineyard; I scattered bagasse through that about six inches deep. I have also experienced no bad results from its use on potatoes.

W. L. Anderson. I discover that bagasse gathers seed where it is not cultivated. Leave it four years, it will rot down and become a bed of smartweed. I have been a little afraid to spread it among my raspberries on that account. I would make that caution. For retaining moisture, I am satisfied there is no mulch better than bagasse. I do not haul it away from the pile until three or four years old, as there is not much in it earlier. By letting it lay three or four years, it is as good as stable manure. I find that as a manure it is very rich. There are some places on my farm where I threw this four-year-old bagasse, and the spots are well defined. I wish to ask if bagasse new from the mill is not poisonous? I am inclined to think there is an acid that is injurious to our land. I would ask Mr. Deming if he can not see the effect?

E. W. Deming. As the bagasse comes from the mill, it is dropped on a wagon and is hauled away and dumped about in the field, at convenient places, to burn. I burn the second or third day after it is hauled out. We neglected to burn a part of it, and last spring, in order to get rid of it, we plowed a little of it under, and little cane grew on those spots. If there was no bagasse on the surface, it was plain where it had been. The past season we have burned, with the exception of three or four times, and anticipate little trouble. Our land is so arranged that we can cultivate every foot of it.

Dr. Furnas. Are the ashes worth as much as the decomposed bagasse?

E. W. Deming. Yes; that is all you get out of them, whether you rot or burn. As Mr. Anderson has a stiff, heavy soil, the bagasse acid remains there through the winter, and, I presume, sours. You can hardly expect anything in it right from the mill. After we burn those piles there is no acid left. The piles are sufficiently dry the second day to burn without stirring.

Mr. Anderson. I used to burn it right from the mill.

Dr. Furnas. We haul the bagasse away from the mill with two ropes, forty feet long, making a loop passing around the bagasse, and hitching two horses to it. A little boy attends to this, dragging everything away smooth and nice, leaving the bagasse in a pile.

E. W. Deming. We shall all see the time when the bagasse will be valuable paper stock. Farmers are not selling their straw as freely as they used, and bagasse will come in on that line. Some are working sawdust into paper. The attempt to make paper at our place proved to be a failure, as they undertook to make the wrong kind of paper from it.

W. L. Anderson. Mr. Chapman says the seed should be cooked, as it is hard, and therefore has a binding influence on the animal. I always understood that it was not due to the fact of its being hard, but on account of the great amount of tanic acid, which caused it to have a binding influence.

Mr. Chapman. The seeds are hard and indigestible; it is better after boiling.

W. L. Anderson. I have been sending boys to gather up the seed, but it did not pay. This year I let the pigs take it; they fattened nicely on it—leaving them in the field until snow came. Hogs take it up much cleaner than boys will.

Dr. Furnas. We fattened our hogs in the cane-field. It kept them in good health, and they improved with much less corn than otherwise. I think it is good economy to give the hogs the benefit of the field.

W. L. Anderson read the following essay:

MATTERS PERTAINING TO THE SORGHUM INTEREST.

BY W. L. ANDERSON.

CHEMICALS.

I think no one will call in question the statement that the worst enemy of the syrup maker—the “sorghum taste”—is due to the free acid in the juice. The “green taste” is the fly in the ointment. This must be neutralized to make a syrup that will compete with similar products.

To the sugar-maker this acid is a worse enemy, since fully fifty per cent. of the sugar will be lost if it is not neutralized. This must be done by the use of chemicals. By what chemicals? This has been variously answered. Many patent compounds have been put on the market. The curse of every new industry—the

patent-right man—has not made ours an exception. After much experimenting, the conclusion is that there is nothing better than lime. It is cheap, well known, widely distributed, can be safely handled, easily applied, coagulates the vegetable matter more readily and completely than any other alkali. But, best of all, it unites with the acid and forms an insoluble product, which unites and is taken off with the scum, hence has no effect on the sugar or syrup. For instance, soda will neutralize the acid as readily as lime, but the product is soluble, and, remaining in the syrup, will give it a deleterious flavor, if much acid has been neutralized. For these and other reasons not necessary to state, lime has come into general favor.

