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FROM THE FAIR TO THE LABORATORY: THE INSTITUTION- ALIZATION OF AGRICULTURAL SCIENCE AND EDUCATION IN MAINE

BY THOMAS REZNICK

Up until the mid-nineteenth century, agricultural science and education in Maine were primarily local affairs. Meeting in farm clubs and attending agricultural fairs, the Maine farmer performed most research by trial and error and by meeting on common ground with other farmers to discuss what worked and what did not. By the mid-nineteenth century, however, the farm clubs and county fairs waned and succumbed to the growing political influence of the Grange, which supported burgeoning agricultural scientific and educational institutions, such as the College of Agriculture and the Experiment Station. Through the auspices of the Grange, such institutions took the reins of agricultural science and education away from the farmer, and the field of agricultural science and education shifted from a “bottom-up” system to a “top-down” system of knowledge dissemination. Tom Reznick graduated from Colby College in 2007 with a B.A. in Science, Technology, and Society. In the fall of 2008, he will be pursuing doctoral studies in the history of science and medicine at Yale University. He currently lives in Brighton, Massachusetts, where he works for an environmental non-profit organization.

ON MONDAY, October 5, 1858, Edward Elwell, editor of the *Portland Transcript*, began an arduous three-day journey north to Presque Isle from Houlton, Maine. After arriving in Presque Isle, Elwell, several other journalists, and a few prominent Presque Isle citizens set out for the Aroostook River to visit farmlands in the vicinity. Elwell wrote, “This is an oats-raising country and the horses have the benefit of them. The first glimpse of the Aroostook drew exclamations of delight from all the party. It is a beautiful river, flowing quietly through the deep forest, like a sweet child wandering in the wilderness, and dallying with the flowers by the way. Its valley affords the best settling lands of



Aroostook Farm, n.d. Farmers in the early nineteenth century generated their own experimental science of agriculture through monthly farm-club meetings and fairs. In the second half of the century, agricultural science moved to the laboratory, the experiment station, and the university. University Photographs Collection. Courtesy of Special Collections, Raymond H. Fogler Library, University of Maine.

the county, and when under full cultivation must become the garden of Aroostook.”¹ This image of a garden featured prominently in Elwell’s writing. His vivid descriptions underscored the popular notions of Aroostook as a lush garden ideal for cultivation. However, Aroostook’s fertility was not what had drawn Elwell to Aroostook County. He was there to visit the fair.

By the afternoon, Elwell had made his way to the annual fair of the North Aroostook Agricultural and Horticultural Society. He was one of twenty-eight editors invited to the fair. From their accounts we are able to piece together a description of the day’s events. The journalists, busy all morning, had missed the livestock shows. Yet the premium lists, which noted the prizewinning farmers, fill in the missing details. These lists provide a glimpse into farm output in specific areas and times. Farmers often won premiums for livestock as well as crops, indicating that they farmed multiple products.²

The North Aroostook Agricultural and Horticultural Society (NAAHS) had hosted the fair since 1850. The group held regular meet-

ings, during which some members gave papers. Occasionally, a guest speaker would address the society. Edward Wiggin, a prominent member of Maine's agricultural community, who had addressed the Boothbay Harbor Agricultural society in 1883 and would later become State Grange Master, presented a paper on strategies for effective management of agricultural societies to the NAAHS in 1887.³ The discussions of agricultural trade topics at these meetings may be seen as a precursor of the more focused agricultural science and educational mission that organizations like the NAAHS would later embrace.

