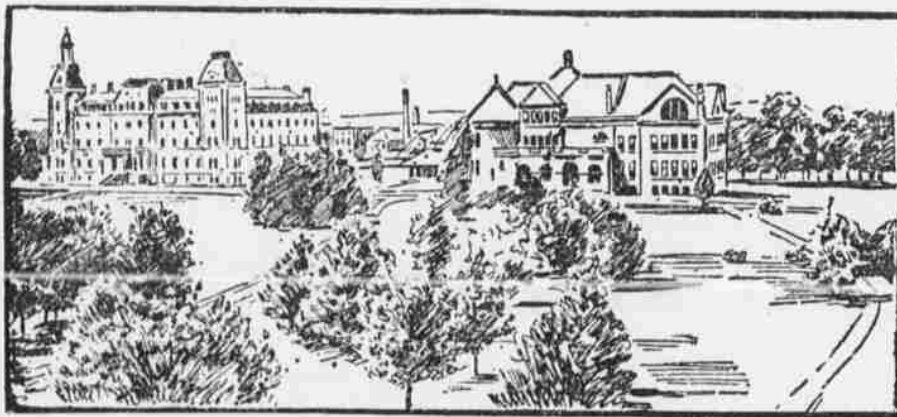


# FARMER OF THE NINETEENTH CENTURY

He Pursues His Calling in a Scientific Way These Days and Does Not Leave Everything to Providence and the Weather.

It used to be the rule that when a man was not fit for anything else he was considered good enough to be a farmer; that if he hadn't brains enough to master military tactics or the intricacies of the law or medicine or of theology, and was utterly lacking in creative ability, then his proper sphere of usefulness was the farm. And in those days even the "gentleman" farmer was a person of inferior standing, and he was made to feel his insignificance whenever he came in contact with the superior persons who ruled the State and made or expounded its laws. Society spoke of him as a "gawk," and his sons and daughters were "country bumpkins." But all this

who are entitled to write. "Bachelors of Science" after their names. They know all about the soils and the seasons, and what crops are adaptable and what are not, and their science goes so far as to include conditions in foreign countries and to be able to judge from them whether corn, or wheat, or barley, or whatever product of the farm will be most in demand for export, and so command the readiest market and the best price. They have reduced farming to a science, and are teaching it as a science. The course in agriculture includes history and government, French and German, English, and the higher mathematics and music, so that our farmers of the next genera-



IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

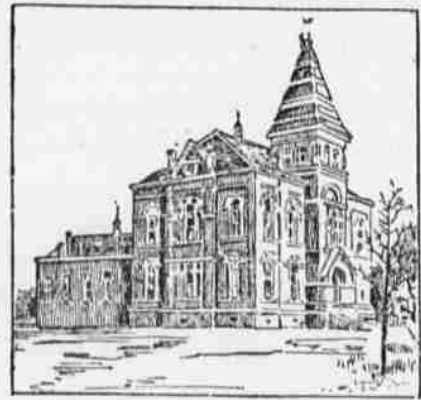
has changed and is destined to still further change. Science, which has done so much for the world at large, has taken the farmer in hand and is investing the man and his works with the dignity and standing that are theirs of right. The masses are being made to realize what they have known dimly all along, but never fully appreciated—that it is the farmer who feeds them, and that he is more necessary to them than they are to him; that without him works great and small would come to a stop and the peoples of all the

tion will not only know how to get the best and the most out of the ground, but will be able to hold their own for general information and polite accomplishments with the elect of any land.

### Where They Are Taught.

Colleges of agriculture are maintained in universities, with the aid of national funds, in Arizona, Arkansas, California, Georgia, Idaho, Illinois, Indiana, Louisiana, Maine, Minnesota, Missouri, Nebraska, Nevada, New York, Ohio, Tennessee, Vermont, West Virginia, Wisconsin, and Wyoming. In Massachusetts Harvard University has a school of Agriculture known as Bussey Institution. Besides these, agricultural and mechanical colleges have been organized in Alabama, Colorado, Connecticut, Delaware, Florida, Iowa, Kansas, Kentucky, Maryland, Michigan, Mississippi, Montana, New Hampshire, New Jersey, New Mexico, North Dakota, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Virginia, and Washington. Separate institutions of this sort are maintained for colored students in Alabama, Delaware, Florida, Mississippi, North Carolina, South Carolina, and Virginia. Massachusetts has the only college whose curriculum is wholly devoted to agriculture.

