

LAWS RELATING TO THE UNIVERSITY.

An act making an Appropriation in aid of the Industrial University, and for payment of Taxes on Land held by the State for use of said Institution.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly,* That there be and hereby is appropriated to the Industrial University at Urbana, in aid of the experiments in progress upon the experimental farm, the sum of fifteen hundred dollars. For the payment of taxes accruing in the years 1872 and 1873 on lands owned and held by the State for the use of said Institution, in the county of Gage in the State of Nebraska, and in the counties of Pope, Kandigoh and Reuville, in the State of Minnesota, the sum of three thousand dollars per annum.

§ 2. The Auditor of State is hereby authorized and directed to draw his warrant upon the Treasurer for the sum herein appropriated, upon the order of the Board of Trustees, signed by the President, and attested by the Secretary, with the corporate seal of the Institution: *Provided,* that no part of this money shall be due and payable to the said Institution, until satisfactory vouchers, in detail, approved by the Governor, have been filed with the Auditor for the expenditure of all sums previously drawn.

§ 3. This appropriation shall be and continue in force from the first day of July, 1873, until the expiration of the first fiscal quarter after the adjournment of the next General Assembly.

APPROVED April 29, 1873.

An act to regulate the Illinois Industrial University, and to make Appropriations therefor.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly,* That it shall be the duty of the Governor, within ten days after the taking effect of this act, to appoint nine

trustees—three in each of the three grand divisions of this State—who, together with the Governor and the President of the State Board of Agriculture, for the time being, shall constitute the Board of Trustees of the Illinois Industrial University, and shall succeed to and exercise all the powers conferred by the act entitled “An act to provide for the organization and maintenance of the Illinois Industrial University,” approved February 28, 1867, except as is herein or may be hereafter provided by law. The said appointments shall be subject to approval or rejection by the Senate, at its present or next session thereafter, and the appointees shall be and are hereby authorized to act as Trustees of the said University from the time of such appointment, unless in case of rejection by the Senate, until their successors shall be appointed by the Governor, and such appointment shall be approved by the Senate.

§ 2. The members of the Board of Trustees, and their successors, shall hold their office for the term of six years each: *Provided*, that at the first regular meeting of said Board, after such appointment, the said members shall select by lot three of their number to hold office for two years, three to hold office for four years, and three to hold office for six years, from the time of convening of the present General Assembly. The Governor, by and with the advice and consent of the Senate, shall fill all vacancies which may at any time occur by expiration of term of office or otherwise in said Board, by appointment of suitable persons resident in the respective grand divisions in which such vacancies may occur. Said Board of Trustees may appoint an executive committee of three, chosen out of their own number, who, when said Board is not in session, shall have the management and control of the said University and of its affairs, and for that purpose shall have and exercise all the powers hereby conferred on said Board, which are necessary and proper for such object, except in so far as the said Board may and does reserve such powers to itself; and any powers granted at any time, by said Board to said Executive Committee, may be by them at any time revoked.

§ 3. No member of said Board shall hold or be employed in or appointed to any office or place under the authority of the Board, of which he is a member, nor shall any member of said Board be directly or indirectly interested in any contract to be made by said Board for any purpose whatever.

§ 4. The fiscal year of the said University is hereby declared and required to terminate on the thirty-first day of August, in each year, and all reports of the University, except catalogues and circulars, shall be addressed to the Governor, and the annual reports shall contain a full account of the financial and other transactions of the University to the close of the fiscal year as aforesaid, together with a full statement of the

then condition of the endowment fund, and shall be presented to the governor on or before the fifteenth day of October in each year: *Provided*, that no less number of said reports be published annually than is now authorized by law.

§ 5. The Trustees of the said University shall elect, annually, from their own number, a President, who shall also be one of the Executive Committee of three authorized by this act, in case such Committee should be chosen and appointed by the said Board; and no money shall be drawn from the treasury of the University, except by order of the Board of Trustees or of the Executive Committee aforesaid, on the warrant of the President of the said Board, countersigned by the Recording Secretary.

§ 6. All pupils attending the said University shall be taught, and shall study, such branches of learning as are related to agriculture and the mechanic arts, and as are adapted to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life, without excluding other scientific and classical studies, and including, for all male students, military tactics.

§ 7. The Treasurer of the said University, and the said Board are hereby required in future to invest the principal of the funds arising from the endowment of the United States, in interest-bearing bonds of the United States, or of this State, or of other States which did not participate in the late rebellion. They are hereby prohibited from changing the securities in which said fund may be invested, without the express permission of the General Assembly, except that county bonds, in which some of said funds are now invested, may be sold, and the proceeds thereof invested in interest bearing bonds of the class and character specified above in this section.

§ 8. All charges for freight heretofore or hereafter accruing over the Illinois Central railroad, for the use or benefit, directly or indirectly, of the said University, shall be applied on the subscription of fifty thousand dollars to the funds of said University, until the said subscription shall be exhausted, and no such freights shall be paid in money by the Trustees to any person or corporation, nor shall any money be drawn from the treasury of the State on account thereof, nor on account of such application.

§ 9. There is hereby appropriated, for the full payment of the Architect, Superintendent, and the entire completion of the main University building of the said Industrial University, the sum of fifteen thousand dollars; for heating apparatus for the same, eighteen thousand dollars; for gas fixtures, including street main connection, one thousand two hundred dollars; for fitting and furnishing said building, seven thousand three hundred and fifty dollars; for furniture and apparatus for

the physical laboratory, three thousand dollars; or so much of the sums specified for each of the above named purposes as may be necessary.

§ 10. The Auditor of Public Accounts is hereby authorized and directed to draw his warrant upon the Treasurer for the moneys herein appropriated, in favor of the parties to whom the same may be and become due, upon proper vouchers, signed by the President of the Board of Trustees, and attested by the Secretary, with the corporate seal of the University attached, and approved by the Governor.

APPROVED May 7, 1873.

RECEIPTS AND EXPENDITURES, Etc.

Statement of Receipts, Expenditures, State Appropriations Expended, and condition of Endowment Fund, as presented to the Board Meeting, September 4, 1873.

The Recording Secretary presented the following statement of receipts and expenditures, also statement of invested funds :

Statement of receipts and expenditures from current funds and State appropriations, from March 1, 1873, to August 31, 1873.

RECEIPTS.

Balance on hand March 1, 1873.....	\$5,667 87
Interest on Sangamon county bonds.....	2,250 00
" on Champaign county bonds.....	11,500 00
" on Morgan county bonds.....	2,500 00
" on Pike county bonds.....	3,000 00
" on Chicago water bonds.....	875 00
" on Illinois State bonds.....	930 00
Rents, etc., of lands.....	670 00
Collections outstanding from last year.....	276 68
" from Chemical department.....	1,447 68
" from students (spring term).....	18 69
" from farm sales.....	2,795 41
" from Mechanical shops.....	847 64
" from Horticultural department.....	995 69
" from Carpenter shops.....	300 39
" fuel from students.....	164 47
" Illinois Central Railroad donation.....	469 71
Sundry collections.....	417 15
Total receipts.....	\$36,976 96

EXPENDITURES.

Board expense.....	\$1,006 69
Salaries.....	13,149 69
Fuel and lights.....	904 82
Stationery, printing and advertising.....	378 03
Buildings and grounds, repairs, etc.....	466 09
Incidental expenses janitor, cleaning, etc.....	573 30
Mechanical department, running expenses.....	1,394 29
Carpenter shops, running expenses.....	886 18
Horticultural department, running expenses.....	2,802 21
Agricultural.....	4,271 18
Chemical.....	233 91
Library and cabinet.....	610 21
New University, buildings and ground.....	1,137 42
Military department and gymnasium.....	67 05
Balance on hand August 31, 1873.....	9,572 73
Total.....	\$36,976 96

STATE APPROPRIATIONS.

	Appropriated.	Expended.	Undrawn.
New University building.....	\$15,000 00	\$8,106 01	\$6,893 90
Heating apparatus.....	18,000 00	9,090 05	8,909 95
Fitting and furnishing.....	7,350 00	1,550 71	5,799 29
Taxes on lands.....	5,000 00	2,660 49	339 51
Agricultural experiments.....	750 00	342 80	406 20
Total unexpended.....			\$22,348 94

ENDOWMENT FUND.

Statement of the Endowment Fund of the Illinois Industrial University, on the 31st day of August, 1873, in accordance with the act of Legislative Assembly, dated May 7, 1873.

Securities.	Amount.
Champaign county 10 per cent. bonds	\$115,000 00
Sangamon county 9 " "	50,000 00
Morgan county 10 " "	25,000 00
Pike county 10 " "	30,000 00
Kankakee county 10 " "	30,000 00
Putnam county 10 " "	13,000 00
Chicago water 7 " "	25,000 00
Illinois State 6 " "	31,000 00
Total	\$319,000 00

Three hundred and nineteen thousand dollars invested as above, and an undrawn balance of \$178 87 on hand.

URBANA, September 1, 1873.

E. SNYDER,
Recording Secretary.

FIFTH ANNUAL SERIES OF AGRICULTURAL LECTURES.

Space only permits the insertion of a few of the papers read before these Conventions of Farmers. The discussions and some of the lectures which were familiar *talks*, illustrated by black-board and drawings, are omitted.

[CIRCULAR.]

LEARNING AND LABOR—ILLINOIS INDUSTRIAL UNIVERSITY.

FARMERS' CONVENTIONS.

The Fifth Annual Series of Agricultural Talks and Discussions, held under the auspices of the Illinois Industrial University, will be held during January and February of 1873, at the following times and places:

At Peoria, Peoria county, commencing Monday evening, January 20th, and continuing, with three sessions daily (9 A. M., 2 P. M. and 7 P. M.) until Thursday, January 23d.

At Jacksonville, Morgan county, commencing Tuesday evening, January 21st, and continuing until Friday, January 24th.

At Pana, Christian county, commencing Monday evening January 27th, and continuing until Thursday, January 30th.

At Greenville, Bond county, commencing Tuesday evening, January 28th, and continuing until Friday, January 31st.

At Kankakee, Kankakee county, commencing Monday evening, February 3d, and continuing until Thursday, February 6th.

At Gilman, Iroquois county, commencing Tuesday evening, February 4th, and continuing until Friday, February 7th.

At Belvidere, Boone county, commencing Monday evening, February 10th, and continuing until Thursday, February 13th.

These Farmers' Institutes have a two-fold purpose: One is, to bring before our farmers and the citizens of the State generally, new facts and new theories affecting the Practice, the Social Condition and the Economy of Rural Life. Another object is, to learn the views of practical men and compare their observation and experience. We desire to bring the man of Science and the practical man together, that they may learn of each other, and that general intelligence upon agricultural matters may be advanced.

The Board of Trustees of the Industrial University provides the speakers, who open the discussion upon the various topics with a short address. The citizens, at the different localities named, furnish halls properly warmed and lighted, and the courses are free to all interested to attend. The live farmers of the State are earnestly invited to attend and to participate in the discussions. Every locality named should begin early and do the work to secure a good attendance of such men. This is essential to success.

SUBJECTS AND SPEAKERS.

Among the speakers already engaged, and the topics proposed to be discussed, are the following:

Prof. J. B. Turner, of Jacksonville, will lecture upon the "Conservation of Animal Force in Agriculture," and perhaps upon other topics.

Dr. J. M. Gregory, Regent of the University, will give an address upon "The Farmers and the Middlemen," and upon "The Scope of Domestic Science," and, when desired, upon "The New Education in the Common Schools."

E. H. Singleton, Observer of the Signal Service, U. S. A., is expected to give an address, at one or more points, explanatory of the advantages to the farmer of the meteorological observations made by that Bureau.

Dr. Wm. LeBaron, State Entomologist, will lecture upon "Entomology."

Dr. E. S. Hull, it is hoped, will be able to talk, at one or more places of those named, upon Horticultural topics.

Thomas J. Burrill, Professor of Horticulture, will open discussions upon "The Treatment of Soils" and "The Propagation of Plants."

Judge A. M. Brown, of the Board of Trustees, will give an address upon "Orchard Management."

Don Carlos Taft, Professor of Geology and Zoology, will lecture upon "The Origin and Nature of Soils and Coals."

J. R. Scott, of the Board of Trustees, will speak upon "Feeding Stock."

Joseph F. Carey, Professor of Ancient History, Languages and Arts, will give an address upon "Plows and Plowing."

B. F. Johnson, Illinois Correspondent of the *Country Gentleman*, will lecture upon "Something More than Corn and Something Better than Oats."

W. C. Flagg, Corresponding Secretary of the Board of Trustees, will give addresses upon "The Agriculture of Illinois in the Census of 1870," upon "How to Make an Orchard," and upon "Rings, or the Combinations against the Farmer."

H. K. Vickroy, Orchardist and Gardener, will talk upon "Timber Growing; and How to make a Nursery."

E. L. Lawrence, Head Farmer, will speak upon "Rearing and Feeding Cattle."

J. M. GREGORY,
Regent.

W. C. FLAGG,
Cor. Sec'y.

SOMETHING MORE THAN CORN, AND SOMETHING BETTER THAN OATS.

BY B. F. JOHNSON, OF CHAMPAIGN.