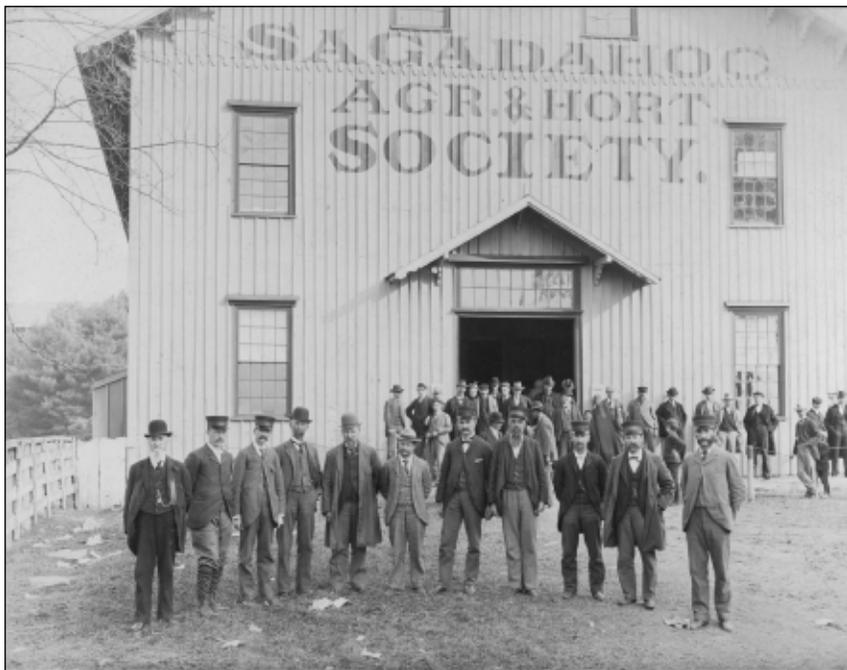
In the mid-nineteenth century, agricultural science and education emerged in organizations such as the farm club and the agricultural society. Later, as farms commercialized and as the Grange developed in Maine, this proto-institutional science moved from the fields to the laboratory. Institutions such as the Experiment Station and the College of Agriculture displaced farmers as the principal sources of agricultural science. Research, experimentation, and the dissemination of knowledge became the purview of these larger and more bureaucratic establishments.

Agricultural Science and Education in the 1850s

Historian Clarence Day lists four sources of agricultural education available to farmers before the establishment of the Maine College of Agriculture and the Mechanical Arts in 1867.

First, farmers could consult articles in several agricultural journals published in Maine. Ezekiel Holmes' *Maine Farmer*, founded in 1833, was the best known of these. There was also an informal network of amateur scientists in New England that investigated the science of farming. These early scientists included the founders of the Gardiner Lyceum, Robert Hallowell Gardiner and Benjamin Hale, whose dedication to agricultural education was revealed by the fact that they often used their own resources for experiments and published the results in the New England farm journals.⁴ Many of these amateur scientists were also influenced by a growing intellectual interchange with Europe, more advanced in agricultural science than the United States.⁵ While *The Maine Farmer* was well read within a select group, the average farmer had scant funds to subscribe to the New England and Maine publications. Furthermore, in remote areas, mail service was unreliable, making a journal subscription impractical if not frivolous, and illiteracy was a serious issue.⁶

Second, farmers could attend meetings of local agricultural societies.



The building is painted with the words, “Agricultural and Horticultural Society.” Farm societies and fairs served an important role in educating farmers and spurring innovation before the advent of the Grange and the Maine College of Agriculture and Mechanical Arts. Courtesy of the Pejepscot Historical Society, Brunswick, Maine.

Maine farmers enjoyed a long and fruitful relationship with agricultural societies. These organizations drew their membership from all walks of life, including artisan farmers, prominent tradesmen, and agricultural experimenters. Most societies covered an entire county. A few, however, such as the North Aroostook Agricultural and Horticultural Society, covered only a region of a county. Maine farmers had established New England’s first agricultural society, the Kennebec Agricultural Society, in 1787. By 1870, Maine had eight county societies and twenty-six town agricultural clubs.⁷ These societies relied upon three umbrella organizations: the Maine Agricultural Society, the Maine Horse Association, and the Maine Pomological Society. All of these groups collected statistics, performed field experiments, and held fairs. Members would share agricultural techniques and perhaps attend presentations by prominent agricultural scientists such as Dr. Holmes. More importantly, the agricultural societies enabled people to get together and discuss farming in the spirit of mutual interest.

THE SOMERSET AGRICULTURAL SOCIETY
OFFER PREMIUMS TO THE AMOUNT OF
One Hundred and Thirty-Six Dollars.