I am well aware that many fear lime as they do counterfeit money, and for the same reason it makes a hole in the profits. There are two reasons for this: First, they use it improperly; second, they use it without a bleacher. To use it just right is as delicate a trick as walking a rope, where the least deviation from gravity's center will throw us on this side or that, and end in disaster. Too much lime is "this side;" too little, "that." When you have tried lime as long and patiently as the gymnast has the rope, you may proceed with as much confidence as he. If lime is used in excess, it will combine with glucose, and the syrup will not only be dark, but bitter. On the other hand, you meet with the "sorghum taste." You should neutralize so closely that if you were to put in a piece of blue and red litmus, side by side, neither would change color. But if you are working for syrup, and have not a good bleacher which you can use intelligently and in sufficient quantity, I would advise that you stay on the safe side—do not neutralize all the acid. But if you are working for sugar, the safe side is the alkaline; for if the least purple is found on the litmus, it means you are losing five to ten per cent. of sugar by inversion. Yet if you use lime in excess, the excess will unite with the sucrose, and thus, in trying to dodge Scylla, we fall into Charybdis; but the danger is not so great on this side, as will be explained further on.

The main objection to lime is that it darkens the syrup. If you do not intend to use a bleacher to counteract this effect, I advise that you let lime alone and make good, old-fashioned sorghum syrup, and brand each barrel in large letters, "Sorghum;" for no one can be deceived in the article. But if you will use a good bleacher in connection with lime, you may mark it "West India Extra Eureka Brand, XXXX," and it will outsell "sorghum" every time.

As a bleacher many things have been used, such as phosphate of ammonia, phosphoric acid, carbonic acid, sulphur fumes, sulphurous acid, bisulphate of lime. The last three have sulphur as a basis. The only valid objection, known to me, against sulphur bleachers (if I may be allowed to so call them) is that they are not permanent. Bleach a rose in sulphur fumes and its primitive color may return; bleach it in phosphoric acid and it will be permanently bleached. I have frequently noticed that my old syrup was much darker than when first made. These bleachers will not lighten the syrup, unless used in excess, and are present as free sulphurous acid. This free acid will, in time, partly or altogether depart, and the syrup becomes dark. If the vessels containing the syrup are kept air-tight, this will not happen. And as this is the way they are usually kept, it weakens the force of the objection.

So far, nothing has been found that will answer our purpose so well as these sulphur bleachers; hence I will pass over the others in silence.

As I wish to be understood by the unlearned as well as by the student, I shall not only go back to the A B C, but use terms not strictly scientific. If you burn a piece of sulphur, a penetrating odor is produced. This odor is due to the gas formed by the sulphur uniting with the oxygen of the air. This combination is known as sulphurous acid gas. This gas is commonly produced by burning sulphur in air, hence called sulphur fumes. Sulphurous acid is water charged with sulphurous acid gas. Pure water will take up sixty-nine times its volume of gas; that is, one gallon of water, under the most favorable circumstances, will absorb sixty-nine gallons of this gas. Bisulphate of lime differs from sulphurous acid only in that the water contains a solution of lime. You will readily see that the value of all sulphur bleachers is due to sulphurous acid gas. You will ask, then, what is the use of the two last? Why not use sulphur fumes and get this gas direct? Many do. But there are some objections. Sulphur fumes contain more than sulphurous acid gas, and you may get things into the juice you do not want. Among these is sulphuric acid, which is not only deleterious to the products for which we labor, but by union with the iron of our pans or implements, forms copperas, which is a poison. I believe (but have not demonstrated) that sulphur fumes convey coloring matter to the juice. I have never seen a syrup made by fumes that would compare in color with that made by other bleachers. But the great objection is that fumes can not be applied to the juice with such exactness as the other two. Guess work will not give us success in this business. For these and other reasons sulphurous acid and bisulphate of lime have been used. Of these two, preference has been given to bisulphate of lime, since it can be made in a concentrated form, saving freight as well as evaporation. Sulphurous acid quickly becomes sulphuric acid, which is very objectionable, as has been explained. Another reason might be given to the sugar maker. All acids are destructive to crystallization. But sulphurous acid in the presence of a base is inert. Lime is a base; hence the sulphurous acid of the bisulphate of lime can be safely used. These reasons have led many to adopt this as a bleacher *par excellence*. Add to this the fact that its antiseptic powers are superior to that of any other bleacher known, and it will be easy to understand why it stands in high favor. An eminent chemist says of bisulphate of lime:

1. It prevents all fermentation of the cane juice.
2. It combines so very readily with oxygen that it prevents the latter from exerting its deleterious action on the cane juice.
3. It is a defecating agent, clarifying the juice at about 212 deg. F., by depriving it of nearly all the albuminoid and coagulable matters contained in it.
4. It acts as a decolorizer, and prevents the formation of coloring matter during the operation.
5. It neutralizes the acids which transform crystallizable sugar into glucose.
6. It substitutes for these acids sulphurous acid, which is inert in the presence of bases.

Whether the bleacher or lime should be put into the juice first is a disputed point. I use the bleacher first, since it should be put in as soon as possible, to pre-

vent fermentation, and since it enables us to use lime with less damage. For if lime is put in first, and we get an excess, the excess will unite with the sucrose, and prevent crystallization. But if the bleacher is put in first, the excess of lime will be absorbed by the excess of sulphur, and you get a light-colored syrup.

It will not be out of place to conclude this paper by a few remarks on the manufacture of bisulphate of lime and sulphurous acid. By what I have said, you will see that to manufacture either of these articles it is necessary to have sulphurous acid gas. This gas is composed of one part sulphur and two parts oxygen chemically combined. This combination takes place when sulphur is burnt in air by the oxygen of the air combining in these proportions with the sulphur. But we experience a difficulty in confining this gas when thus produced, so as to force it into the water. Sulphuric acid contains one part sulphur to three parts oxygen. Could we extract from it one part of the oxygen, we would have left just what we want—sulphurous acid gas. Fortunately, charcoal when boiled in sulphuric acid will extract this desired amount of oxygen. This can be done in a closed vessel, where the heat will force the gas thus formed with great power wherever we wish. Hence, the machine is very simple: a closed vessel with an exit large enough and long enough to convey the gas to the bottom of a barrel of water. If we desire a very pure article, a wash-bottle can be easily attached. The great difficulty to be overcome is to prevent the acids from destroying the machine. But glass, rubber, lead, cast-iron and other things are but slightly subject to the action of these acids. With these we can invent a machine cheap and durable. The principal part of the machine is the retort. All other parts can be easily supplied, changed, or repaired at any village at a slight cost. But if your retort fails, you are done for the season, unless you go to those who manufacture this especial article. We can ill afford to lose the time in the midst of the cane harvest. Besides, we will have to pay more than two-thirds the price of a new machine for a retort alone. All points of superiority claimed for other parts of the machine are insignificant to those of the retort. The best material for a retort is cast-iron. In this there are but four things to guard against:

1. Be sure the sides are one-half inch thick where the fire strikes it.

2. Have it warranted, if possible, to contain no sand-holes. Most of you are aware that I am the inventor of one of these machines. The first retort sent from the shop had sand-holes, and gave out quickly in two places. Having the tools at hand, I quickly and permanently repaired it by boring out the sand-holes and filling them with rivets; but to most of operators this could not be so readily done, and might result in great loss. Word was immediately sent to the shop that no more retorts with sand-holes would be received. Not a single complaint has been made by any of the patrons of the company, though many retorts were sent out and diligent inquiry has been made. Letters have reached me stating that retorts sent out by other parties were honey-combed by sand-holes, showing the necessity of a guarantee against this evil.

3. Have the rubber packing near the top and in a neck of the retort, and well secured by a sufficient number of bolts with deep threads, or it will keep one hand busy to keep the gas from leaking, and then fail.