Mr. President, Ladies and Gentlemen:

One year ago I read before the students of the Illinois Industrial University, and before several conventions similar to this one, a somewhat lengthy paper on "Indian Corn—its varieties, their cultivation and use." That paper had for its main object how to improve the corn crop—how to get three bushels where we formerly got two, and how not only to make a wide and general increase in the yield, but also how its consumption might be enlarged and extended. These seemed to be very desirable and legitimate things to be done, for until the year 1872 we had all of us believed the larger we could make the corn crop, the better should we be entitled to the thanks of farmers and the wide and general gratitude of the country. But the corn and oat crops of 1872 seemed to have changed all previous conception of such great and abounding yields, and we begin to understand and to have the fact brought forcibly home to us, that there may be, under an artificial state of society, such a thing as the over-production of corn, even, and that for the farmer's profit there may be, also, too many cattle, hogs, horses and

sheep. Indeed, we begin to see how it is, that too much of a good thing is good for nothing.

The very large crop of corn and oats, and the astonishing estimated increase of cattle and hogs appear to have demoralized the market and so affected the commercial mind of the country, that under this pressure prices have fallen a good deal below the reasonable and natural limit.

Some inquiry on the question of prices enables me to state this curious law, which is well illustrated in the present condition of the markets of the West. "Investigations in England, extending over a period of two hundred years, have shown approximately that a deficit of one-tenth in the crop of cereals raises the price three-tenths; and so on to a deficit of one-half, which raises the price four and one-half times the average." And so of the converse of this proposition. That is, a large surplus, such as that of the corn and oat crop of 1872, depresses prices out of all proportion to the excess of the supply. So you see if I had undertaken last winter to diminish the corn crop one-half, and had I succeeded, I should have been entitled to the thanks of the farmers of the State, for corn would now be 80 cents, instead of 20 and 25 cents, and oats 45 cents, instead of 15 or 18 cents. Indeed, if we looked no farther into the question of production than the single relation of prices, we might regard as beneficent a calamity, which would sweep out of existence one half the agricultural production of the Northwest, because the money value of the remaining half would be three or four times more than the original whole.

But nobody wishes to decrease the production, either in that way or any other, but we should, and indeed it is imperative upon us to enlarge the narrow boundaries of our primitive agricultural system, and for that reason I have undertaken to suggest that with the one at 25 cents a bushel and the other 18 cents, there should be grown in Illinois "something more than corn and something better than oats." Still I suppose if we had the markets of the world free to buy and sell in; if we had a currency of equal value to specie, so that a dollar at home would be equal to a dollar, not 80 or 85 cents abroad, and if all ranks, classes and conditions of men—the farmer, mechanic, miner, banker, manufacturer, railroader and laborer—were each and all alike protected, with a uniform revenue tariff of 10 or 15 per cent., then we might here in Illinois go on with growing corn and oats, and raising hogs and cattle, horses and sheep, increasing each with increasing age and development; and even without any considerable advance in present prices, we might continue that prosperity which marked the not distant past. But violent interference with the laws of trade and commerce, in the form of a high protective tariff, which robs the Western farmer just in proportion to which it benefits and enriches the Eastern manufacturer, together with

a depreciated paper currency, and general and wicked railroad conspiracy, produced violent results, and the time has come when the Western farmer asks himself if he must not abandon that system and method of agriculture for which the soil, the climate and the situation were specially designed and created. To-day the farmers of Illinois are in the precise condition the farmers of Georgia would be if forced to abandon rice culture; those of the cotton States, cotton-growing, and those of Louisiana sugar-cane. That is, government interference has been so violent as to break up the order and design of nature.

East of the Alleghanies, manufactures and the country generally were never more prosperous than at the present time—due, principally, to a twelve years' continuance of a high protective tariff; west of these same mountains, farmers were never in a condition of distress and poverty more wretched. East, the benefits of the tariff seem to increase with the length of time it has been in operation; West, since the war, the prices of farm produce have steadily declined; and now we are on the down grade to bankruptcy and ruin, with broken brakes, and the oppressive weight and momentum of three full crops behind us. And here in the present condition of things, is made conspicuous the cool effrontry of that infamous tariff dogma, that the best way to enrich the Western farmer is to protect the Eastern manufacturer. This is akin to the old-world maxim, "Take care of the rich and the rich will take care of the poor," and is about as reasonable and sensible as it would be to teach to shepherds that, in order to save sheep, they must stimulate, protect, and foster the breeding of cur dogs.

To resume, then. Since in my mind we owe the present depressed and deplorable condition of the farming interest: First, mainly to a depreciated paper currency, which forces us to sell low at gold prices (the prices in gold for corn and oats in Liverpool makes the price in Illinois), and buy high at paper ones; second, to a high protective tariff, which robs the West to enrich the East; and third, to high and extortionate railroad freights, which have been produced by both; and since we have, ninety in a hundred of us, helped to bring this state of things about, there can be no permanent improvement until there is a radical change in the public sentiment of the country. And since such changes are slowly brought about, we must look toward diversifying our industry; we must try, we must study, we must observe, we must experiment and ascertain what in Illinois we can grow which will pay us better than corn at 20 to 25 cents a bushel, and oats at 15 to 18 cents.

"Men sometimes are master of their fates—
The fault, dear Brutus, is not in our stars,
But in ourselves, that we are underlings."

And here at the outset of my subject I want to be understood as rather making suggestions than giving advice right out, and as addressing my-

self to a few rather than expecting to influence or impress the many. Illinois, so far as the present state of agricultural science will allow us to judge, is, and always will be, a corn and cereal growing, and a cattle and stock-raising country, and nothing, in my mind, can permanently change that high destiny. But now, just as a conspiracy of unfavorable circumstances has produced a crisis in our affairs, we may offer a partial solution by suggesting and pointing out some few of the many changes which may be made in the agricultural productions of the State.

One of the greatest objections to growing, to sell abroad, corn and oats and other cereals, hay, fruit, potatoes and other bulky products of our western agriculture is, that so large a per cent. of their home price is consumed in transportation, whether to interior cities or the seaboard, and therefore any change I shall suggest or recommend will be to products of the soil which have great value in proportion to their weight and bulk. Indeed, if we grew here in Illinois nothing of large consequence to market abroad, which sold at home for less than two or three cents per pound, the present extortionate rates for transportation would not so much injure as when it takes the price of two or three bushels of oats or corn to carry one to market. Then the growing of either becomes a ruinous business. But when we pay the same rate per hundred pounds for broom corn, butter, cheese, flax, hemp, tobacco, hops, madder, and the like, it takes only about an average of one-tenth or a twentieth, instead of two or three times the home price. And so the freights on live stock, though excessive, are not ruinous, because the drover can choose his shipping point, get the benefit of competition, and is not confined, as the grain growers are, to one road, one route, and one depot. The consequence is stock, especially good grade cattle, pay better at this time than the fruits, the cereals, vegetables or other bulky product of the farm.

So, since Illinois is, beyond all question, the grazer's paradise, and since, under the present depression, cattle feeding pays better than any other business, I shall not only not suggest that any cattle farmer change to untried things, but recommend that those engaged in any of the numerous branches of stock growing industry remain where they are, and that just as fast as the necessary capital has been accumulated, that any and every farmer who likes any one or more branches of the calling engage in it.

But you ask how and with what crops shall we diversify our farming industries; and what have you to recommend to us as "something more than corn and something better than oats." Of the products of agricultural industry, having an almost world-wide demand, which are valuable in proportion to their weight and bulk, which require a deep, rich soil, two of which are very exhausting crops, but which are suited

to the soil, latitude and climate of Illinois, I name tobacco, hemp and madder in the first category.

The consumption and consequent demand for

TOBACCO

is increasing and has been for two hundred years. Indeed, the surprising increase in the use of this narcotic is one of the most difficult problems the social philosopher has to determine at the present time. The price ranges from forty cents for the best Connecticut, down to twenty-four cents and even ten for the products of Kentucky, Missouri, Illinois and Wisconsin. Tobacco has been a staple production of Southern Illinois for many years, and during the war its cultivation was undertaken to a considerable extent in St. Clair, Madison and neighboring counties. It has generally, however, been abandoned there, not so much, however, because the quality was not good, but rather from want of special knowledge in the handling. Tobacco grows, and grows luxuriantly, on our strongest prairie soil, but it is claimed that the quality is coarse. Nevertheless, there are several million acres of timber lands lying all about the State, which, if the proper trial were made, would, I have no doubt, produce as good tobacco as Wisconsin. Doubtless some persons remember when it was quite the common belief that we could successfully neither grow apples nor grapes on the rich soil of the prairies, and there is a belief too general that wheat, especially winter wheat, is pretty sure to fail there also. But the better experience of the last ten years has taught us that, on the whole, for apples and grapes the prairie is rather preferable to the timber—and we are also slowly learning, if we only adopt the right methods of preparation and seeding, wheat growing is as successful on the open prairie as in the sheltered timber. So I shall never be willing to believe that there are not as good tobacco lands in Illinois as in Connecticut and Wisconsin until the trial has been thoroughly made in every county in the State. And while the cultivation of tobacco on a large scale demands, not only skill and special knowledge, but capital, still the farmer of a few acres only may find a fortune in them, if he gives his time, his mind, his money, his days and nights to tobacco.

I say, if a farmer would succeed with it, he must give his mind, his money, his days and nights to tobacco. It is so in everything. And one of the strongest objections which can be urged against the exclusive culture of the cereals, is that they do not give employment much more than half the year. The mechanic and the laborer who succeeds and makes something more than a bare living, goes to work at 7 in the morning and works till 6 in the evening, at least 300 days in the year. The merchant, the banker, and the manufacturer who makes a fortune,

does even better than that, while the successful railroad man puts in from 12 to 20 hours every day of the year. I beg of you, gentlemen, to look at the example of the most successful business men you know. Did you ever visit their places of business between sunrise and 9 o'clock in the evening without finding them at their posts. Do you ever find them idle or indifferent to their interests, or to your propositions to buy or sell? Do you see them in the country half as often as they see you in town? But how is it with you? "You know how it is yourself."

Now let me call your attention to

HEMP GROWING.

Of hemp there was imported into the United States in 1872, 260,000 bales of 200 pounds each, more or less. On hemp there is a duty of \$25 per ton. The price ranges from \$125 per ton for American, to \$300 for the best Italian, while manilla hemp ranges from 9c to 11c a pound in gold. In Illinois there are of the 35,000,000 acres area, 15,000,000 acres at least suited to the growth of hemp. Indeed, the strong black soils of our middle counties are peculiarly suited to this crop. Of all crops, it is conceded hemp pays best, the only difficulty being how to procure labor to harvest and handle it. This problem I do not undertake to solve, but leave it to those who are going to wreck and ruin on corn at 20 cents per bushel and oats at 15 cents, to find out. Neither can I give special directions as to the cultivation and handling of this crop. Suffice it for me to repeat that hemp suits the strong soils and fervid summer climate of Central Illinois admirably well, and that the profits on one good, full crop would be sufficient per acre to purchase the fee of the best farm lands in the State. Those desirous of making a trial of hemp growing may consult the agricultural papers or the encyclopædias; or what is better, they may take a run into Missouri or Kentucky, where they could obtain all the information they need at first hands. The demand for hemp is world-wide, and is fast increasing, and if the railroad extortionists get their just deserts in 1873, there will be twice the demand there was in 1872. To the farmer of independent means, who is strong handed in the way of a large family of robust and willing boys, who can at his pleasure devote forty or fifty acres, more or less, to the growth of hemp, even if he has to begin with the A B C of hemp husbandry, I recommend its trial, satisfied it will pay him better than any new crop he can lay his hands to. Although hemp is an exhausting crop, when made part of a rotation, hemp will succeed hemp, as corn succeeds corn, time out of mind. Hemp leaves the land, like flax and buckwheat, in admirable tilth and condition, just suited, after two or three crops in succession, to the growth of winter wheat. I would suggest to those who, on the strong, black soils of the middle counties, find

great difficulty in making a crop of winter wheat, on account of the weight of the straw, to put these soils in hemp two years in succession, and then try winter wheat. The hemp crop will have taken up the surplus fertility, cleaned the land of weeds, and made successful winter wheat growing hardly doubtful.

MADDER.

Then there is madder, a plant, the root of which is very largely used in dyeing. The production of madder is limited to a few hundred square miles in the north of France and Germany. Yet is the consumption in civilized countries almost universal. All the brilliant and lively colors on cotton and calico, all the Turkey reds, all the other kinds of reds, all the yellow, all the browns, indeed, nine-tenths of all the prints now in every-day use, owe their colors to the root of the *rubia tinctorium*, or madder plant. Madder is a principal ingredient which makes the scarlet of the uniform of the British army—and is the foundation of the reds so largely employed in the clothing of the infantry and cavalry of the French and other continental armies. The madder plant is in a manner a perennial, or rather a tri-ennial in some such way as the dandelion and the coffee chickory. It is sown one spring, cultivated two years, and harvested the fall of the third year from sowing. Madder has a long slim tap-root, which hilling up lengthens, while it helps the growth of laterals, and demands a deep, strong soil, special knowledge and special handling, but is a profitable crop, selling from ten to fifteen cents the pound dried and ground.

I suggest madder as a crop to be tried by our German fellow-citizens whose home antecedents make them familiar with the process of growth and handling.

THE ADVANTAGES

for the profitable growth of the three crops of tobacco, hemp and madder here in Illinois, over most countries and States, are that we have a soil on which manure is not at present needed, and a climate of special fitness. To prepare the tobacco lands of Connecticut, the hemp lands of Italy, or the madder lands of France and Germany involves an expenditure equal to the price of the strongest lands in this State. In the cultivation of these crops we have the single disadvantage of the high price of labor and the lack of a little special experience and training. So it remains to be seen whether the farmers of Illinois will suffer themselves to be starved on corn at twenty cents per bushel and oats at fifteen cents, rather than put themselves to the severe but profitable labor of growing tobacco, hemp and madder, or some other great and leading product of the soil; in fine, whether they will undertake to grow "something more than corn and something better than oats."