In the universities in which courses in agriculture are maintained the general tendency is to make this course correspond in scope and thoroughness with those given in the other departments, to divide the instruction in agriculture among an increasing number of specialists, and to provide buildings and apparatus and illustrative material on a scale in keeping with those in other branches. At the same time efforts are making to bring the university in close touch with the masses

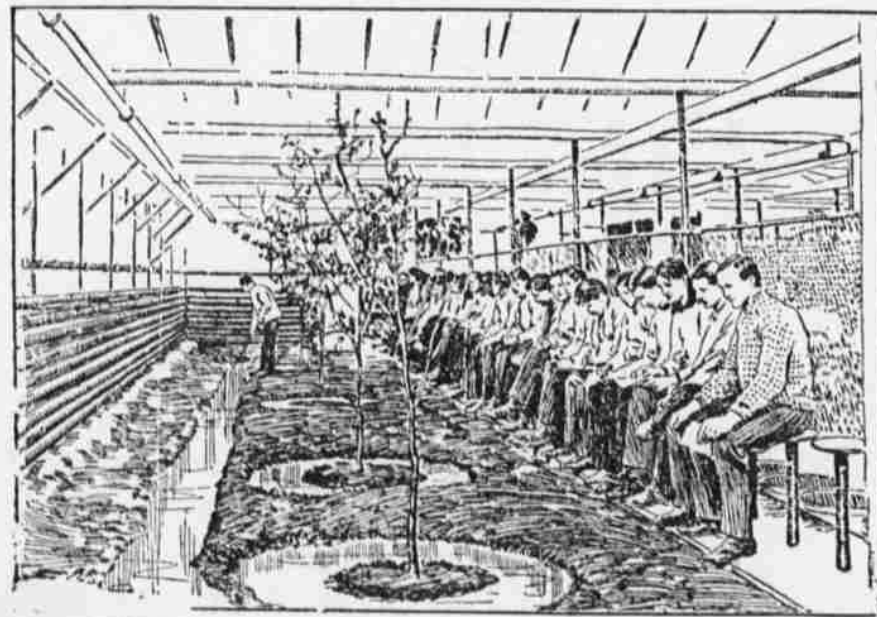


CHEMICAL LABORATORY, ALABAMA INSTITUTE.

earth be reduced to a state of savagery and cannibalism.

### Farmer Knows Why.

Science is bringing not only the public to a realization of the importance of the farmer, but the farmer himself to an appreciation of the importance of his work and of the necessity of fitting himself for it by studying nature and inducing her by scientific means rather than by haphazard to yield her store. Formerly the farmer could tell you "when" without knowing "why." Experiment showed him that rotation



LESSON IN IRRIGATION—UNIVERSITY OF WISCONSIN.

in crops made his land produce better and last longer, but he couldn't tell nature's reason for it, nor explain the thousand other seeming mysteries of the soil. Science has done and is doing that for him. It is experimenting for him day in and day out the year round, and teaching him the why and the wherefore. Uncle Sam is backing science in this matter, and the farmer is getting the benefit without cost. The farmer learns from the bulletins that are sent out by the Department of Agriculture, and all over the land the farmers' sons and daughters are taking courses in agriculture and horticulture, farm gardening and dairying, and stock breeding and stock raising, in colleges supported jointly by the State and Federal governments.

Their instruction is practical, too, for the colleges have farms under cultivation and herds and droves of cattle and swine, and dairies and truck farms and orchards. The instructors are men

of farmers through special schools, farmers' institutes, nature teachings, and other forms of university extension work. Along with this is the deepening and strengthening of the scientific and practical researches, carried on with a view of widening the world's knowledge of the facts, laws, and processes required for the improvement of agriculture.