The Trustees propose to have a **CATTLE SHOW** and **EXHIBITION OF MANUFACTURES** at the Court-House, in *Norridgewock*, on **TUESDAY** the 19th day of *October* next, at *nine o'clock A. M.* And offer the following **PREMIUMS—viz :**

<p>For the best pair of OXEN, - - - - - \$ 6 For the next best, - - - - - 4 For the best BULL, over two years old, - - - - - 3 For the next best do. - - - - - 3 For the best COW, - - - - - 5 For the next best do. - - - - - 3 For the next best do. - - - - - 4 For the best pair 3 year old STEERS, - - - - - 4 For the next best do. - - - - - 3 For the best 2 year old do. - - - - - 3 For the next best do. - - - - - 2 For the best pair YEARLING do. - - - - - 2 For the best 2 year old HEIFER, - - - - - 3 For the next best do. - - - - - 2 For the best YEARLING do. - - - - - 2</p>	<p>For the best CALF, English breed, - - - - - 8 3 For the 3 best CALVES, raised by one man, - - - - - 3 For the best 2 year old COLT, - - - - - 3 For the next best do. - - - - - 2 For the next best do. - - - - - 1 For the best HOME-MADE CLOTH, not less than two yards, DRESSED, - - - - - 4 For the next best do. - - - - - 2 For the next best do. - - - - - 2 For the best FLANNEL, do. do. - - - - - 3 For the next best do. do. - - - - - 2 For the next best do. do. - - - - - 1 For the best CHEESE, made in the County, - - - - - 3 For the next best do. - - - - - 2 For the best PLOUGH, - - - - - 2</p>
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For the best *Mechanical Invention*, subservient to the purpose of **AGRICULTURE** : and which the Committee shall adjudge deserving 5,00

The claims for the above *Premiums* will be determined on said day, by Maj. **LORING**, **SOLOMON STEWARD**, **SALMON WHITE**, **THOMAS ROBINSON**, **JR. JONATHAN RUSSELL**, **STEPHEN WILLIAMSON**, and **DANIEL SHAW**, who are appointed a Committee for that purpose.—*Stock and Manufactures* offered for the above **PREMIUMS**, to be raised or made in the County.

And to the person who shall on or before the *first day of January* next, furnish to the Trustees satisfactory evidence, agreeably to former notice, of his having raised the *greatest quantity* of good **CLEAN WHEAT**, on *one acre* of ploughed ground, the present season, in the County,

The Trustees offer a Premium of \$ 12,00

For the next do. do. - - - - -	10,00
For the next do. do. - - - - -	8,00
For the <i>greatest quantity</i> of SMALL WHITE BEANS , raised on <i>one-quarter</i> of an acre, - - - - -	5,00
For the next do. do. - - - - -	3,00
For the <i>largest and fattest</i> HOGS , not less than two in number, and not more than 22 months old, raised and killed by one man, - - - - -	5,00

Per Order of the Trustees,
WM. ALLEN, JR. Treasurer.

Norridgewock, Aug. 4, 1819.

Somerset Agricultural Society broadside, ca. 1819. The Somerset Agricultural Society held Maine's first agricultural fair in 1819. This broadside announced a cattle show and exhibition on August 4, 1819, in Norridgewock. Courtesy of the Maine Historical Society.

Delegates from each of these societies, including the three statewide associations, comprised the Maine Board of Agriculture, which met and published its findings annually in the journal, *Agriculture of Maine*. The board exerted some control over the local societies, but for all practical purposes, local clubs and societies remained fairly autonomous.⁸

The third source of agricultural science and education, and arguably the most important function of the agricultural society, was the agricultural fair. The Somerset Agricultural Society held the first fair in Maine in 1819. In 1832, the state legislature authorized a \$300 matching stipend for agricultural societies. While this fund was not specifically earmarked for fairs (the grant did not stipulate a specific use for the funds), the societies often used it to fund these agricultural gatherings. After the passage of this law, fairs became commonplace features of agricultural societies. The fair was significant in many respects. It gathered farmers with different degrees of literacy in sparsely populated locations to discuss their trade.⁹

Fair organizers awarded premiums for prizewinning livestock and crops. A fertile ground for the exchange of ideas, fairs allowed farmers to observe new crop varieties and machines. The fair was certainly recreational, yet it had a significant educational value as well. In the annual report of the Board of Agriculture for 1870, future Grange Master Daniel H. Thing described the value of agricultural organizations and fairs:

When a large number of individuals combine together for the purpose of accomplishing a certain object, there are just as many minds at work and just as many intellects laboring for the same object as there are individuals in the association, and among persevering, progressive men, there is always a noble contention or rather emulation to excel, which is continually spurring them on to greater exertions. Again, it is essential in order to make the greatest improvement, that these associations come together and compare notes and products, that they may know who excels in any calling or department, or in regard to any particular animal or article, and how they do it; whether by chance or by intelligent experiment.¹⁰

Nowhere else could farmers from sparsely populated areas gather to exchange information. The fair provided a means of education for farmers who could not benefit from farm journals. Furthermore, the fair and the agricultural society provided an egalitarian setting in which to compare ideas and spurred healthy competition for better methods. It was in fair grounds that new crop varieties, as well as new agricultural technologies

such as “chemical manures” (an early form of fertilizer) and different crop rotation methods, were introduced to farmers. The most fruitful exchange at the fair, however, was between the farmers themselves, who through repeated discourse and criticism, were able to perfect their craft and further their understanding of the processes behind their trade. In this setting, nascent agricultural science began to develop.

The fourth, and often overlooked means of agricultural education, was the local farm club. According to Day, Maine’s first farmers’ club was founded in Bethel in 1853.¹¹ Like the fair, the local club was a great aid to local farmers. “Some [clubs] established small libraries and encouraged the reading of books. Some . . . owned their own fairgrounds.”¹² While associated with the larger county societies, “each was administered on a local basis and not as the subordinate unit in some larger county or state club.”¹³ Many of these local groups were the only means of agricultural support—scientific, educational, social, or otherwise—available to farmers in the early to mid nineteenth century. In *Agriculture of Maine*, 1870, Hon. Simon Brown of Concord, Massachusetts, delivered an address on the value of farmers’ clubs as educational institutions:

The farmer, too, has become inquisitive and inspired. He is not satisfied now with turning up the furrows of the field because it makes hoeing easier, but asks, “What action is going on in these clods? What are the rain and frost doing there? What office does this sand and these pebbles perform? How came from the bone found in the garden a complete net-work [sic] of roots? Why was the wheat crop where lime was spread three times as much as was ever obtained before? Why have young pines covered the ground where oaks were cut off four years ago?”¹⁴

Brown’s commentary highlighted the farmers’ eagerness to learn and exchange ideas about farming techniques and local ecology. The simple practice of farming no longer satisfied the yeoman; his curiosity demanded further explanation of the natural processes associated with his profession. The farmers’ clubs, agricultural societies, and fairs were the only forums for the exchange of ideas and the airing of agricultural questions. A fairgoer, known only as “Bridget,” remarked on the educational and scientific merit of the fair. She wrote, poetically,

’Tis one of nature’s wholesome laws
That minds of men, tho’ single
Excited by some common cause

In masses meet, and mingle.
Analysis brings food for thought, -
The whole world, every tittle,
Its Governments and Nations wrought
Of atoms, all so little!¹⁵

By 1860 there were twenty active clubs in Maine. Meetings were held in members' houses, local halls, or schools, and membership crossed socioeconomic lines. Clubs included doctors, lawyers, ministers, and others from the nearby village as well as farmers.¹⁶ Membership fees varied from club to club, as did resources such as libraries, exhibits, and fairgrounds. Some members were expected to prepare talks, while all engaged in discussions. Clubs sometimes even engaged in neighborhood restorations.

The farm club, county fair, and agricultural society constituted a loose, egalitarian network of education and science, whose members were directly involved with the actual practice of farming. The organization of this proto-institutional system bears significance. Farmers in sparsely populated areas could gather at a fair, club, or society, and exchange techniques or information. This information flowed from the ground up, or perhaps from the ground out, as the direction "up" implies a hierarchy that for the most part was not present.