And here I suggest there is an opportunity for the labors of a class of public-spirited men, men who have made great fortunes out of Illinois agricultural products, like some of the leading business men of Chicago, such men as are not absent in the dullest communities, and to whom we owe, to a great extent, most of our material and political progress. I mean those who do good for the sake of doing good. Let these men, not with the object of profit, not for curiosity alone, but solely for the purpose of spreading truth and knowledge, make some experiments in, the way of growing tobacco, hemp and madder, and other new crops as well. An acre, or the half of an acre, devoted to these trial crops, and the processes and results reported through the press, surely would be of the highest interest, and might be of incalculable value to the State.

DAIRYING.

And now into the second division of my subject, as a very important means of developing our industry, I put dairying, or the making and manufacture of butter and cheese. Certainly Northern and Central Illinois, the home of the whole tribe of grains and grasses and forage plants, corn, wheat, oats, rye, barley, white and red timothy, red top and blue grass, and fifty other grasses not necessary to name, in fine a champagne country, made for, of all others, and suited to the breeding, rearing and feeding of the bovine race, should be that one in which the products of the dairy largely engaged the labors of its farmers. We have the soil and the climate for the cheap production of cattle food, in that we can have no successful competitors. Against us is the summer and the winter temperature. Can we overcome these objections, at a cost so inconsiderable as to leave us as far in advance in dairying as we are in cattle feeding and related industries? This is the question. Up to this time, so far as the dairy industries are concerned, Central Illinois has made little progress. I suppose we make butter enough for home consumption; but I think we eat and consume five pounds of cheese where we make one. Our hot summers and cold, intense winters, the almost level plain of our prairie lands, and the consequent deficiency of perennial springs, and the difficulty of obtaining a liberal or sufficient supply of cool, fresh water, have made the necessary preparation for the successful manufacture of butter and cheese too costly to be undertaken by private enterprise. No matter how rich and wide the pastures may be, how little the cost, and how abundant the supply of cattle food, the climate that gives us from the 15th of June to the 15th of September a mean temperature of 75 degrees in cool summers and 82 to 85 degrees in warm ones, and in which there are days at 90 degrees, and nights at 85 degrees, something more is required for butter and cheese making than the simple preparations

common to cool, hilly and springy countries. To be sure, butter is made with us in any quantity in June and July, but it is butter only in name—butter in quality, equal to second rate soap grease, which has to be measured by the quart, rather than weighed by the pound. It is next to impossible to make good butter, butter that will keep the whole season through, where the opportunities afforded do not warrant a steady temperature, not above sixty-five or seventy degrees, nor can cheese be made, handled, cured and kept where and when liable to the fever heats of eighty-six and ninety degrees for days and weeks together. Two months in the spring and two in the fall are as about as many out of the twelve of the year as the private dairy farmer, with the facilities common to the country, can count upon; for we need as much protection in dairying in this State from the frigid days of our arctic winters as we do from the torrid days of our sub-tropical summers. It is only a few years since the packing of pork in Chicago, Cincinnati and St. Louis was confined to the winter months, and we had little or no hog market but in the cooler months of the year. But now by the liberal use of ice and cool cellars and packing-houses, the work is done quite as cheaply and expeditiously in the summer. So when our grazing counties shall have become so thickly settled that the farmers of a neighborhood can employ associate capital, to provide side-hill and other cellars, where an even temperature of sixty-five and seventy degrees may be maintained through the year; when every farmer, especially every milk farmer, shall provide warm winter shelter for his beasts, and store clover and oats for their use; when every man of them shall lay up his summer's ice as regularly as he puts down his pork, or hangs up his hams, then, I predict, the difficulties of the climate overcome, dairying in Illinois will have become established as one of its leading and most profitable industries. I put it to you earnestly, gentlemen, now, when corn is worth from 20 to 25 cents, and when tax collectors are conspiring to rob and ruin us, and drive us out of the land, whether, when you have a tolerably thickly settled community, it is not a good time to talk about the results which may follow associated efforts in this branch of farming.

HOPS, BROOM-CORN AND CASTOR BEANS.

Within the second division of my subject I may also include hops for the north part of the State, broom-corn for the central, and the castor oil bean for the south. I know that so far as our experience goes, hops have failed in Central Illinois, but I believe it is one of those failures due rather to unskillful handling than to a want of adaptation in the plant to the climate. In Northern Illinois, and especially Wisconsin, hops have been a great success, and though during one or two seasons

the price got down to the parallel of those now ruling for corn and oats, hogs and cattle, nevertheless, hop growers there are pretty confident, if they stick to their business, they will pay better than any single crop. I believe that if the farmer, who, in Central Illinois, has high, dry, and well-drained land, should steadily engage in hop husbandry, he would in ten years make himself rich. The soil of the prairies is so abounding in fertility and the climate generally so well suited to almost every cultivated crop common to the temperate zone, that persistent, thoughtful and skillful cultivation in any particular line is pretty sure to be crowned with success.

Broom corn is and has been a profitable crop in Northern Illinois for many years, say twenty-five, and in Central Illinois for the last ten years. To be sure, that commodity has suffered fluctuations in price, common to every agricultural product, but the broom-corn grower, who has held steadily on to his specialty, has found it a profitable one. The soil and the climate of the center of the State favor the growth of the large evergreen varieties of broom-corn, which require a strong soil and a long summer.

These are the main advantages the middle have over the northern counties, and over the growers of Ohio and New York, all of whom are compelled to confine their labors to growing the early varieties and dwarf kinds; and have to submit to a stronger competition in consequence. Considering the cultivation of broom-corn in all its relations, I think, it may be safely claimed that the central counties of our State produce the best article grown in the country. However, broom-corn production must necessarily be confined, for some time yet, to the near neighborhood of considerable interior towns, since the labor required is to a great extent suited to women and children, and requiring not more than four out of the twelve months of the year.

Of the castor beans suited to the soil and climate of the south half of the State, I know but little. Formerly a good deal of it was grown in Southern Illinois, so much so that a special law was made prohibiting its cultivation unless strong fences were built and maintained to keep stock off. I suppose the bean is still cultivated; but if so, to a very limited extent. The St. Louis prices current inform me that castor beans are worth from \$1 50 to \$1 75 per bushel. At these prices one would think they would pay better than corn at 20 cents and oats at 15 cents.

ABOUT ROOT CROPS

I am not certain, remembering how hot and dry our average summers are, and how, if you have to sell a short distance only from home, the transportation eats up the price. The truth is, the successful cultivation of roots for forage purposes is almost as necessarily confined to

countries and States having a cool and comparatively moist summer climate as the corn crop is to countries having a fervid one. To be sure one may succeed with corn in Canada and Northern New York, and sometimes we get good root crop returns in Central Illinois, but in both cases there are more failures than successes, and more out-goes than incomes. The cultivation of the sugar-beet being still of doubtful profit I would not recommend its trial, except on contract, to supply a beet-sugar factory already established. However, there is one forage root, one vegetable I would heartily indorse as almost the only one I know which gives a sure return. I refer to the parsnip. Of all root crops on our prairie soils it has the most striking advantages and conspicuous good qualities. Among which are: It may be sown, and indeed should be, the moment the frost is out; it is easily distinguished from weeds at its first appearance above ground, holds firmly to the earth from the start, stands dry and wet weather equally well, grows the whole season through, and may remain in the ground uninjured all winter. It is always a precious recourse of the kitchen when other vegetables fail; hogs will eat it, horses like it, sheep love it, milch cows and steers adore it. In fact, as an auxiliary food for fattening stock, and especially to increase the flow of milk without a disagreeable taint, it is worth, pound for pound, more than any forage root that can be named.

COTTON.

When the cry went abroad that king cotton was dethroned, it was declared that king corn should succeed to his inheritance. The succession has been a short one, and now king corn is so poor and dishonored as to sell three pounds for a penny, it may be worth our while to recall to mind our former ruler. Cotton is pretty well suited to the soil and climate of the lower third of our State. Indeed, one may say with allowable hyperbole, that cotton has been grown in Egypt from remotest antiquity. I am aware many unsuccessful attempts have been made to push the cultivation of this plant north, but the failures have not been such as to warrant its abandonment to an arbitrary line below 37 degrees or 36 degrees north latitude. In experiments with cotton, made some years since, I found a wonderful difference in maturity between the product of seed obtained from Tennessee, and that from tropical South America. The Tennessee cotton, planted in May, stood a pretty severe frost in June, and the summer being cool got ready to open a few bolls only, when killing frosts came, early in October, whereas the tropical cotton, protected from early frosts, pushed vigorously after the 10th of July, continued on that line all summer, and had barely opened its first blossoms at the close of the season. So, said I to myself, climate and circumstances, without man's aid, has produced the wonderful dif-

ference in the maturity of an annual plant; there is not a man capable of making as wide a difference in the period required for growth and maturity between the Tennessee cotton, and a cotton suited to latitude 40 degrees north, as nature and circumstance has established between the cotton of Tennessee and the cotton of the tropics. That is, cotton having been acclimated from the tropics to the region of Tennessee, what reason is there to doubt the accommodation to climate may not be continued, so as it may be successfully grown considerably north of 40 degrees north latitude? I suggest experiments be made, and particularly since it is a well-authenticated fact that a cotton "sport" has been discovered in Georgia, remarkable for its fecundity in bolls and its early maturity.

MINOR INDUSTRIES.

And now for the minor industries—industries suited to farmers of few acres, narrow circumstances, and but a limited amount of stock and other desirable worldly goods and possessions. And I want you to bear in mind, gentlemen, in these my various suggestions and recommendations to a wider diversification of our agriculture, that I do not wish to break up or break into the plans of a well-ordered farm life. Of course, rich and well-to-do farmers, men of large means and large holdings of improved lands, who are engaged in the more profitable branches of agriculture, such as the raising and feeding of stock, and the breeding and improving of thoroughbred animals, farmers native here and to the manor born, who have acquired a liking for any single specialty, I do not wish, I repeat it, to see change to new and untried paths. These men are capable of taking care of themselves, and would, and probably should, regard as impertinent any and all changes recommended to them by gentlemen who have no better right to advise than that which comes of a limited theoretical and practical knowledge of the subject.

However, I venture as one of the minor industries, to name for small farmers, especially for those of foreign origin, who shall retain and teach their children the prudent economy and industrious habits of the "old country," as well suited to this climate, and requiring little land, less money, and a small amount of preliminary teachings and experience, the cultivation of

THE POPPY

for the purpose of making opium. Opium is the thickened and dried juice of the poppy capsule or seed-pod, for which there is, like tobacco, hemp and madder, an almost unlimited demand. Opium sells for from \$6 to \$10 per pound, and is as easily made as anything can be. The poppy succeeds well and accommodates itself to all soils, and when and where not watched, becomes a pernicious weed, the plants volunteering and re-appearing with as much persistency as the morning-glory.

In growing the poppy for the purpose of making opium, all that is needed is that it be sown at corn-planting time, in drills three and a half feet apart, and then thinned in the row so that the plants will stand fifteen to twenty inches apart. It may be cultivated like corn. Some-time late in June or early in July, when the plant has flowered and the petals have fallen from the capsules, they (the capsules) are sliced on the side in such a way as not to kill them. From the capsule a milky juice exudes, which is scraped off the next morning, and on the third morning the capsule is again sliced and scraped as before. This operation goes on as long as the plant continues to bloom, and by planting at different times the harvest is prolonged until severe frosts come. To be sure, from each capsule one gets only a grain or two of opium, and it takes many grains to make a pound. But a grain of opium is worth more than many pounds of corn, and you can send \$1,000 worth of opium to market for what it would cost to send \$10 worth of corn or oats. This, indeed, is one of the branches of agricultural industry which requires patience and perseverance, and prolonged and unremitting attention and labor; but one can see how a poor man, with few acres and many children, can make more money off one acre in poppies, opium being worth from \$6 to \$10 the pound, than off ten acres of corn, fetching in the market a penny for three pounds.

MEDICINAL PLANTS.

Then there is the herb peppermint, and, in fact, the whole tribe of medicinal plants, out of which the Shakers and Quakers make great gains in growing, curing, pressing, distilling, and marketing. Peppermint oil is worth from \$2 50 to \$3 the pound, and the essential oils of several other common enough herbs sell quite as high. I am not able to give you special directions in this regard, but refer you to the authorities in the newspapers and the encyclopædias. I could name as among other minor industries, the growing of small and large patches of hemp, flax and millet for seed, saffron as a medicinal plant, the osier willow, which I was not long ago surprised to learn was supplied of the very best quality from Kentucky, and a hundred other new crops to which I have not time to refer. But it is worth one's while to remark here, that though the leading staples are low, universally low, winter apples, potatoes, and vegetables generally are in good demand, at home and abroad, at fair prices, even that diversification which makes of a farm a truck patch; and a kitchen garden pays better, under present circumstances, than corn and hogs, cattle and horses, and oats.

NUTS.

Now I will wind up by considering and recommending the planting of the nut-bearing trees. So far, in this State, neither privately, as I

have heard of, nor in the transactions and debates of our wide-awake State Horticultural Society, have we made any account of the nut crop. The groves and forests of Illinois are rich in the nut-bearing trees; and all, or nearly all, of these trees grow to a large size, are beautiful both for shade and ornament, and furnish timber of strength, durability and beauty. First of merit as a nut, is the shell-bark hickory. If its surpassing excellence were known as well abroad as at home, its consumption would become world-wide. Unfortunately the multiplication of the finest varieties has been found a very difficult business—grafting and budding succeeding only in rare instances. However, by planting shell-bark nuts, you will be sure to get shell-bark bearing trees, the first of which may be better or not as good as the nuts planted. By root pruning, for a year or two, the young seedling may be safely transplanted at the third or fourth year.