### Thirty Thousand Farmer Students.

The classes in agriculture in these schools range in enrollment from 200 to 900 students. The total enrollment is 30,000. The full course in agriculture covers four years, and practical farmers who know enough of other matters to make them intelligent and desirable citizens are being sent out from these colleges at the rate of 8,000 a year, or 80,000 in a decade. That they will assist wonderfully in the development of the country need not be doubted. Their knowledge and training will enable them to get more out

of the earth and themselves than the tens of thousands of other earnest and honest men who have taken up homesteads and gone to farming without any knowledge of or preparation for the cultivation of the soil.

In an article in the Year Book of the Department of Agriculture on "Some Types of American Agricultural Colleges," A. C. True, Ph. D., director of the Government's experiment stations, describes the essential features of some of these institutions of learning. Of the Massachusetts Agricultural College, which is near Amherst, on a farm of 400 acres, situated in a most beautiful part of the Connecticut river valley, he says:

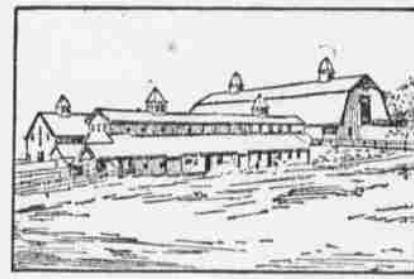
"In 1897 the college had permanent endowment funds aggregating \$360,000, and its buildings, farms and equipment were valued at about \$315,000. The college buildings include combined dormitory and class room building, chapel and library, laboratory for chemistry and physics, entomological laboratory with insectary, botanic laboratory and museum, drill hall, dormitory, president's house, several residences for professors, farm houses, boarding house, horticultural plant houses, and barn, including creamery and dairy laboratory. The experiment station also has a chemical laboratory, botanical laboratory with plant house, and barns.

### Excellent Equipment.

"On the farm 150 acres are under cultivation with a variety of field crops, and the extensive college barn is stocked with 100 head of cattle and equipped with the most improved agricultural implements and machinery. The horticultural grounds cover 100 acres, with orchards, vineyards, small fruit and vegetable plantations, and groves of forest trees. Much attention is given to floriculture and landscape gardening, and the ample plant houses are well stocked with numerous varieties of exotics. Some eighty acres are devoted to the work of the experiment station, including numerous plot experiments with varieties of field and hor-

they are required to attend prayers and worship in the college chapel.

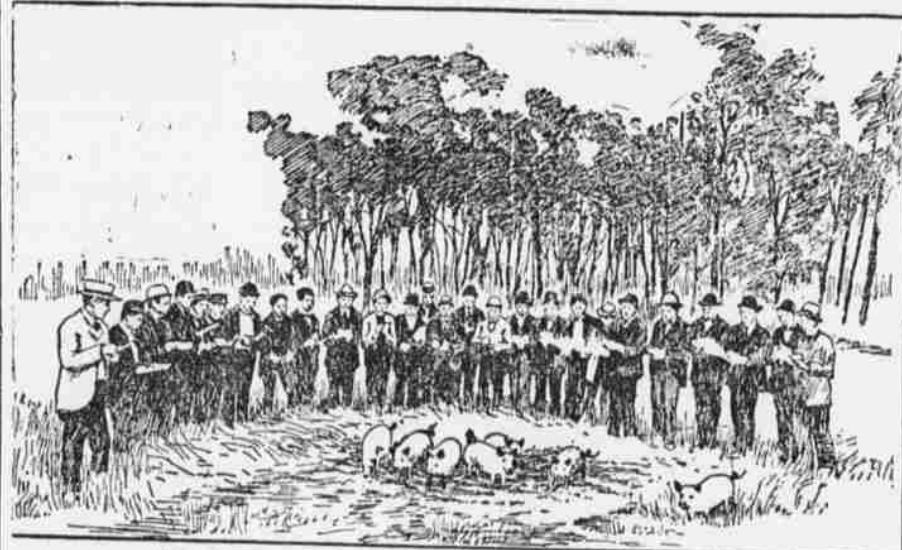
The Michigan State Agricultural College is the oldest in the country. It was established by an act of the Michigan Legislature in 1855, and for thirty years, like the Massachusetts College, had only an agricultural course. In 1890, under a materially increased income, a mechanical course was added, and later a woman's course. The laws of the State prescribe that it shall be a "high seminary of learning, in which the graduate of the common school can commence, pursue, and finish a course of study terminating in thorough theoretic and practical instruction in those sciences and arts which bear directly



MASSACHUSETTS COLLEGE BARN.

upon agriculture and kindred industrial pursuits."