4. Have a safety plug, or the retort is liable to explode by the least mismanagement.

Make sure of these four points, and you will never complain of your retort. To prevent misunderstanding, I will say in this connection that I am in no way connected with or interested in the manufacture or sale of these machines, nor am I advised as to what the Ladoga Bisulphate Apparatus Company intend to do in the future. Last season I rendered them all the assistance possible, for the sake of the sorgo industry, and believe it has resulted in great good. My opinion is that the time has come when some reliable firm handling cane machinery should take up this matter and treat it as all other machinery necessary to our industry. I am ready to render any desired assistance to such a firm.

DISCUSSION.

Prof. Wiley. The fact that bisulphate of lime or sulphur fumes will prevent fermentation of sugar, and in many parts of Europe bone black is supplanted by sulphur, because it is cheaper. It is thought by some—and the best sugar authorities—that bone black will be discontinued; and for raw sugars and common, refiners believe the sulphur will supersede bone black altogether.

Dr. Furnas. Is cast iron the best for a retort for making bisulphate of lime?

Prof. Wiley. It is best, and practically reliable.

E. W. Deming. The discussion is hinged on making good syrup. I have been studying some on the proper way to handle the juice to make the best quality of syrup. It requires thorough defecation and constant evaporation, with about 238 degrees of heat.

Prof. Wiley. The only proper way of applying a degree of temperature is in closed vessels. I have thought extended defecation and evaporation would be best. I made last year a trial of this method; I took a steam pipe six inches in diameter, and put a three-inch copper pipe, which was forced through this, after defecating with bisulphate and lime, with a power of eighty pounds to the square inch. So in passing through this pipe, it was readily brought to this temperature, and what escaped was almost all steam. But the defecation was imperfect, while albumen coagulated there in small particles as fine as silk, which rendered it impossible to get it through the filter properly.

W. L. Anderson. If that is the only difficulty, why could they not turn cold water through?

Prof. Wiley. They did that there, but it is too great expense of fuel to heat up and cool down.

Dr. Furnas offered a resolution instructing this society, at its next annual meeting, to pay a premium of three dollars for the best quart of sorghum syrup, and two dollars for the second best. To this, A. Chapman said he would add to the first premium, one of their fifteen dollar pans, and to the second premium, *The Sorghum Growers' Guide and Farm Journal*, for one year. All of which was agreed to, and a vote of thanks tendered Mr. Chapman for his liberality.

Then Prof. Wiley offered gratuitously to make analysis of such articles thus entered for the premium, if sent to him at Washington. This was also accepted with thanks.

The object of these premiums was to give an opportunity for syrup made with or without chemicals to have a fair and impartial test as to their respective merits.

The selection of the committee to make these awards was a matter of discussion, without arriving at any definite conclusion. The matter was finally left with the Executive Committee for arrangement.

E. W. Deming. In some parts of Missouri syrups have been made without the use of chemicals. The nature of the soil and close proximity to limestone formation does not require a particle of lime. In some parts of Iowa it is the same.

Prof. Wiley. If you are going to offer those premiums, if you desire, I will give chemical analysis of those samples on exhibition, to ascertain the caustic acidity and density, and quantity of sugar and albumen. I will make this analysis free of charge, and have the analysis furnished to the committee as to the character of the samples. In that way there is no difficulty about coming to the test, as you have the analysis before you. When you determine on the soil and defecating, you can not tell by the color. There are many kinds of syrup that will ferment. This will be determined after the analysis—the density with the boiling and percentage of albumen which prevent putrefaction. Where syrup has been well defecated and thoroughly boiled, it never will spoil. I have seen barrels lie out for two years in the open air, with just enough covering to keep the rain off, defecated with lime only, and just as sweet as the day when first exposed. It will not be five years until molasses will be sold exclusively on the chemical analysis. Molasses, butter and sugar will all be sold by analysis as in England, where they have a public analyst whose duty it is to report on this subject. People will pay better prices for an article that is pure than one that is spurious.