Next comes the pecan, which grows magnificently on the American Bottom, and on all low, rich lands, but is seldom found abundant north of Springfield. When at home, on a soil that suits and a situation that fits its wants, it makes one of our handsomest shade trees, bears profusely, and in company with the broad-spreading honey-locust, for which it seems to have a particular affection, the two together become strikingly beautiful objects, when seen a quarter or third of a mile away.

Then there are the native walnuts—the black walnut and the white, or the butternut. Of its strength and majesty as a tree, of the beauty, durability of its timber, of the profusion of its rich fruits, I need say nothing in praise of the black walnut to an audience of Illinois farmers. But I will remind them of a fact of which they may not be aware. It is that there is not only a striking difference in the size of the nuts from different trees, but a difference quite as striking in the thickness of the shell and in the flavor of the kernel. It is possible, and indeed probable, when horticultural improvement shall take that direction, that we may get fruit from the walnut almost equal, in flavor and thinness of shell, to that of the Persian or English walnut. The butternut would be considered a striking and beautiful tree, were it not so overshadowed by its magnificent half-brother already described. The butternut is not so impatient of cultivation and the exigencies of civilization as the black walnut, nor is its temper as strong, durable, hard, or high colored, but it grows faster, transplants easier, bears fruit earlier, and makes a broader shadow, if not a denser shade. Both walnuts transplant safely, may be propagated by starting seedlings, and both may be grafted and budded. It should be borne in mind, however, that both operations are of considerable difficulty, when compared with the ease with which such processes are performed on fruit trees. The black walnut and the white walnut, the shell-bark hickory and the pecan, these are all native nut-bearing trees, and each should have a representative near every

home and farm-house in Illinois. The timber of these trees will become, in course of time, one of the most precious and desirable commodities our farms will yield or produce.

Then there is the chestnut, which deserves and shall have a paragraph by itself, partly because of its merits, and partly because it is a stranger to our State, but a near neighbor. I know it is still an unsettled question among farmers and horticulturists generally whether the chestnut can be safely transplanted, and then whether it will make a vigorous, large, healthy, fruit-bearing tree. If the nuts are planted in the fall before they are dry, or the germ shrunken, and protected from vermin, the young plants appear soon after the frost is out of the ground in the spring. The plants attain from ten to twenty inches in height the first year. The spring the plants are a year old they may be transplanted as easily, or nearly so, as apple seedlings, for the first roots are almost as fibrous. After that, and for five or six years, the plants grow slowly, like nearly all hard-wood trees produced from roots; then having obtained a firm hold on the soil, they break away outward and upward into strength, shade, and magnificence. So much for the nut-bearing trees.

Then, in conclusion, let me ask who it is, among our Illinois nurserymen, who desires to make a fortune and build up a name? If there is such an one, let him produce for the markets seedlings of the oaks, the hickories, and the nut-bearing trees. This thing can be done, and, if in skillful hands, successfully and profitably done. Suppose there were on the market in Illinois to-day a million of seedlings of the trees I have named, ten feet high, and two inches through at the collar, so trained and pruned and peeled as to be sure to live and grow vigorously, is it not evident they might be sold at ten or fifteen times the price asked for elms, maples and poplars, and other soft-wood trees?

THE SOCIAL WANTS OF OUR RURAL COMMUNITIES.

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 BY W. C. FLAGG.
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I purpose to preach you a sermon to-night, from the text: "It is not good for man to be alone." This was a remark made of a distinguished horticulturist, by the way a man of great originality, but who was discharged as a gardener for eating too much fruit. I shall preach, of course, a good deal more than I practice, and, like Ovid of old, praise the better way whilst I follow the worse. But in that I shall only do as other sermonizers, and I am sorry to say even some of our horticultural essayists; and if our aspirations and our ideas were *not* a

good deal better than our lives, I am afraid we should be worse men and women than we are. So let us dream our dreams of a better life, even though we are unable or unwilling to make them real. And my dream, if not exactly Arcadian, shall be of a happier, more healthful and wiser ordering of social affairs in country neighborhoods. I presume it is a topic not unthought of by most who hear me, and it is one to which my own attention has been frequently called by the vague speculations on that frequently recurring conundrum: "Why do young men leave the farm?"

Mankind, like many of the lower animals, including our Darwinian progenitors, are very gregarious, and hence are dissatisfied and uneasy when alone, and quickly seek the company of their fellows. This is more especially and universally true of unintelligent or rather of illiterate persons. One who is fond of reading finds no bad substitute for companions therein. Indeed, as they can choose and keep the best and wisest of all ages their associates in this way, many have deemed the library a more profitable and pleasant place than the drawing-room, or the public place, where one must receive all who come, and waste time upon frivolous matters. The enthusiast in natural science or other pursuits, in which one is independent of living men in a great degree, is measurably in the same position. But to the man who cannot or will not read, society is a daily necessity, without which his mental and moral nature will be stunted, like a plant without water. This is true of the small intellects that we meet, the product of successive generations of ignorance; it is still more true of the shrewd, practical man we occasionally see, who, ignorant of books, is as thirsty for conversation as the plant for sunshine. It is his great channel of information, and even to the more literary or scientific man there is vitality and vividness in the spoken thought, in the ideas vibrating with living passion and personal interest, that the dead inscription of the page cannot have. Hence all men, unless preoccupied, or embittered, desire the society of their fellows, just as the babe in its mother's arms crows and chuckles over the approaching child, in which its early awakened instinct detects a peer and a playfellow.

Hence the long miles traveled by our early pioneers to attend the barbecue, the horse race, and the camp-meeting; hence the corn-husking, the apple-pearing, and the singing school; hence the gatherings at the beer house and the feminine teas of the leisurely country afternoons; hence, too, according to some, the continual unrest and desertion of the farm by our young men and women; though I am inclined to think that is the result of a regular law of supply and demand. Our cities cannot grow their able men in sufficient quantity any more than they can their own beef or wheat.

Without stopping to consider the evolution of this social instinct, and the curious suggestion of Darwin and others, that it is the source of the moral sense or conscience, I pass on to discuss its varied phases as we find it existing in human societies to-day. The causes that lead us to seek the society of our own fellows seem mainly these :

1. There is the desire of amusement, the wish to hear and learn some new thing from simple curiosity. The loafers at the country stores and at the railway station provoke our criticism, but they come together by a very human affinity. The group around the table in the beer house may quaff the mild stimulant, but no doubt the song and the jest that go round are far more to their taste. Men go to church to worship, drawn strongly thither by their reverence of a supreme being, but not less by the desire to see friends and neighbors, and know how their little world goes on. There is a wonderful distraction and refreshment in these human fellows of ours. How we stand in the fields and stare at the passenger train, yet hardly heed the unpeopled freight.

2. Then we seek in society the means of self-improvement. Our manners are awkward ; we go to see our more experienced and graceful friends comport themselves. We are ignorant, and have not books or the wit to use them ; we seek the company of more learned or traveled men who can make us wiser. We are slow in thought, or slower in speech ; we want the brighter-witted to express our embryo ideas, and go home with our ideas quickened and our tongues less halting.

3. Again, we seek the society of our fellow men from an interest in them that takes a benevolent shape. We desire to help them in whatever way may be most practicable and acceptable. We desire to make others more religious, more moral, intelligent, or refined, and we seek them out and associate with them to gain their good will and a favorable hearing.

These, I suppose, are about all the legitimate reasons to be alleged, though they hardly exhaust the catalogue of causes that might be assigned, springing out of this great human instinct, or rather the instinct that pervades the higher orders of creation, so far as we know. Given them a very strong natural instinct of this kind, by virtue of which great uses may be subserved, and by the abuse of which great evil may be done, and what shall we do with it ?

The question is protean in its shapes ; but I need not dwell much, except on those phases of it that concern country life—the country life as contrasted with town and city life—the life of communities divided into not more than two or three strata, rather than the many caste development of older and metropolitan life.

Social life in cities and towns is developed in excess, in corrupt forms often, but to a harmful extent always. The city man sees too much of business, and too little of the weather, which he thinks of merely as the fair or foul time for trading or pleasuring, with no conception of the human needs that hang upon sunshine and storm. He knows too much of men as traders and sharpers, and too little of nature and solitude. He knows too many isolated facts, and too few thoughts. He is alert, glib, shallow and impulsive.

Nearly all permanent dwellers in cities and towns become cockneys. They become so impressed with the special merit of their own peculiar town that they have no interest in the broader world of their State, their country or mankind. But the dweller in the city shows the good as well as the evil of mental attrition. The sharp corners of his character have been rubbed or knocked off. He is more liberal in his opinions and purse than the country man. Still, the problem of society in the cities is to furnish better for worse places of social gathering; to stimulate reflection and repress levity; to furnish solitude rather than companionship. Emerson says: "The high advantage of University life is often the merely mechanical one, I may call it, of a separate chamber and fire." Our townsmen are boys in large families that see too much one of another.

Social life in the country is more difficult. Our solitary farm houses are too often nurseries of morbid thoughts, and brooding monotonous sentiment that distort and often madden the mind. There is excess of thought—if it can be called such—thought, that for want of more outward pressure and excitation runs in grooves, and furrows the brain year by year. The farmer thinks, but is often morbid and misanthropic. He is somewhat slow, dull and incurious concerning much that is nearest to him. He is illiberal and intolerant of opinions different from his own. Yet, his opinions are generally sound, and in political and religious crises, strange to say, our republican democracy reverses the experience of Europe, and shows that the rural districts rather than the cities are the nurseries and strongholds of liberal and radical opinions.

His observation of men is too limited, but he adds his observation of weathers and soils and minerals—of plants and animals; and his thoughts abutted upon true facts of nature, and of human life, are necessarily broader, deeper and better.

But the physical separation made by broad acres of meadow and grain make it difficult to choose company, or to keep it when chosen. The social instinct is repressed and stunted, or makes unhealthy growth from unnatural food. It is pitiful to see, sometimes, the efforts of unassisted human nature reaching out for human sympathy, as the tendrilled vine to the tree—the wistful child gazing longingly after the passing stranger; the young woman wandering from the parents' house

and seeking companionship in distant and perhaps unfit homes; the young man straying into the drinking "saloon," that is at least brilliant, warm, jovial and companionable. Then see how every occasion is seized upon to minister to this half-satisfied desire. The very prayer meeting and funeral are impressed into uses not their own.

All this tells us that country people lack social opportunity. How shall we make it? First, by using the incidental opportunities that come within our reach. For instance, when your Alton Horticultural Society meets to discuss the varieties and culture of fruits, one of its members gives a dinner, and you not only learn more about apples, but more of the kindly neighbors you have about you. Our Farmers' Club is a good medium for communicating and sharing practical knowledge, but many will say, and justly, that it does a no less valuable work in giving general opportunity for men and women to meet and see one another in an unconstrained way.

The average American feels it necessary, as yet, to have some proper excuse other than the need of social intercourse, for leaving his farm and attending even a monthly meeting; and we must cover his advance into society with the pretext of business or some other well-sounding reason.

But the Farmers' Club does not meet the wants of all. The young men and women, of country life even, are often indifferent to good crops of wheat and the proper fattening of pork. Their thoughts may be of other things. Then there are many who regard Farmers' Clubs and Horticultural Societies with suspicion. They look distrustfully upon farmers who talk about farming as if they were betraying the best secrets of the craft, or were mere babblers of empty theories. Hence, we must have other and varied forms of social intercourse.

Some of us will remember the spelling school as a prime necessity of its day. It has been well described in Eggleston's story of the Hoosier Schoolmaster. The young, and even the old, came far and wide; and Webster's Spelling-book was thoroughly ransacked for hard words. But none the less attractive, doubtless, were the social opportunities given, and except to an ambitious few the *ph's* and *th's* of phthisic were a secondary matter. This was, and though somewhat fallen into disuse, still is a form of intercourse in rural districts.

Another, and less common form in the same line, is the literary club, whether taking the form of the debating society, in which the discussion of controverted questions is the alleged business; of the dramatic club, or of the literary society, where the reading of good authors or of original essays become the prominent business. The literary club, as the outgrowth of an old and now somewhat waning belief in literature as the sole means of culture, is being replaced, to a

limited extent, by the scientific club, in which natural history in its various phases becomes the special object, but this change, so desirable in the rural districts, goes on very slowly where the habit and appliances of the study of natural history are still very rare.

Then we have reform clubs, religious or moral in their character, such as our temperance organizations, with the object of combining social influences against vice or bad habits. These are apt to be a little "slow," and not to succeed in making themselves pleasant enough to hold the volatile spirit, and hence are too much frequented from a supposed efficacy in a good example and from a so-called sense of duty. But the Church and the Sunday School, the Good Templars, or other organizations so supported, can never be a very vital force in the community.

We have again those allied agencies known as sewing circles, sociables and the like, where an effort is made to combine charitable and religious work with social enjoyment; and some of these, perhaps, have been among the most successful of social organizations. Somewhat similar in their character are those organizations whose professed object is amusement and the enjoyment of social intercourse. Such are our social clubs where dancing, cards, base ball, skating or other recreation is made the basis of union. These are pleasant but apt to be short lived, from their not having a sufficiently earnest motive in them. Enjoyment simply does not satisfy; and mankind, especially Americans, grow weary of play that has not something more earnest back of it.

The secret benevolent societies—the Masons, Odd Fellows, etc., might be mentioned, but these do not affect much the rural districts, however important in the cities and villages.