Agricultural science grew distinct from agricultural education as both fields became more professionalized and institutionalized. In the 1850s, however, the institutions that engaged with one almost always engaged with the other; those that performed agricultural education also researched. Given the embryonic nature of agricultural science at this time, these institutions performed what the philosopher of science Thomas Kuhn has called "frontier science." There was, moreover, no paradigm for this science, in the Kuhnian sense of the term, as it was so inchoate and researchers were so sparsely distributed that a consensus was nearly impossible. There was no distinction between a canonical body of knowledge and a groundbreaking body of knowledge. Each participant in the fair, the club, or the society was both an agricultural student and an agricultural scientist.¹⁷

Yet, by the close of the Civil War, this network was in decline. This was in part due to the deaths of many agricultural club members in the Civil War. Continuing western emigration also depleted New England's younger farming population and starved the networks of active participants. Finally, the onset of the Grange was a principal reason for the decline of the farm club.



Grange Hall at Atkinson Mills, Maine, ca. 1920. This grange hall belonged to the Patrons of Husbandry. The Grange was founded by Oliver Hudson Kelly, an employee of the federal Department of Agriculture, who, after assessing the situation of rural farmers throughout the nation after the Civil War, sought to alleviate some of the farmers' economic suffering and social isolation. Courtesy of the Maine Historical Society.

The Grange

The Grange and the farm clubs were similar organizations in many ways. Both focused on the farmer's problems in the fields and at home, and both sought education through discussion. There were, nonetheless, significant differences between the two organizations. The Grange had a national presence, well-equipped halls, and often "fairly adequate finances." The Grange grew at the expense of the clubs, a process with many political consequences.¹⁸

The Grange, according to historian Solon Justus Buck, had multiple roots. Buck attributed the rise of the Grange to anti-monopoly sentiments among left-leaning southern and western farmers: it provided a forum for like-minded agriculturalists to voice discontent with the practices of industrialists and railroad monopolists.¹⁹

Grange founder Oliver Hudson Kelly traveled throughout the South

after the Civil War on behalf of the federal Department of Agriculture. Kelly sought to assess the state of the region's rural population, particularly in the South, which had been devastated by the Civil War. Kelly sympathized with the farmers' plight and endeavored to alleviate it by establishing the Patrons of Husbandry in 1867, with a mission to help practitioners of agriculture. The organization was loosely based on the Freemasons, with a national organization of lodges.²⁰

In the mid-nineteenth century, railroad and industrial promoters promised farmers cheaper freight rates and access to distant and profitable markets in exchange for their political support. Winning over the farmers was (and remains) a critically important political strategy: over half the voting population was rural, and harnessing this political power was imperative.²¹ Republicans, whose interests generally lay with industrial and financial enterprises, began to portray the farmer and the capitalist as bound within a mutually beneficial relationship—a vote for the Republicans was a vote for the farmer.

Unfortunately, the industrial policies implemented after the Republican victories in 1860 did not produce the benefits promised to farmers. Trusts flourished and suppressed competition, resulting in higher prices. Transportation costs rose and were not offset, much less reduced, by the efficiencies that were supposed to follow increased investment in internal improvements. Having functional monopolies on specific routes, railroads fixed prices at the highest levels their markets would bear. Overproduction, punishing freight rates, and the Panic of 1873 effectively reduced the farmer to the level of an underpaid laborer. Furthermore, the Civil War had left the former Confederate states in shambles and pitted the Republican North against the Democratic South. The Grange flourished in this culture of frustration and discontent.²²

Granges, conceived as a balm for the rural population, soon became a forum for voicing bitter political and economic grievances. Western and Southern Granges deemed railroads and industrial capitalists their mortal enemies and obsessed over defeating these perceived foes. National Grange associations dreamt of a mass crop withholding, a tactic analogous to a labor strike. The Grange won legislation in central and western states to control freight and grain elevator storage rates, and the constitutionality of these "Granger Laws" was upheld in a series of 1877 Supreme Court decisions. Additional laws were passed after the success of the first Granger laws, and in 1887 the Interstate Commerce Commission (ICC) was formed to regulate transportation rates.

Historian Dennis Nordin argues for a more complex understanding

of the Grange, contending that there was a strong distinction between Granges in the Northeast and those in the South and West in terms of chronological development and political orientation. The Granges in the West and South arose in the late 1860s but were in decline by the 1880s. The eastern and northern Granges arose approximately a decade after the first movement. While those in the West and South were hotspots of political activism, northern and eastern Granges were more concerned with supporting and educating farmers and their families than with the politics of industrialism and railroads.²³

Nordin points out some flaws in Buck's work, but he seems to ignore the significance of pre-Grange education and support mechanisms.