The college land, comprising 676 acres, is divided into the farm of 230 acres, devoted to field crops grown under a system of rotation, forty-five acres of woodland pasture, 114 acres of lawns, gardens and orchards, 240 acres of forest, and 47 acres of experimental fields and plots. The farm is equipped with cattle, sheep and swine of the principal breeds. There are an arboretum of 150 species of trees, a botanic garden containing 1,200 species of native and foreign hardy herbaceous plants, with some shrubs, a grass garden of 200 species of grasses and clovers, and a weed garden of 100 species of the most troublesome weeds. The students in agriculture are required to work two and one-half hours a day on the farm or garden. The annual average expenses of students for board,



CLASS SCORING PIGS—IOWA STATE COLLEGE.

agricultural plants, fertilizers, methods of culture, etc., feeding experiments with animals, soil investigations, etc.

"The laboratories of the different scientific departments are well equipped with apparatus for experimentation and demonstration and with illustrative material, such as specimens of plants, insects, animals and machines, particularly those of importance in their relation to agriculture. The library of 18,000 volumes has been carefully collected with reference to the needs of an agricultural college, and is thoroughly catalogued and managed with a view to providing the students every facility for obtaining the information they desire to gather from books. It is one of the most extensive and valuable collections of books on the science and practice of agriculture to be found in this country.

"The instruction is given by a corps of eighteen professors and assistants. The chairs include botany, chemistry, agriculture, horticulture, zoology, veterinary science, mental and political science, English and Latin, modern language, mathematics and civil engineering, and military science and tactics. There is also a lecturer on farm law. The student is required to follow a definitely prescribed curriculum during three years, and in the last year of the course he is allowed wide latitude of choice among numerous specialties, English and military science being the only required studies."

For a time the college was open to men only, but women may now attend special elective courses in such branches as botany, entomology, floriculture, fruit culture, market gardening and dairying. Candidates for admission must be at least 16 years old and are required to pass examinations in English grammar, geography, United States history, physiology, physical geography, arithmetic, the metric system, algebra (through quadratics), geometry and civil government. The students as a rule room in the college dormitories and are boarded in clubs or private families. The expenses for room rent, board, fuel, washing and military suit for the college year are estimated to range from \$150 to \$300. Students performing labor at the college are paid by the State, and there are small endowment funds for the assistance of needy students. The students have their athletic associations and glee clubs and social amusements the same as at Harvard and Yale and

room rent, heat, light, books, laboratory and other fees are estimated at \$125. These expenses are often reduced by receipts for labor performed on the farm or elsewhere about the college. There are thirty or more professors and assistants in the faculty, and in addition to the chairs provided by the Massachusetts College there are professors of mechanical engineering, domestic economy, and household science.

### Negroes Not Received.

The Mississippi Agricultural and Mechanical College is conducted on the same general plan, except that women and negroes are not received as students. Out of a total of 308 students entered last year 316 elected to take the agricultural course. By farm labor the students may reduce their expenses there to \$100 a year.

Over 800 students took the farming course last year in the Kansas State Agricultural College, in Manhattan. The college farm comprises over 300 acres, and is well equipped with live stock. The State has supplemented the United States grants by the erection of a number of substantial buildings, which are valued at \$350,000. Students of both sexes are admitted at 14 years of age, after passing an examination in reading, spelling, writing, arithmetic, geography, English grammar and United States history. Connected with the course of study here is industrial training in several of the arts, to which each student is required to devote at least one hour a day throughout almost the entire course. Young men may have farming gardening, fruit growing, woodwork, ironwork, or printing. Young women may take cooking, sewing, printing, floriculture, or music. Tuition is free, and the annual expenses of the student range from \$100 to \$200. Students are paid at the rate of 10 cents an hour for work.