Now, in our country life we find it somewhat difficult to combine upon any one of the various forms of which I have spoken. In the city, within a limited area, you may get a knot of persons together upon almost any given idea, from Platonism to Mormonism. In the country, even within a scope of many miles, it is somewhat difficult to get enough harmonious elements together to form a permanent organization of any kind. Hence, in organizing the social elements of the rural districts, we must endeavor to so broaden our platforms that many may stand upon them. Our Farmers' Club and Horticultural Society meeting monthly and dining at the houses of the members, succeed because they appeal to a variety of motives.

It is hard to keep together men who go to discuss agriculture and horticulture only; not many would drive from five to ten miles simply for a good dinner. They could get it more cheaply at home. Not many go out that often simply to attend a social gathering. But sum up these motives, and you have continuous success. The combination becomes irresistible. Then these organizations exclude nobody. They are essen-

tially democratic. The doubter and the scorner, the stranger whom a friend introduces, the child in its mother's arms, the patriarch tottering on the verge of life, all attend, and all are welcome. So that clubs of this kind command a large constituency for their support, and in this respect afford a model for others.

Hence, I say that whatever clubs are organized, be they religious, moral, intellectual or æsthetic in their character, must, to succeed in the country, be broad, charitable and hospitable; and to be specific, I will enumerate some of the real and ideal organizations that seem to me worthy of consideration.

1. First, as to religious organizations. Ten or twelve years ago, in a Southern Illinois settlement, a number of new-come fruit-growers found themselves just located and isolated. The surrounding population was densely ignorant, and regarded the strangers with dislike and even hostility. They were thrown upon their own resources—social and otherwise. Scarce any two held the same religious convictions, and they had not means to support a minister. So they met and organized and built a house of worship, and held a weekly service at which those who were competent officiated in turn, and read a published sermon or prepared a discourse at will. The widest liberality of thought was permitted, though, of course, under the circumstances, they were careful not to abuse it. Theodore Parker's views would be given one Sunday; Henry Ward Beecher's or Spurgeon's, the next. This organization is continued to this day. The community has increased in numbers, and already two organized churches of the old stamp have come out from among its members. Yet, I am informed, it is still the popular organization, and its broad tolerance makes it so. This is an example of church organization worthy the consideration of country dwellers, in communities where a dozen families or less make the sum total of any church membership. If it is objected that it gives too much opportunity for the dissemination of error, I can only reply with Milton: "Since the knowledge and survey of vice is in this world so necessary to the constituting of human virtue, and the scanning of error to the confirmation of truth, how can we more safely and with less danger scout into the regions of sin and falsity, than by reading all manner of tractates, and hearing all manner of reason."

2. Again we want, and at this particular epoch imperatively need, a proper opportunity to discuss certain social and economical questions affecting the farmer, both as producer and consumer. The questions of Labor, Capital, Production, Co-operative Farming, Railway Transportation, Middle-men, Free Trade and the like are all of grave importance, and some of them press for an early solution. With corn below the cost of production, and high freights to the sea-board; with diminished means, and labor as high as ever, we find ourselves in an anomalous

position that requires discussion and agitation to get it properly adjusted. We want organizations for the proper discussion and elucidation of these, as free as may be from the bias of partisan politics, but bringing those who have a common interest in the work and products of agriculture together, to deliberate upon the farmer's political economy. There should be the same tolerance and freedom of discussion as I have instanced in religious exercises, but the agricultural class, of all others, should be considering the changed relations in which they stand to production and consumption. Clubs tending to this are already rapidly organizing—clubs looking to sale of products and the purchase of necessities. These must, of necessity, more or less consider many economical questions.

3. Our rural communities need, also, clubs organized for the study and discussion of rural topics, that shall be more thorough and frequent in their work than our ordinary clubs can be. One of these should have its scientific committees, who should report what plants and trees are native in the neighborhood, what animals and insects abound, and their effect on the crops; the nature of our soils and the peculiarities of our climate. They should explain the failure of the butter to "come," and why the bread does not rise. It should have its literary side also, and the rhyme and reason of country life should be furnished by its proper committee, who should ransack the pages of Hesoid and Virgil, Cato and Columella, Tusser and Thomson, for what has been worthily said of rural life and rural affairs. It should hold its weekly meetings at the house of one of its members, and a part only of the time should be devoted to business. It should have its refreshments and its social hour. It should welcome all worthy outsiders, without reference to membership, and endeavor at once to learn to teach and to be happy.

CATTLE REARING.

—
 BY E. L. LAWRENCE, HEAD FARMER.
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"The object of agriculture is to develop from the soil the greatest amount of certain kinds of vegetable and animal produce at the least cost."

The object of cattle rearing, an important branch of agriculture, is to produce the largest amount of milk, butter, cheese and beef, in the shortest time and at the least expense, and in quality that will sell for the largest amount of cash. Cattle rearing bears so directly upon every operation of the farm, that I shall not attempt to exhaust the subject in

any one of its many bearings, but shall touch lightly on each branch, and only hope to open the way for an interesting and profitable discussion, which may follow the few suggestions I make.

Probably the first to be considered is the breeds of cattle to raise. Then to follow with care, feeding, shelter, pasture and water; conducting the whole with our eyes open to the fact that even the rich prairie soil of Illinois may, in time, become exhausted.

We have at the University stock farm five brands of cattle: the Short Horns, Herefords, Devons, Ayrshires and Jerseys or Alderneys. A bull and cow of each breed, also some calves. It was the intention in selecting these to fairly represent all the different cattle-growing interests of the State.

The Short Horns are so well-known that it is not necessary to describe them here; they are becoming more and more popular both in this country and in England, and the demand for them is constantly on the increase, both for breeding pure bloods and for crossing on native stock. The statistics of the Royal Agricultural Society of England, kept since 1852, go to show that they are fast superseding the other breeds, and it is now estimated that there are more short-horn cattle in England than of all the other breeds combined.

The Herefords are among those classed with the Devons as middle horns. They have the same characteristics, in many respects, as the short-horns. They fatten easily—in fact to be fat seems to be their natural condition; they arrive at maturity at an early age, and are possessed of that mild and quiet disposition so essential to the laying on of fat. They are more coarse in the head and horn, and also in the limbs, than the short-horn. I have but little acquaintance with the breed, and can only say that if they are all as good as those we have on the farm, they are animals of which any breeder may well feel proud.

The Devons, like the Short-Horns, are well-known. They are such a distinct breed that when crossed to the third and fourth generation with native stock, they show the color and many characteristics of full-bloods. It is said, however, that when crossed with Hereford cattle, the Hereford characteristics predominate. Years ago the Devon was bred principally for the yoke, and it is related in Morton's *Cyclopedia of Agriculture*, that in their native county in England they have often been driven eight miles an hour. Should the epizootic visit us often, they will be popular with fast drivers. Lately they have been bred both for beef and the dairy, and their admirers claim a superiority in them for both these purposes above all other breeds.

The Ayrshire cow is "queen of the dairy." For feeders, they will not compare with the Short-Horns and Herefords.

The Jersey cow is a little pet; all the favors you may show her will

be returned. She produces a fair amount of very rich milk, almost cream, which is churned to butter in a very short time. The butter is such as can be produced from no other breed of cows. Near large cities, in the east, many dairymen keep them and sell the butter for a large price. Should you visit Boston and refresh the inner man at the Parker House, you will be feasted on Jersey butter, for which the dairyman receives one dollar and twenty cents per pound. Many dairymen near Boston, New York and Philadelphia furnish their customers with Jersey butter at from seventy-five cents to one dollar per pound. This breed is of but little value for beef, and as the slaughter-house is the ultimate end of all our cattle, it will not be found a profitable breed for the general farmer.

The Jerseys, Alderneys and Guernseys are the same breed, Jersey being the larger of the Channel islands, from which they are imported.

Were it possible I should think it advisable to breed from none but thoroughbred animals. It must be evident to every one that where animals have been bred for a long time with special reference to the development of certain desirable qualities, that a degree of excellence will be reached that cannot be attained by the hap-hazard manner of breeding practiced by those who have bred natives. It being impossible to breed from pure bred animals on both sides, we may do the next best thing, that is breed from pure bred males.

The characteristics of the pure bred animal being of general fixed type—careful breeding and selection having established and fostered, in a measure, the qualities sought for, and the qualities being strengthened and concentrated by time—it stands to reason that when this force is brought to bear on the scattered and weaker forces of the animal of a mixed breed—there being here as elsewhere strength where there is union—that the qualities of the pure bred animal will, in a large measure, be transmitted to the offspring. Thus, by crossing a pure bred bull with a native cow, we have three-fourths to seven-eighth of the qualities of the sire, and only one-eighth to one-fourth of the less desirable qualities of the dam in the progeny, though, in fact, we have but a half-blood. But when this half-blood animal (the progeny) is bred to an animal of the same breeding, that is, a half-blood, while we still get in the offspring a half-blood, we lose that preponderance of the qualities of the full-blood first noticed, and get only an animal with qualities half of the full-blood and half of the native.

Then I would say, procure choice full-blood bulls at whatever cost, and breed up our native stock to the standard of the pure bred animal. It will not do to prophecy ruin to a man because he pays one thousand dollars for a breeding animal, as those who, directed by judgment, have been most liberal in these purchases, have been most successful in the end.

The breed of cattle should be selected with reference to the requirements of the breeder. If we are breeding for beef alone, or for beef in connection with the dairy, we should breed from bulls, pure bred, of one of the three breeds first named; my own judgment would say one of the two first named. If for general dairy purposes, let us take the Ayreshire. If for cream and excellent butter, the Jersey, though small, is large enough to "fill the bill." We have had many visitors at the farm, during the past year, to see the five breeds of cattle together, and I think nothing has been more coveted than our little Jersey, "Cream Pot."

Having thus given my ideas with reference to the selection of breeds of cattle for the various purposes of the farm, believing that the saying that "a bad beginning insures a good ending," does not apply to cattle rearing, I wish to be understood as considering the keeping of them good as of equal importance.

It has taken several thousand years to make up the enlightened man of the present day, from the crude specimens who first peopled the world; and how many millions of years—by Darwin's theory—to make these from apes I will not pretend to say. And yet man becomes a savage at once if removed from the influences of civilization in infancy. It is now one hundred years since Robert Bakewell gave his whole energies to the improvement of cattle, and in that time improvements have been made that are wonderful. (Bakewell bred the less desirable Long Horns of England, but his success stimulated others, who have taken the other breeds.) But it takes only a short time to degenerate improved animals and make scrubs; and many think that because the Short Horn cattle, that have been bred principally for their flesh, when deprived of their flesh make homely skeletons, that this proves them to be of little value. They say "they can't rough it like our native cattle." We do not want animals to "rough it," if this means to scrimp them in their food. Shelter them the first winter, keep them fat and give them something better to lie on than snow or mud, and they will prosper. Last winter, in experimental feeding, I fed a high grade Short Horn steer, three years old this spring, that weighed when sold, April 15, 1,570 pounds, having gained in one year and fifteen days 690 pounds. This steer had no shelter, but was fed in an open lot with thirty others. Shelter, of course, would have been desirable, but I give this to prove that they do well without it. Others that gained less through the summer months gained much more during the winter months when sheltered. When we allow well bred animals to degenerate we have neither the qualities of the enlightened Short Horn, nor the vigor of the half-civilized Texan.

While many in England and America have been laboring to improve cattle, others seem to work in an opposite direction. How often have

we seen the latest and poorest calf left a bull for no other reason than that he was good for nothing else. Such bulls have a wonderful amount of energy, and can make up in the numbers of their progeny what they lack in the more desirable qualities of size and beauty. Too many farmers keep such bulls at the present time to serve their own cows, and those of their neighbors, for "fifty cents to insure." The "insure" might be left out, as they never fail—as some can testify to their loss. Many of us have said hard words where such animals have broken out, or been let out, and go over the country breaking gates, smashing fences and doing damage less easily repaired.

As nothing can make amends for the lack of care in breeding, so nothing can make good the lack of a good and vigorous growth in the young animal.

Many have recommended other food than milk for young calves, some say "whey is good," some give "gruel of corn meal," some "hay tea," etc. I have yet been unable to find a substitute for the food that nature has provided. Calves may be raised in connection with the dairy, and fed skimmed milk at the age of four to six weeks. At this age they will begin to eat oats or meal, which should always be provided. It will be found that the more grain the calf consumes, the more profitable the operation, till it is turned to grass after the first winter. I once tried raising calves on whey, and I think where water can't be had they will live on whey, but I should prefer the water.

It was once thought that to have a steer in proper shape to feed well he should be four or five years old. And I have often heard it said that "a *young* animal will grow, but will not fatten." Where this opinion prevails, it is thought that if an animal does not have to be "tailed up" in the spring he is all right. And if he has ceased to grow for the last six months and fallen off, it is all the same. Under the old theories, cattle were supposed to be like the toper's cider—he said, "all it wanted was age to make it perfect."

With the improved breeds of cattle, this has all been overthrown, and the thoughtful farmer has discovered that, with an animal less than one year old, the food required to give them three pounds of growth daily will give but two pounds from one to two years old, and but one pound from two to three years of age, (these figures are given as an approximation only.)

Our steers for slaughter are now heavier and much better at three years of age than they formerly were at the age of from four to six years, and the question now is, shall we make our steers weigh 1,400 pounds at the age of twenty-four or thirty-six months? I believe that the "forcing process," as it is termed, which gives us this weight at two years of age, will be found most profitable.

It is essential that young stock be provided good comfortable quarters, at least for the first winter. While young stock should be kept growing the whole year round, it will be found that the most of growth is made from pasture. For this reason, bountiful pasture should be furnished.