E. W. Deming. It occurs to me that possibly the sugar growers of the Iowa State Association, Wisconsin and Indiana, all might meet at Chicago at one time; it would be more interesting, and much information might be gained.

Dr. Furnas. We tried this in a horticultural way, but it did not work satisfactorily.

J. Harvey. If we want to kill off the interest of the Indiana cane growers, this idea is just the way to do it.

Query No. 1: "Has any one used the offal of the pan for making vinegar?"

W. L. Anderson. I made some, but could get only seven cents. I can make meat with the skimming better than I can vinegar.

Mr. McQuisten. Can any one tell what density to make vinegar by the saccharometer?

W. F. Lietzman. I have made, in a small way, by throwing the skimmings up into a vessel. I find it is necessary to largely dilute it with water before going to vinegar. My opinion is that the juice as expressed from the stalk, after being properly defecated, is just about the right density—eight or nine by the saccharometer.

John Harvey. We take the last white scum, and to one gallon of that add two gallons of fresh rain-water, and let it stand two weeks in the sun. It gives good satisfaction

Convention adjourned *sine die*.

BIOGRAPHY.

Alexander C. Stevenson, (whose portrait engraving is the frontispiece of this book), was born in Woodford county, Kentucky, November 21, 1802, and the eldest child of James and Margaret Stevenson. His mother was a daughter of Alexander Campbell, of that county. His paternal grandfather, Benjamin Stevenson, of the Eastern shore of Maryland, was, during the war of the Revolution, a soldier of the patriot army, and soon after that conflict, removed from Maryland into Kentucky, and settled in what afterwards became Woodford county. His son James entered the United States army in the war of 1812, as a private soldier, and during that struggle, endured such hardship, that he ever afterward remained an invalid. This fact made Alexander, while yet a boy, the stay and support of the family, compelling him to supervise the servants, and market the farm products. Diligence, even then, characterized him, and he often arose at two o'clock in the morning to be first with his products in Lexington, a market nine miles away. This training and constant labor gave to him a splendid physical and intellectual manhood. Educational advantages he had but sparingly. The common schools of Kentucky at that day were but indifferent, and seminaries and colleges were distant and expensive. He who there acquired letters, relied upon himself and the private tutor. The latter facility he had not, and books were scarce. He therefore made nature his text-book, and learned wisdom and diligence from her precepts. Himself a laborer and brought in contact with slavery, the injustice of that institution made strong impressions upon his mind, and determined him to seek a home in a land of free institutions, where to labor was honorable. Impelled by principle, he at the age of nineteen years, and in 1821, left Kentucky and came into Indiana, seeking a location. Railroads there were none—clay roads were but trails, and difficult even for horsemen. But these difficulties were overcome, and Alexander came into what is now Parke county, Indiana, and entered lands northward from where Rockville now stands. He was not disappointed with the country, and from that time has regarded Indiana as his home.

After satisfactorily "prospecting" the Hoosier State, he visited his family in Kentucky, where he was induced to study medicine with a relative, Dr. Walker, of Montgomery county, Kentucky. On completing his course with Dr. Walker, Alexander entered Transylvania Medical College at Lexington, Kentucky, and

NOTE.—Dr. Stevenson is yet living, but quite feeble. This biography was prepared by M. A. Moore, of Greencastle, April, 1885.

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subsequently graduated from that institution. After graduation, he, for a short time, practiced in Kentucky; but in 1826 he set his face for his future residence in Indiana, and arrived here that year, expecting to make his home in Parke county. But after reaching Parke, he attended a camp-meeting in Putnam county, held on the Cumberland road, in what is now Warren township, and near the present Bethel M. E. Church. The journey to this meeting brought to his notice the "blue-grass" lands of north and central Putnam, as well as the situation and advantages of Greencastle. These considerations induced him to change his location, and he cast his lot with the people of Putnam, and at once entered on the practice of his profession at the county seat. He was now among freemen, in a free State, in splendid health, in mature manhood, soon had a lucrative practice, and felt that success was assured. Here was an epoch in his life. Naturally reverential, he, from a sense of duty, committed himself to the Christian religion; connected himself with the Methodist Episcopal Church; and now after eighty-two years have passed over him, declares that in every period of life Christianity is the best investment. He rapidly rose to eminence in his profession, and as a physician and surgeon was without a peer. His parents came to him in Indiana, and he, with them, brought from Kentucky the slaves owned by his father and gave to them their freedom, and they remained in Putnam until after the Constitution of 1850 was adopted. That instrument, as he thought, restrained them of liberty, and he aided them to a home in the colony of Liberia.