The Iowa State College of Agriculture and Mechanic Arts is a flourishing and well attended institution. It has fifteen buildings, erected by the State at a cost of \$500,000, and these include a hall for women. There are besides dwelling houses for professors and other employees, a creamery, barns, stables, seed houses and forcing houses. The college lands, of which 120 acres have been parked as college grounds, are 900 acres in extent. "The farm," Mr. True says, "consists of rolling prairie, bottom and woodland, and is stocked with good representatives of five breeds of horses, six breeds of cattle, seven

breeds of sheep, and six breeds of hogs. These animals are used in class illustrations and for the various experiments in breeding and feeding for milk, wool, growth, and maintenance conducted by the experiment station as a department of the college. All the crops of the farm are grown for some educational purpose; all the animals are fed by rule and system, and the results of their management reported upon and used in glass work. Labor is not compulsory, but students in the agricultural courses are given work that is parallel with their studies. Some students pay for their board by work in the mornings and evenings. There is a practical working creamery and cheese factory in operation throughout the year. During the summer season from 15,000 to 25,000 pounds of milk are taken in daily and manufactured into butter and cheese. The number of students in 1897 was 573, including women."

### New York Method.

In New York State the Agricultural College is an annex of Cornell University, and in 1897 there were 127 students taking the farming course. The tuition in agriculture at Cornell is free, and the yearly expense of the student ranges from \$300 to \$500. The four years' course in agriculture is designed to afford an education as broad and liberal as that given by other departments of the university, and leads to the degree of Bachelor of Science in Agriculture. The college farm occupies 122 acres of land, and it is well stocked with dairy cows, sheep, horses, hogs and poultry. The dairy building is equipped with modern appliances and machinery for making butter and cheese. Ten acres are devoted to the gardens, orchards, and nurseries of the horticultural department, which also has eight forcing houses. Candidates for admission to the Cornell agricultural course must be at least 16 years old and pass examination in English, geography, physiology and hygiene, history of the United States and England, Greece or Rome, plane geometry, elementary algebra and either Greek or Latin, and French or German, or advanced mathematics.

It is pretty much the same with all the other agricultural colleges. The student gets practical instruction and assists in practical work, obtaining at the same time the benefit of experiments made for the purpose of improvement in cultivation and in the quantity and quality of farm products. There is the same enthusiasm and, in some respects, extravagant devotion to athletics that obtains in other colleges, and there are musical, literary and social societies with more or less clannishness and secrecy. There are college papers and annuals, in which some serious journalistic work and not a little lampooning is done. The students are leading earnest and useful and happy lives, and they are judged by the same moral standards as are men and women throughout the country. They do much severe mental work, and enjoy the sports and social recreations of college life to the full.

With an institution of this sort in almost every State in the Union, the American farmer of the near future ought to be at the head of the procession of those who feed the world.

### WORLD'S PETROLEUM OUTPUT.

Yield Is More than 5,000,000,000 Gallons, Half of It from America.

More than 5,000,000,000 gallons of petroleum, according to the treasury bureau of statistics, is now produced annually in the world. Of this amount 2,500,000,000 gallons is produced in the United States, 2,250,000,000 in Russia, and the remainder is distributed among a dozen countries, Austria producing 87,000,000, Sumatra 72,000,000, Java 30,000,000, Canada 29,000,000, Roumania 24,000,000, India 15,000,000, Japan 8,000,000, Germany 7,000,000, Peru 3,000,000, and Italy about 1,000,000 gallons.

While the United States and Russia furnish the bulk of the world's petroleum and stand almost abreast in the quantity of crude oil produced, the amount of refined illuminating oil supplied by the United States is more than double that produced by Russia. This is due to the fact that a given quantity of United States oil produces three-fourths of its bulk in refined illuminating oil, while of the Russian oil the ratio is only about three-eighths.

### Deep Down in the Earth.

The deepest hole in the earth is at Schladebach, near Ketschau, Germany. It is 5,735 feet in depth and is for geologic research only. The drilling was begun in 1880 and stopped six years later because the engineers were unable with their instruments to go deeper.

### Cake at English Weddings.

The cake at English weddings is always a star feature. Usually at a fashionable affair it is fully six feet high and is a marvelous architectural structure of icing adorned with flowers and figures.

Some folks are so industrious that when they haven't anything else to do they worry.

It isn't what a woman says that influences a man, but the way she says it.

No man who has never been tempted is sure of his honesty.