We too often allow our pastures to be too closely cropped, especially in the latter part of the season. We should have more pasture or less stock; and I think if we have more pasture and raise less grain for a foreign market—or, I should say, raise *no* grain for a foreign market—we should be better paid for our labor.

It was once thought that it was an advantage to “summer fallow” land to enrich it and destroy the weeds. Science has shown and experience demonstrated that summer fallowing, when nothing is grown to be turned under, is of no particular benefit to the soil; that the land should be covered. Thus, pasture or meadow is better, when plowed, if some crop, or even weeds, should be grown to be turned under. When land is too closely covered, we lose the benefit of this covering of the soil, and also the protection which should be furnished the roots of the grass or clover from the drouths of summer and the frosts of winter. Then, by pasturing too closely one season, we very much diminish the yield the following. One animal well kept, summer as well as winter, will be found to pay better than two but half fed.

Much has been written to prove to farmers that there is a great gain by planting trees in pastures for shade for stock (perhaps these zealous writers have had trees to sell). My experience and observation have shown, to my own satisfaction at least, that there is no pasture so good as the dry open prairie without trees. Time will not allow me to give extended reasons for this belief; but I would recommend that each one give the subject of shade in pastures a careful investigation.

There have also been no lack of advisers who have told us to construct artificial ponds to hold water for stock. Such watering places furnish a supply of very poor water in a wet time, when not wanted, but fail entirely in times of need. The babbling brook and the flowing river, (where farmer boys may go fishing when it rains so that they can't work out of doors) have each their charms; but I should prefer them on my neighbor's farm, and not on my own. The land occupied and made useless by standing or running water, if used for pasture will more than pay for appliances by which the winds, so bountifully furnished in this country, may be made to supply the best of water and at all times, and one square rod of land is all that is required.

Returning to the subject of breeds of cattle, I am prepared to lay down this proposition: That a grade steer from a good short-horn bull and a fair native cow, will bring more money at three years old than a

pure native at five, provided always that both shall be well kept. While studying this subject, I noticed the following in the Marengo "Journal" of Nov. 30th: "Mr. I. E. Searls, of Riley, shipped to Chicago last week a car load (sixteen head) of fat steers, which were probably as fine beeves as have been shipped from this part of the country. The sixteen head weighed 21,380 pounds, being an average of 1,336 pounds. The most of these were three years old, and some of them weighed 1,400 pounds. In this county, most of the cattle are Short-Horn grades. Many farmers, being from Kentucky, brought from there many choice Short-Horn bulls, that have left their marks on a l the cattle in the region where used." The same day that I noticed the above in the "Journal" (first week in December), I weighed for my neighbor nine two-year old steers, which weighed 12,744 pounds, an average of 1,416 pounds—80 pounds more than Mr. Searls' cattle, and one year younger. These were all two-year olds, and some of them weighed 1,600 pounds (the inference being that those of which friend Babcock wrote were a part four-year olds). Give these cattle another year, and they will press 2,000 pounds each. These cattle have never been in a barn or under a shed. Cattle are as well fed and much better sheltered in McHenry than in Champaign county. Again, the former are taken as an exception, and considered worthy of a newspaper article. The latter are not. The difference is all in the breeding.

To show that this is not caused by the climate, I will relate that in August last, wishing to purchase stock cattle, I applied to a dealer from one of the counties not a hundred miles south of Champaign. He informed me, in answer to my question, that his best two-year old cattle would weigh 700 pounds each. I replied that our cattle of that age weighed from 1,000 to 1,200 pounds. He seemed to understand the situation, and rejoined that they had had no county fairs, and no farmers' clubs, and no effort had been made to improve the breed of cattle. I submit that this would be a suitable place to send missionaries.

As the cash dividend is what the stock-grower is laboring for, it is always in order to look into the future and calculate the prospects. By the light of the past we may judge something of the future. By comparing the census of 1870 with that of 1860, we find that the increase in cattle in the United States has not kept pace with the increase of population. It has been estimated that for each one hundred inhabitants there should be eighty head of cattle to insure a supply of beef, milk, butter and cheese. In 1860 there were eighty-one cattle to one hundred inhabitants, while in 1870 there were but seventy-three. It would have required 2,200,000 in 1870 to make the supply good. Temporary causes will of course cause the markets to fluctuate, but the rule of supply and demand will govern prices. While many are complaining

of losses, I see nothing to discourage the cattle-growers. The trouble has been with feeders, who have paid too much for stock cattle, and not with the cattle raiser.

It is the best article that always finds a ready and liberal buyer, and is most profitable to the seller. This can only be produced by diligence, care and perseverance, directed by judgment, without which we are sure to make a failure.

THE AGRICULTURE OF ILLINOIS IN THE CENSUS OF 1870.

By W. C. FLAGG.

Illinois, according to the census of 1870, contains a population of 2,539,891 inhabitants, and, as in 1860, ranks fourth in this respect. Its relative gain, however, as compared with the States standing nearest above and below it, shows that it is still rising in the scale, and will take at least a third place in the census of 1880 :

<i>States.</i>	<i>Population 1870.</i>	<i>Per cent. gain.</i>
New York.....	4,383,759	12.94
Pennsylvania.....	3,521,951	21.19
Ohio.....	2,665,260	13.92
Illinois.....	2,539,891	48.36
Missouri.....	1,721,295	45.62
Indiana.....	1,680,637	24.45
Massachusetts.....	1,457,351	18.38

It surpasses in area all these States except Missouri, which has about 10,000 more square miles, the area of Illinois being, according to the census report, 55,410 square miles, whilst that of Missouri is 65,350. The area, however, is stated by our State Auditor to be 55,872 square miles. Its density of population, using the census figures, is 45.84 to the square mile, or 45.47, using the State area for a divisor.

It is twelfth in area of the organized States, and eleventh in density of population. Texas has five times its area, and California three times as much. Massachusetts has four times the population to the square mile, and Rhode Island three and a half times. Although a large State, equal nearly to half the British Isles, or one-quarter of France, to forty-two Rhode Islands, or twenty-six Delawares, it stands by no means first in extent of surface. Whilst containing a population of two and a half millions, it is far from the maximum density of population. Probably, however, no State in the Union has less waste land, nor can, when its farming lands and coal mines are fully developed, support a larger population to the square mile.

“These soils,” says Prof. Voelcker, “are very rich in nitrogenized organic matter. Indeed, I have never before analyzed soils which contained so much nitrogen. Nor do I find any record of soils richer in nitrogen than these.” Very long in a north and south direction, it unites the climates, or at least the latitudes, of Boston to that of Norfolk, and wheat that matures at Cairo as early as the first of June, does not ripen at Galena until more than a month later. The ripening wave of grain and summer fruits rolls northward at the rate of ten or twelve miles a day, and the strawberry yet lingers at Rockford while the early apple blushes and mellows at Villa Ridge.

Thus fair, fertile and various are the broad acres of the Prairie State. Of these, 19,329,952 acres, or about 53 per cent., are reported as improved in farms; 5,061,578 acres, or about 14 per cent., are woodland; 1,491,331 acres, or about 4 per cent., are returned as unimproved land in farms; whilst 9,875,219 acres remain unaccounted for. Uncle Sam, it will be seen, has very imperfectly provided for correct census taking, and this is one result of imperfect legislation. I think we have every reason to believe that the present Superintendent is an exceedingly able statistician; but he could not overcome the defects of an imperfect law. So that more than one-quarter of the area of our State must be conjecturally assigned to unfenced woodland and prairie, to large streams, highways—common and railway—and town plats. So that we have perhaps 15 or 16 per cent. of woodland, against 7 per cent. in Iowa, and 10 per cent. in Wisconsin, 21 in Missouri, and 35 in Indiana.

Compared in its parts we find Illinois most heavily wooded south of a line drawn through the north line of Macoupin. The region of the Grand Prairie, and the northeast portion of the State, shows the least woodland. The most heavily timbered county in the State is Randolph, which, although settled in 1683, nearly two centuries ago, has yet to-day two hundred and eighty-one acres of woodland for every square mile of its surface. Next to it come Calhoun, Hardin, Pope, Williamson and Edwards. The opposite pole we find in Ford county, with only six acres of woodland to the square mile, and this is succeeded by the adjacent counties of Livingston and Grundy. In general, we may say, in Illinois that the existence of forests depends chiefly and primarily upon drainage. The well-drained counties have natural forests, the badly drained have not.

As density of population bears upon agricultural statistics, it may be well to notice the difference in our counties. Cook, of course, with Chicago included, has the most dense population, or 356 to the square mile. Excluding the city, it sinks to about 50 inhabitants to the square mile. St. Clair, Peoria and Kane come next, with 77, 76, and 72 inhabitants, respectively, to the square mile; two counties range between 60 and 70; eight between 50 and 60; twenty-one between 40 and 50; fifty-

six between 30 and 40; ten between 20 and 30; and one—Ford—has only 19 inhabitants to the section; whilst Iroquois and Jasper have but 22. The whole State averages about 45 inhabitants to the square mile, or one for every fourteen acres of land. We are not over populated.

The territory of which Illinois is composed has contained, at different eras, the following

POPULATION :	
1800.....	2,458
1810.....	12,382
1820.....	55,162
1830.....	157,445
1840.....	476,183
1850.....	851,470
1860.....	1,711,951
1870.....	2,539,891

Most notable in this great increase of population is the decade 1850-60. "So large a population," said Superintendent Kennedy, in his preliminary report, "more than doubling itself, in ten years, by the regular course of settlement and natural increase, is without a parallel."

Of the population of 1870, 2,511,096 were whites, 28,762 free colored persons, one Chinese, and thirty-two Indians. The counties containing more than 1,000 free colored persons, were the following :

Adams.....	1,567
Alexander.....	2,296
Cook.....	3,858
Madison.....	2,214
Pulaski.....	2,394
Randolph.....	1,137
Sangamon.....	1,166
St. Clair.....	1,297

Considerably more than half the colored population is concentrated in these eight counties. The solitary Chinaman is accredited to Morgan, and Pope has eleven of the thirty-two Indians.

Looking to nativity and foreign parentage, we find that we have 2,024,693 native, against 515,198 foreign born inhabitants; or, speaking in general terms, one person in five is of foreign birth. Nearly as many more were of foreign parentage on one or both sides, making nearly two in five of our population foreign or of foreign parentage.

The counties having exceeding 10,000 foreign born inhabitants are :

Cook.....	166,772
Henry.....	10,278
Kane.....	10,336
La Salle.....	16,262
Madison.....	12,880
Peoria.....	11,673
St. Clair.....	18,321
Will.....	14,587

About half the foreign born population is found in these eight counties, the ratio of foreign born to native population being largest in Cook.

Of the native population our good commonwealth herself can now claim to be the mother of 1,181,106. Of other States the following have sent us more than 25,000 each :

Indiana.....	86,432
Kentucky.....	63,297
Missouri.....	26,824
New York.....	133,290
Ohio.....	162,623
Pennsylvania.....	98,352
Tennessee.....	44,012
Virginia and West Virginia.....	33,668

Of the foreign population the following countries sent us each more than the same number :

British America.....	32,388
Germany.....	203,750
England.....	53,886
Ireland.....	120,162

Examining localities, we find that the Ohio emigrants have gathered in the greatest numbers in Champaign, Cook, Fulton, McLean, Shelby and Vermilion ; those from New York, in Cook, DeKalb, Kane, Knox, LaSalle, McHenry, Ogle, Whiteside, Will and Winnebago ; those of Pennsylvania, in Carroll, Cook, Fulton, Henry, LaSalle, Lee, McLean, Ogle, Stephenson and Whiteside. Indiana, as might be expected, simply overflows into our adjacent counties without the same selection of abiding places that is made by more distant States. The Kentuckians have come specially to Adams, Coles, Cook, Edgar, Macoupin, McLean, Morgan and Sangamon.

The German born citizens are found, in numbers exceeding 5,000, in Adams, Cook, Madison, St. Clair and Will.

The acres of land reported as in farms, as I have stated, are 25,882,861 acres, valued at \$920,506,346, or about \$37 per acre. These farming lands are divided into 202,803 farms, or an average of 128 acres to a farm, against 146 acres in 1860 and 158 in 1850. The average of all the farms in the United States is 153 acres, showing us already below the average and settling down to small farms. Utah has the smallest farms—30 acres to a farm—and the District of Columbia comes next, with 56 acres to a farm. California shows 482 acres to the average farm, and Georgia 338, being the highest on the list.

Of the Illinois farms, 43 contain less than 3 acres ; 3,552 less than 10 ; 10,229 less than 20 ; 53,240 less than 50 ; 68,130 less than 100 ; 65,940 less than 500 ; 1,367 less than 1,000, and 302 more than 1,000 acres.

Taking the small farms, under 10 acres in size, we find the Egyptian and fruit growing county of Union to stand first with 240 farms, whose owners seem to reckon "ten acres enough." Vermilion comes next with 183 of these, and Cook and Effingham follow with 133 and 123 ten acre farms. The southern and wooded counties, as might be expected, furnish

a large majority of the farms of from 3 to 20 acres—Union county leading, and Vermilion over eastward coming next.

Of large farms we find, curious to say, that extremes meet, and Vermilion, one of the counties leading in small farms, has 23 farms of over 1,000 acres each; McLean has 21 and Morgan 17. Of farms exceeding 500 acres, McLean has 89, Sangamon 88, and Vermilion 67. So that we have no lack of large farms.