At an early period of professional life his practice so frequently brought him in contact with the retail liquor traffic as to compel an investigation of it. This investigation convinced him that drinking was an unmitigated evil and the traffic a most flagrant wrong. In his own life total abstinence had been the rule, and he felt that *moral suasion* was the true remedy. A man of strong will and unquestioned courage, these convictions soon impelled him into conflict with intemperance, and this conflict has been life-long. He it was who delivered the first temperance lecture in Putnam county, and the novelty of it brought friends and foes to hear. Men brought with them whisky in bottles, and drank bumpers to each other and to the speaker, while he, in nothing daunted, hurled anathemas at the traffic, and deplored the evils of intemperance. Some who heard him reformed, and afterwards became Washingtonians; others continued their evil course, and met the fate of the drunkard. The Doctor, however, never let up on the traffic, and while a member of the State Board of Agriculture he was among the most determined of those who succeeded in prohibiting the liquor traffic on or in the vicinity of the State Fair grounds.

In early life he became addicted to chewing tobacco. To evidence what will would do for an evil practice, he declared he would quit, and he did. He threw aside his quid and never returned to it. This fact he used to show that a man could control his appetite for stimulants.

Careful investigation and thorough study convinced him that free institutions were wholly dependent on morality, integrity and intelligence. This conviction made him the friend of common schools and higher education. In the securing of Asbury University for Greencastle he was a liberal and active co-worker and contributor; became a member of its first board of trustees; saw ten continuous

years of service as such, for three years of which he was the president of the joint board. He was an active participant in securing free schools for Indiana, and did much to bring Putnam county into line in favor of that system. Some educational opinions then entertained by him were in advance of the times. Insisting that the common schools should be thorough and facilities for higher education ample, he, in an address, urged the necessity for schools in which complete training in agriculture and the mechanical arts could be acquired. This brought him in conflict with some leading educators, but time has demonstrated the wisdom of his thought, as "Rose Polytechnic Institute" and "Purdue University" evidence; and he is now insisting that the idea then advanced by him will remain of imperfect execution until capital and philanthropy shall equip and thoroughly endow an institution wherein the children of the State who choose may, without cost, acquire any of the skilled mechanic arts and handicrafts without the influence or aid of guilds or trades unions.

Eminent as a physician, his lucrative practice enabled him to acquire a large estate in wild lands. This he did preparatory to returning to agriculture as a profession. From these lands the inferior timber was removed, and the lands set in blue-grass. This, at the time, was considered a waste by many, but the Doctor reaped from it afterwards abundant harvests of rich pasture and fat cattle.

Though engaged in an arduous profession, he, through study, became a believer in, and an advocate of, the American system of Mr. Clay. This brought him early into political prominence, and as he had the courage of his convictions, the result was that in 1831, 1832, 1844 and 1845 he represented Putnam county in the Indiana House of Representatives, and in the last term was Speaker of the House.

In 1839, 1840 and 1841 he was the Senator from Putnam county, and was, in 1846, the Whig candidate for Lieutenant Governor of Indiana. In 1850 he was elected to the convention which framed the Constitution of Indiana of 1851, and was active in the deliberations of that body. His services in this convention closed his political career. He sympathized with labor and with men too intensely to readily reconcile himself to the compromise measures of 1850, and never again became a candidate. In 1860, however, he earnestly advocated the election of Lincoln, and gave to his administration an earnest, loyal, and enthusiastic support.