The largest farm in the State is undoubtedly that of M. L. Sullivan, of Ford county, who is said to have about 40,000 acres in a body. This gentleman, probably feeling somewhat cramped by the twenty odd thousand acres of his Champaign county farm, sold it and occupied this. The Champaign county farm has since been cut up and diminished in size. Jacob Strawn, of Morgan county, formerly owned one of the great farms of the State, about the size of a township, I believe; and Mr. Gillett, of Logan, has a ten thousand acre farm at Elk Hart Grove, Logan county. Praise a large farm, cultivate a small one is the Horation motto, and undoubtedly large farms are a great check to the growth of a community in intelligence and wealth. So much for our Illinois farms.

The farms of Illinois are surpassed in their aggregate value by those of Ohio, New York and Pennsylvania in that order. Whilst their value per acre somewhat exceeds those of Indiana, is considerably more than those of Wisconsin and Iowa, and is far ahead of those of Missouri, they are considerably below those of the eastern and older States of Ohio, Pennsylvania, New York and New Jersey.

Of farm implements and machinery Illinois has the value of \$34,576,587, or fourteen dollars' worth for every man, woman and child in the State, or about \$170 to a farm. The implements are 3.7 per cent. of the farm valuation. Compared with other States, we find it does a much larger portion of its farm work by machinery than the New England or Southern States, not quite so much as New York, rather more than Pennsylvania and Ohio, and decidedly less than the more prairied Iowa. The great prairies of the northwest are singularly favorable to the use of farm machinery.

Comparing county with county, the cash value of farms was greatest in Sangamon county with \$25,388,118 valuation. This is closely followed by LaSalle and McLean. The cash value of farms shows the lowest aggregate in the somewhat marshy county of Alexander, \$546,250; Massac and Pulaski, adjoining counties, comprising the peninsula lying between the Ohio and Mississippi.

Comparing the value per acre, we get about the same relative value per acre as is shown by the reports of the Board of Equalization. Counties near the large cities show the highest value per acre, Cook, St. Clair and Madison standing first. At the other extremity of the list

are counties lying in the Ohio and Illinois peninsulas, such as Alexander, Palaski, Massac, Hardin and Calhoun. These are now the counties of cheap lands, although containing tracts that for special purposes are among the best in the State.

In farm implements and machinery, LaSalle and McLean, the largest two counties of the State, come first, the former with \$895,963 worth, and the latter with \$810,167. Alexander stands lowest, with only \$22,353 invested in farm implements, or about \$100 to the section, and Pulaski next, with \$27,730. This compares curiously with the county of Putnam, which, although the smallest in area of any, shows \$70,491 valuation of farm implements, or \$420 worth for every square mile of its surface. But this is not extraordinary, as the prairie county of Champaign has about \$700 worth, and McLean somewhat more. As a rule, the prairie, level and easily worked lands, will show a greater percentage of investment in farm implements.

In the interesting matter of wages, we find that Illinois paid \$22,338,767, whilst New York and Pennsylvania only exceeded her in this respect. Of our own counties, Knox leads in the aggregate amount of wages paid, but this is undoubtedly a mistake. LaSalle is more probably the leader, having paid \$691,373 for farm labor. Madison comes next, \$638,773, and McLean close after, with \$632,051. Boone, considering its area and population, stands very high, paying \$498,080, an amount so large as to again create the suspicion of error. Of counties paying small amounts for farm labor, Richland has a pre-eminence, being put down at \$10,960, and amount so low as to lead us to suppose that this also is an error, as the county is considerably larger than Boone. We find, however, that Pope paid only \$16,496, and Saline \$16,867, showing that low wages or small farms predominate in the southeast, along the Wabash.

The total estimated value of all farm productions, including betterments and additions to stock, was \$210,860,585. This is exceeded only by New York, which reports \$253,526,153, and is succeeded next by Ohio, with \$198,256,907.

Only 17 counties of Illinois produced less than a million dollars' valuation. Lowest stands Hardin, with \$235,462, and next comes Alexander, with \$268,950. LaSalle produced most, or \$5,502,502, and next came McLean, with \$4,860,898. Adams, Champaign, Cook, Morgan and Sangamon produced in excess of \$4,000,000.

In orchard products Illinois stands fourth. It is surpassed by New York, Ohio and Pennsylvania, yet produced the value of \$3,571,789. Adams county is first in orchard production in 1870, being credited with \$170,540. Union, the great Egyptian fruit county, succeeds with \$150,576. Hardin is credited with only \$376, and Gallatin with but

\$1,045. The counties producing in excess of \$50,000 are Bureau, Edgar, Fayette, Fulton, Hancock, Johnson, Knox, Madison, Marion, McLean, Randolph, Rock Island, Sangamon, St. Clair, Tazewell, Vermilion, Washington, Wayne. These indicate pretty well the regions where orchard fruits are well established and successful. It will be noticed that they are very generally counties along the great rivers.

In the produce of market gardens, as we might anticipate, the counties near the great cities come first. Cook produced, in 1869, the value of \$149,489, St. Clair (opposite St. Louis,) \$93,142, and Madison, lying next to St. Clair, \$69,753. Some counties return nothing, and many but a few dollars, showing that we have yet much advancement to make in that direction. This is still more obvious when we make comparisons with other States. The value of the product of market gardens was only \$765,992 in Illinois, and it was excelled in this respect by seven other States, among which are Maryland and Massachusetts.

The value of forest products, as might be expected of a prairie State, is not very great—\$1,087,144—less than that of thirteen other States. Of our own counties, curious to say, Knox stands first, DeWitt second, Henderson third and McHenry fourth; although popular belief would have assigned those places to some of our southern and more wooded counties. I very much suspect that the returns were imperfect.

Home manufactures, as given in the census, indicate a more primitive state of society where they abound, and hence while we find Illinois to have the value of \$1,408,015, we are not surprised to find it outranked not only by the large States of New York and Pennsylvania, but also by such States as Missouri, Kentucky and Tennessee, the products of whose home manufactures exceed in value those of any other State.

So in Illinois itself. The county of Wayne, far down in southeastern Egypt, reports \$280,773 in home manufactures, and is followed by its neighbor, Hamilton, with \$98,620, while the great county of LaSalle has \$91,928, and McLean only \$74,694. The county of Cook reports but \$605.

In the value of animals slaughtered and sold for slaughter, Illinois occupies an enviable position. It amounted to \$56,718,944, the next State being Ohio, with \$40,498,375. This represents, however, not only animals grown, but those fed and fattened, and probably overstates the fact. Still the production of beef and other meats is great. Sangamon leads with a valuation of \$2,293,734; McLean comes next with \$2,133,735, and Knox is third with \$1,891,483. Fifteen counties in all exceed \$1,000,000 each. The counties that rate low are Alexander with \$40,806, followed by Pulaski and Massac as heretofore.

In value of all live stock, Illinois comes second to New York. The latter has a valuation of \$175,882,712, whilst Illinois has \$149,756,698.

Of our own counties, McLean ranks first, having a valuation of \$4,129,814; LaSalle comes second, with \$3,906,367, and Morgan third, with \$3,875,150. Sixty-two out of one hundred and two counties had live stock valued over \$1,000,000 each. Alexander had only \$120,047 worth, and Massac, \$133,439.

Coming to details, we find that of horses Illinois had 853,738, a horse for every three persons in the State and for every $2\frac{3}{4}$ acres in cultivation. This exceeds the number in any other State. Ohio comes next, with 609,722. Illinois has 9 per cent. of the horses of the country, enough to draw all its own population, and take Ohio into the wagon.

These horses are found in the largest number in LaSalle, which has 24,673; in McLean, with 19,943, and Bureau, with 19,193. Alexander has fewest, 488, and Pulaski comes next with 871. They more and more replace oxen except in the more wooded and primitive counties.

Of mules and asses Illinois has 85,075 less than Georgia, Kentucky, Missouri and Tennessee. These animals abound in a different class of counties. Madison has 3,070, Sangamon, 3,046, Adams, 3,018. Thirty counties have more than 1,000 each. They seem to accompany the southern rather than the northern element of our population. There are but 90 in Putnam, 94 in Lake and 95 in Boone counties.

Of milch cows, Illinois has 640,321. New York has nearly double that number, and Pennsylvania and Ohio both exceed it. Cook county has 23,063, a result of the proximity of Chicago. Will has 18,193, LaSalle, 17,605, McHenry, 16,378. Twenty counties have more than 10,000 each, the southernmost of which is Adams, and most of which are in the valleys of the Fox or Rock Rivers. In other words dairying thrives most in northern latitudes, and where the water is clear. Alexander, Pulaski and Massac furnish the minima again, with 496, 842 and 948 cows, respectively.

Of working oxen, Illinois has 19,766, or less than *twenty-six* other States, and against 90,380 that we had in 1860. Milch cows have more than doubled, but oxen have fallen off nearly 80 per cent. The "Bull Whacker," with his detonating lash and strange cath, like Horace Greeley's ideal young man, has "gone west," to exhort the impenitent bullocks of the plains. They linger in our southern counties; Hamilton has 1,124 working oxen; Union 1,079; Williamson 1,047, and Pope 1,016. All the counties having more than 550 are Egyptian, and many of the northern and central counties report none at all.

Of other cattle, Illinois reported 1,055,499, far in excess of any other State, except Texas, which in turn had nearly three times as many as Illinois. Of our own counties, Morgan comes first with 30,344; LaSalle comes next, with 29,244, and Bureau next, with 28,999. The minimum of other cattle is found in Alexander, with 642; Massac with

1,064, and Pulaski with 1371; forty-two counties have more than 10,000 cattle each. South of Macoupin, with the exception of Hamilton, there is not a county of these forty-two, and with a few exceptions they lie north of Springfield. This is partly a result of difference of climate and soil. The southern counties are strongly tempted by their success in winter wheat and fruit growing to neglect animal husbandry, and their hotter summers are less favorable to the growth of grass; whilst the northern counties succeed specially in grass growing, and cultivate the cereals with some drawbacks of climate, etc.

Of sheep, Illinois has 1,568,286, less than six other States. The number has doubled, however, since 1860 in Illinois, while it has not increased thirty per cent. in the United States. Vermilion county is credited with the largest number of sheep, 67,890, with Lake close after it with 67,763; sixty-four counties have more than 10,000 sheep each. Alexander has the fewest, 1,007, and Woodford only 1,331. Yet, upon the whole, sheep seem better distributed than cattle.

Swine, however, are a more common and popular domestic animal. Of these, Illinois had 2,703,343, or something more than a pig for every person within its borders. This is only a small increase over 1860, but Illinois is now the leading State in pork production, Missouri standing next, and not far removed. Sangamon county comes first with 76,429; McLean second, with 62,007; and Knox third, with 61,768. Only eight counties have less than 10,000 each, the lowest being Alexander, with 4,986, followed by Massac and Putnam. The southern counties are relatively stronger in this than in other domestic animals, and make a better showing than the advocates of a greater variety of meats might desire.

In wheat, Illinois, as heretofore, though less emphatically, leads the van of grain producing States. She had 23,837,023 bushels of all kinds of wheat in 1860, and in 1870 shows 10,133,207 bushels of spring, and 19,995,198 bushels of winter wheat, making an aggregate of 30,128,405 bushels. This is 12 bushels of wheat for each of its inhabitants, or a ration of 10 pounds of flour a week for every man, woman and child throughout the year.

I have taken some pains to classify the figures, and find that twenty-five counties, lying solid in the north end of the State—excepting Ogle—extending down to Rock Island and Ford, on either hand, produced less than 5,000 bushels each of winter wheat, and may be designated as spring wheat counties. Forty-four counties, lying solid in the south end of the State, and extending up to Pike and Coles, produce less than 5,000 bushels spring wheat each, and may be properly called winter wheat counties. In aggregate yield, in the remaining counties, St. Clair comes first, with 1,562,621 bushels of winter, and 2,550 of spring wheat. This is over 30 bushels of wheat to every person of its popula-

tion, or half a barrel of flour a month. Madison comes next, with 1,207,181 bushels of winter wheat, and 550 of spring. Stephenson and Ogle give the largest aggregates of spring wheat, the former returning 527,394 bushels of spring, and 2,118 of winter wheat; the latter 497,038 of spring, and 5,580 of winter wheat.

Looking at yield per acre, without reference to aggregate, and we find Randolph, also the most wooded county in the State, standing first. This is not an unexpected result. The quantity and quality of the wheat and flour of Randolph and surrounding counties have long been recognized by dealers and millers. Monroe, Alexander and Scott come next; St. Clair, Madison and Calhoun not much after. The minimum of product per acre is returned from Ford, Grundy and Livingston, the three least wooded counties in the State. The association might mislead somewhat, as some would infer that forest protection in Randolph, and the lack of it in Livingston, was the cause that produced the result. But the relative abundance and scantiness of wood and wheat in these two counties is more probably a result of the same cause—drainage in one county, and the lack of it in the other. 1869, which generally furnished the products that appear in the census of 1870, was a wet year, and the flat, though fertile prairies that lie in the upper part of the Grand Prairie did not appear to good advantage in consequence.

Of rye, Illinois produced 2,456,578 bushels, about a bushel a piece for each of its inhabitants. It was slightly surpassed by New York, and a good deal by Pennsylvania. The crop has increased in Illinois since 1860 250 per cent., but has diminished in total production. In this State it has undoubtedly taken the place, to a certain extent, of winter and spring wheat, as a hardier grain, ranking, in this respect, after oats and barley, but before wheat and Indian corn. Ogle comes first with 157,504 bushels, and next to it, Woodford, with 137,985, and Stephenson with 135,362. It is found in quantity exceeding 10,000 bushels in just one-half of our 102 counties, but in many southern counties the amount sinks to a few hundred bushels or nothing.

Of Indian corn, Illinois produced 129,921,395 bushels, and has been doing better ever since. The next State is Iowa, with 68,935,065 bushels, or not much more than half as much. The increase over the product of 1860 is not large, being about 12 per cent. Yet such a product is an immense fact. It is 52 bushels of corn to every person—man, woman and baby—in the State, or a bushel of corn a week every day in the year—four rations under the slave systems.

We are not less amazed when we examine the aggregate product of counties. Sangamon produced 4,388,763 bushels; Logan 4,221,640. Each of these counties, if they were such bad farmers as to ship and sell all their corn, could load a train of 40 cars a day 300 days in the

year. That illustrates the need the west has of every possible and practicable outlet for its immense surplus. Five other counties produced between three and four million bushels; fourteen range between two and three millions, and thirty-four more exceed one million.

The greatest percentage of surface was planted in Stark, if we may rely on the assessor's reports, and the smallest in the wheat growing counties of Randolph, Monroe and St. Clair. The best yield per acre was in Morgan, and next to it stood the adjoining and nearly adjoining counties of Scott and Menard, with Logan not far off, showing a little north and west of Springfield to be the pre-eminently fit corn ground of the State, at least in a wet season. Richness of soil and natural drainage seem to meet here.

The poorest product of corn, as well as of wheat, appears in the flat prairies of Grundy, Livingston and Ford, and emphatically declare the policy of the farmers of that part of our State. A friend suggests that there has been less exaggeration in the returns of production from that quarter; but after duly weighing his argument, I cannot concede that it has much force, though it may qualify my statement.

Of oats we produced 42,780,851 bushels, leading by six millions any other State, with Pennsylvania and New York coming next. We nearly tripled our product of 1860. Oats, like rye, have probably gained at the expense of the wheat crop, and replaced to some extent spring wheat in the northern counties. The greatest aggregate production was in Will county—1,868,682 bushels. Next comes Cook, with 1,584,225, and La Salle with 1,509,642 bushels. De Kalb, the one other county producing in excess of one million bushels, lies in the same part of the State. The cause of this excessive local production I hardly understand. Fourteen counties produce less than 100,000 bushels each, lowest of which stands Scott, with 13,462 bushels. Classed among the first in wheat and corn production, that fertile little county can afford to be last in this not very profitable crop. The oat crop is found mainly in the northern counties, and diminishes southward.

Of barley, Illinois produced 2,480,400 bushels, or nearly two and a half times as much as in 1860. California and New York grew more than three times the quantity however, and though we come next there is no reason to say that the crop has received special attention in this State. The census returns make no distinction between winter and spring barley, but I presume our State would show the same facts as in regard to wheat—that the best yield and finest product is winter, and that it is grown in the southern counties. Ogle gives the largest product, 317,462 bushels; De Kalb comes next, with 289,417, and Stephenson, with 165,266. The other counties having more than 100,000 bushels product, are Carroll, Kane and Lee, all among the most northern coun-

ties and lying adjacent to those already named. Thus, barley is clustered in its greatest production, like oats, into a few neighboring counties. No county south of Sangamon produces as much as 10,000 bushels except St. Clair, which, lying next to the St. Louis breweries, and producing some fine crops of winter barley, at least ran up its products to 48,192 bushels. But barley, more than oats and rye, seems to be a northern crop.

Of buckwheat, a still less important crop, unless in respect to fertilization, Illinois produced only 168,862 bushels, whilst New York reached nearly 4,000,000, and Pennsylvania 2,500,000. This was not much more than half its product in 1860. Only one county—McHenry—produced 20,412 bushels of this, and the counties producing more than 5,000 bushels are all in the upper north, except Wayne, which returns 6,399 bushels. Many counties return none or a few bushels. To what extent this growing neglect of the hot-cake crop is owing to an increasing distaste for flap-jacks and golden syrup, or a conviction that the crop is unprofitable, I am unable to decide.

Rice, though grown as far north as Tennessee, and a possible product, does not appear in the census of Illinois. It is given in 10 States, but South Carolina, Georgia and Louisiana have almost a monopoly of its production.

Of tobacco, Illinois produced 5,249,274 pounds, less by more than a million than in 1862, being surpassed often greatly by 10 other States. Kentucky produced 105,305,869 pounds. In the production of Illinois tobacco, two new counties come to the front, Saline with 1,155,941 pounds, and Williamson with 1,152,589. Thus, two counties far down in the southeast produce more than 40 per cent. of our crop; and the only counties north of Coles producing more than 10,000 pounds are the adjoining counties of Stephenson, with 87,803 pounds, and JoDaviess, with 12,935. But the counties on the Wabash and Ohio slopes grow nearly all the filthy weed which tobacco haters assign to a satanic origin, and loving smokers consign to a satanic fate.

Of cotton, the product of 20 States, Illinois grew only 465 bales against 1,482 bales in 1860. This was produced in 14 of our southern counties—a majority of them growing none. More than half of the amount was produced in the adjoining counties of Jackson and Williamson.

In the more important product of wool Illinois has done better. It stood eleventh in 1860. It stands sixth in 1870, with 5,739,249 pounds. Lake county leads with 318,042 pounds. The adjoining county of McHenry comes next with 290,022 pounds. 12 counties produced more than 100,000 pounds, and several of these, like those named, lie in the north-east corner of the State. Comparing the wool with the sheep statistics, we observe the satisfactory fact that whilst the sheep have

increased 104 per cent. the wool from them has gone up 185 per cent., tending to show that we have better sheep.

Coming to root crops, we find that in potatoes Illinois is far behind New York, Pennsylvania and Ohio, producing 10,944,790 bushels, or something more than 4 bushels for each of its inhabitants. Among our own counties, rather unexpectedly, Madison leads with a product of 557,460 bushels. This is the result of growing in the American Bottom for the St. Louis and Chicago markets. Cook comes next with 444,554 bushels, grown probably for the Chicago market. Thirty-six counties produce more than 100,000 bushels. Nearly all of these are northern and central counties; but Hardin, the little county of the Ohio, and St. Clair are among the number; Scott reports the smallest amount, 12,457 bushels, and Massac stands next to it with 13,125.

Of sweet potatoes only 322,641 bushels are credited to Illinois, which is little more than it produced in 1860; 75,052, or nearly a quarter of these, were grown in Union county; Williamson, Jackson and Madison come next. It is interesting to notice that they were grown in every county in the State except Jo Daviess—and probably in that—a thing that ten years ago would hardly have been deemed possible.

Passing from potatoes to wine upon a principle of association only suggested by the arrangement of the census tables, we find Illinois to have produced 111,882 gallons, being exceeded by California, Missouri and Ohio; 44,711 gallons of this, or 40 per cent., was produced in the single county of St. Clair, a result of the German population and favoring soil and climate of that county; Hancock, Boone, Madison and Monroe come after. Seventeen counties return more than 1,000 gallons. Most of these are in proximity to St. Louis, and more or less occupied by a German population. Upon the whole, wine culture is not much developed, although it has made a great advance since 1860.

Of dairy products, Illinois returns 36,083,405 pounds of butter, 1,661,703 of cheese, and 9,258,545 gallons of milk sold. Its butter product has increased 22 per cent.; its cheese product has diminished 11 per cent.; and its milk product has been built up since 1860. It is the fourth State in the production of butter, but is far behind New York, Pennsylvania and Ohio; it is seventh in the production of cheese; it is fifth—though far behind—in the amount of milk sold. In short, our dairy production is one of the most unsatisfactory results of the census, and would be more so but for the consciousness of our good work in fat cattle. Cook, LaSalle and Will are rival counties in dairy production. One leads the other two in butter, another in cheese, and a third in milk. Many of the northernmost counties, especially those in the northeast, are heavily engaged in one form or another of dairy production.

In the southern, hotter and less watered (I allude to the county, not the

milk) region of Southern Illinois, the production sinks to a very low point.

Of hay, Illinois produced 2,747,339 tons, more than Ohio, a little less than Pennsylvania, and not half as much as New York produces. Its relative position is not far different from that of 1860, but the absolute increase in the hay product is nearly 60 per cent. Of our counties, Cook leads in hay production with 129,210 tons, and is succeeded by the adjoining county of Will with 106,196 tons. The counties producing less than 10,000 tons are nearly all south of Springfield, and mostly in the south-east. Those producing 50,000 tons and over are all north of Springfield, and most of them quite in the north end of the State.

Of seeds Illinois produced 10,486 bushels of clover, and 153,464 of grass seed, far below its product of 1860, but leading other States in grass seed though ninth in clover seed production. Wabash county furnished the most clover seed, Schuyler came next, and Lawrence, adjoining Wabash county, came third; so that clover seed seems to have been made a specialty in that region. LaSalle raised 22,087 bushels of grass seed and DeKalb 13,367.

Hops are produced to the extent of 104,032 pounds, our State being only eighth in that product, and far behind New York, which runs up to 17,000,000 of pounds. What little we have is mainly the product of a few counties in the north-east corner. McHenry 19,391, Boone 18,710, DeKalb 15,580. 66 counties produce it.

Hemp has nearly disappeared, only 174 tons having been grown against nearly 3,000 in 1860, and the whole product of the country is not more than one-tenth what it was ten years ago. It was grown in 10 Illinois counties—Douglas, Hamilton and Pope being the principal.

In the production of flax we were exceeded by New York, and especially by Ohio, but increased on our production of 1860 largely; we have 2,204,606 pounds. Kane, Ogle, DeKalb and Lee produced a very large part of this. It was grown in 46 counties. Flax seed is reported from 58 counties to the amount of 280,043 bushels, showing that the plant is grown more for seed than for lint. Iroquois, Lee and LaSalle grew the most.

Maple sugar is made in sixty counties, to the amount of 136,873 pounds, only a slight increase over 1860. Fifteen States do better, many of them largely so. Our sugar is mostly made in Clark, Edgar, Hancock, Menard, Schuyler and Vermilion. Over on the Indiana line and up the Illinois is the best sugar ground.

Maple molasses was made to the amount of 10,378 gallons in thirty-six counties. This is less by half than in 1860.

Of sorghum molasses we had, however, 1,960,473 gallons, which is a little less than Ohio or Indiana produced. Every county but one returns

a production of it. Shelby and Edgar lead with 75,183 and 67,984 pounds. Some of the northern counties return but a small amount, and I suspect its production will go to the southern counties.

Of wax we had 46,262 pounds, and of honey 1,547,178, the former decreasing, the latter increasing slightly since 1860. New York, North Carolina and Tennessee lead us in wax, but we are first in honey, flowing with that if not with milk. Franklin and Wayne, wooded counties, lead in wax, which is still to a considerable extent, I believe, a product of the bee hunter. Sangamon, McLean and Franklin produce the most honey. All but these counties make some return of it. The counties producing least are in the southeast.

Such are the facts of our agricultural production, to which I beg leave to add the following

REFLECTIONS.

1. Our State produces an undue proportion of grain. We grow a great deal more animal-feeding grains and fodder than we consume. There is a bad balance between animal and plant production. See the cheap stock fields, and the fact that stock men can winter animals at less expense than they can summer them—perhaps for one half. Wheat, or rather flour—reserving the manufacture and the bran and other offal to ourselves—should be the only grain carried out in quantity. Our corn should be fed to animals, made into high-wines, into corn starch, or anything else; but don't, for the sake of good farming, ship so cheap and bulky an article, unless the price is high. Don't constitute yourself a railway freight producer, and pay forty-two cents to carry a twenty-three cent bushel of corn to New York. Do anything but ship the highest fertility of your soils for high freight and low prices to New York. You are not worthy the name of farmers, or freemen, if you do.

2. We want more of the home industries or farm manufactures. We should make more butter and cheese, more ciders, wines and vinegars; more canned fruits and the various secondary products that will give the farmer and his family something more than the price of the raw products of his farm; and so

3. We want a more diversified industry, such as begins already to appear around Chicago in the Fox river counties. We find there more of the grains not commonly grown, more grass and hay, more butter, cheese and milk, more hops, and so on. To a certain and less extent this is true around St. Louis on the Illinois side. But there are dead levels of husbandry throughout central and southern Illinois where corn and oats, perhaps cattle and hogs, constitute the entire ways and means of rural economy. Employment is inconstant and uncertain. The success or failure of the year is staked upon one or two products. This has succeeded to a wonderful extent in some cases, but it cannot under ordinar

conditions, and in the long run. So in the south, and especially in the south-east, we see an adherence to old practices now unprofitable, and oxen and short supplies of farm implements prevailing.

4. We want extensive drainage in the broad and fertile prairies of the east. They grow short crops of timber, short crops of corn, and short crops of wheat on a rich and exuberant soil. Ford county has 6 acres of woodland on the square mile, whilst Randolph has 280. Grundy has less than 5 bushels of wheat to the acre, whilst Randolph shows 30. Livingston has perhaps 20 bushels of corn to the acre, whilst Morgan has 50. These are results of the wet summer of 1869.

5. Ours is the Empire State of the West and the garden and glory of the Union. We can feed the teeming millions of the East with bread and meat, and lead the agricultural production of the age. We can provide the country with food, as we have with presidents and statesmen, generals and armies. We furnish New York with cattle and with a model constitution. We have coal enough to drive the steam engines, the looms, the forges and furnaces of future ages; and there stands only in our way the looming power of the gigantic monopolies that succeed the lordly aristocracy of former ages. Putting them under our feet as our servants and not masters, making corporations and their aggregated wealth serve the public interest for fair wages and not for extortionate gains, and there is no perceptible limit to the growth of our magnificent State. Forward, then, to the great and glorious work of making two blades of grass grow where one grew before, and protecting the sons of toil in the enjoyment of their fairly-earned wages. "Equal and exact justice to all men" is a motto worthy of freemen and farmers.