In 1843 he removed from Greencastle to his farm two miles east of town, and gave up his medical practice, as rapidly as his patients would permit. Thenceforward, he sought to make agriculture and stock raising his profession, declaring that he could accomplish more in this for himself and his race than in any other calling. For a time he edited an agricultural department in a newspaper, and in this way, as well as in public addresses, sought to introduce better modes of farming. More through his efforts than that of any other, the Putnam County Agricultural Society was organized and continued. He introduced into the county and bred large flocks of Spanish merino sheep, and for a time made sheep husbandry most prominent. While thus engaged, he endeavored to organize an incorporated company for the purpose of importing and breeding Shorthorn cattle. Not succeeding in this, through defects in Indiana law, he began that enterprise alone. In 1848 he purchased and brought into Putnam county the first thoroughbred Shorthorn cattle.

In 1847 he was commissioned, by Governor Whitcomb, member of the Indiana State Board of Agriculture. In this position he assisted in putting into operation the State Board proper, and was himself a member of the Board for several years, during three of which he was its honored President. In this position his character, ability and energy gave him high rank as a thinker, organizer and friend of agriculture. It was while he was a member of the Board that the plans were matured, and action taken, which have enabled that body and its agencies to accomplish so much for the stock breeding, agricultural, mechanical and mineral interests of Indiana. And in these labors he assumed his share of responsibility, doing his full portion of the work.

The field opened to his observation in this position impressed more fully upon his mind the importance to Indiana interests of thoroughbred Shorthorn cattle. In 1853, at his own instance and cost, he went to England, inspected the principal Shorthorn herds of that kingdom, bought for himself a small herd of the best, and brought them to Putnam county; and this was the first importation of Shorthorns direct from England into Indiana. The result of this venture was profit to himself and great benefit to the stock-breeding interests of Indiana. His prominence as a stock grower caused him to become prime mover in calling the Indiana Shorthorn Breeders' Convention, which assembled at Indianapolis, May 21, 1872. He was made President of the convention, and on taking the chair said:

"Gentlemen, you constitute probably the first Shorthorn Cattle Breeders' Convention ever assembled, but doubtless the assembling of such conventions hereafter will be frequent." At this convention he read his remarkable paper on "Points of Cattle and Their Rationale." This document created much interest, and is a model in manner, matter and comprehensiveness. This convention created the Indiana State Shorthorn Breeders' Association, which association made him its president, and kept him in that position so long as he would consent to fill the same. The aforementioned convention suggested the idea of an American Shorthorn Breeders' Convention. A call was issued by a committee appointed for that purpose, and the first "American Shorthorn Convention" assembled at Indianapolis in December, 1872. It was largely attended by Shorthorn breeders from the States and the Dominion of Canada, and great interest was manifested in its deliberations. This convention created the "American Shorthorn Breeders' Association," and it has since bought, and now controls, the publication of the American Shorthorn Herd Book. The Doctor was made President of both the convention and association, in which latter position he served as long as health permitted. The effect of the action thus taken has been such that the States generally, and Mother England, have fallen into line and maintain like associations.

The Doctor's efforts have not been confined to stock growing. He organized and built in 1867 the first gravel road in Putnam county. The line was nineteen miles long, and is yet operated, though its success was originally doubtful. Now in the county is maintained over one hundred and fifty miles of improved roads.

From 1840 until about 1880 the Doctor was a man of wealth, but, wishing to administer on his own estate, he divided his lands and goods among his twelve

children, giving to each an equal share, and reserving for himself and wife a modest competency for their lives, but he continues to manage 160 acres of the old homestead and resides thereon.

He has always been delighted with employment, and instructed his children to labor, often himself going with them to the fields and by precept and example showing them how to accomplish the best results.

Intellectually the Doctor has had among his compeers few equals. Liberal in his views, clear in convictions, logical as a reasoner, far-sighted and methodical in business, firm and persistent in purpose, able and persuasive in argument, careful of the rights of others, of profound thought power, industrious, hospitable, courteous, courageous and generous, a good husband and a kind father, he has made firm and lasting friends and has led a successful life.

He thinks his lot has been cast in the best of the ages. His county has acquired and maintains high rank among the best in the "Hoosier State." His State, when he first knew it, the home of the savage beasts and savager men, has become sixth in the sisterhood of States; amply supplied with the avenues of trade, over which roll its and the world's commerce; a land of beautiful cities, stately mansions and happy homes; the habitat of two millions of intelligent freemen; and his country has become a mighty Nation, fifty-five millions of freemen, so indoctrinated and permeated with the principles of self-government and civil liberty, that a majority of one commands profound respect and prompt obedience from all.



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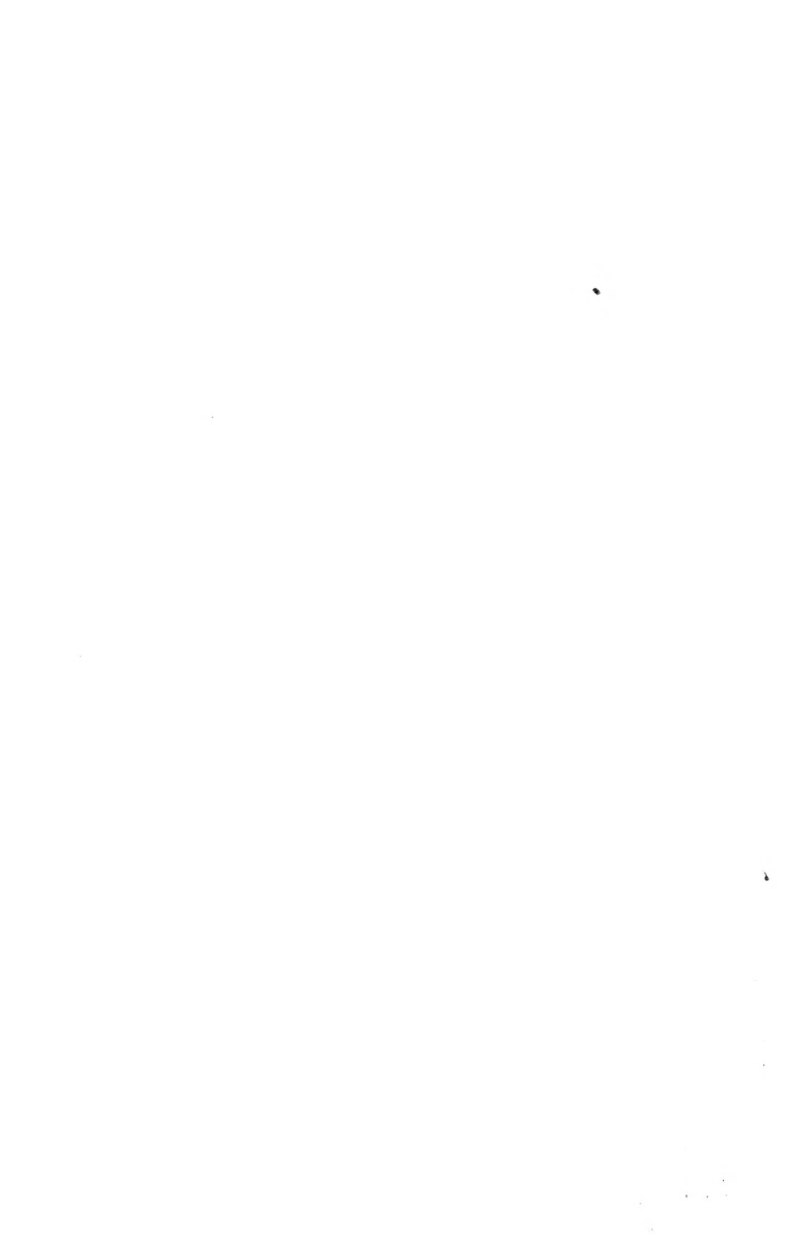
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