The captains in the Grange who refused to abandon ship because of a leak in the hull more than likely remembered a decade or two earlier when the average farmer was not much more advanced intellectually than his grandfather living at the time of the War of 1812. Members of both generations had narrow horizons scholarly. In fact, most of both generations believed that an elementary knowledge of the three R's was all farmers needed to meet their problems. To these unenlightened souls, any additional learning was a frivolous waste of their time and energy because 'education and farming, like oil and water, would not mix.'²⁴

The farm club and fair system, while informal, clearly suggest that farmers were interested in enlightened progress before the advent of the Grange.

The Grange in Maine

On October 30, 1873, Allen Carter founded Maine's first local Grange in Hampden. Carter was impressed by western Granges and believed that similar institutions in the Pine Tree State would help rural citizens cope with the economic distress caused by the Panic of 1873. Carter was not alone in his enthusiasm for the Grange, and on April 21, 1874, six months after the founding of the Hampden Grange, masters of seventeen of the eighteen local Granges in the state formed an umbrella organization, the Maine State Grange. The founding members elected Nelson Ham as its first Master.²⁵ The Grange spread rapidly throughout the state. At its first annual meeting in December (eight months after its inauguration), delegates from sixty-four constituent Granges convened in Lewiston, representing nearly 2,000 members. By 1875, the Patrons

had formed 136 new Granges, and in 1876 there were about 228 local chapters with around 12,000 members.²⁶

Initially, the Maine State Grange embraced the animus against capitalists, middlemen, and railroad monopolists that characterized their western and southern brethren. At their first annual session the members “resolved, that, in the opinion of the Grange, the time has come when the farmers of Maine ought to go about their own business, and do it themselves, instead of giving it to others who have long enriched themselves to our disadvantage.”²⁷ Ham spearheaded programs such as collective purchasing agencies and fire and life insurance programs, providing both a fair middleman for goods and a safety net for the rural population.²⁸ This evidence challenges Nordin’s claim that the Eastern Granges were not politically motivated. While Buck’s narrative of the political crusade of the Patrons may to some degree be embellished, a more accurate narration of Grange, especially in Maine, lies somewhere between these two histories.

Ham was master from 1874 to 1877, and under his leadership the Grange steadily grew in membership and in number of subordinate Granges. Ham’s successor, Daniel Thing, served for four years (1877-1881), and during his tenure the Grange declined gradually, each year admitting fewer new members until in 1880 it lost more than it gained. By 1880, the State Grange had declined to seven local, or Pomona, Granges and had lost nearly 5,000 members from its height in 1876. This erosion corresponded with national trends. Between 1875 and 1880, the National Grange lost nearly 730,000 members, around 85% of its membership.²⁹

There were several reasons for the Grange’s decline. In the context of the Panic of 1873, the Grange appeared, to many farmers, as a panacea. Cooperative business and political action seemed to be the solution to the woes of the rural population. When neither strategy supplied the bucolic Eden promised by national Grangers, farmers departed the order: “thousands of farmers in some states lost a great deal of hard earned money through the dismal failure of cooperative enterprises promoted by the Grange. Disillusioned members deserted the order in droves, just as they had flocked in droves to become patrons a few short years earlier.” The Grange was also plagued by a lack of competent leadership. Cooperative purchasing and selling required honed business acumen to which most “dirt farmers were not accustomed.”³⁰

The Grange did not win immediate approval among all farmers. Some farmers were quite dissatisfied with the order, as shown in an edi-



Pembroke Agricultural Fair, 1890s. By the late nineteenth century, the predominance of the agricultural fair as a source of education and scientific innovation for rural Maine farmers was waning, thanks to the emergence of the Grange and the College of Agricultural and Mechanical Arts. Courtesy of the Maine Historical Society.

torial in the *Maine Farmer* in 1880. “Outsiders found fault with the Grange in a number of ways. The Grange was accused, for example, of trying to create an agricultural elite: ‘It [the Grange] tends to selfishness, to narrowness of thought and feeling, and the establishment of an agricultural aristocracy.’”³¹ Most studies of the Grange portray it as representative of the rural population. Nordin and Buck, for example, assume widespread rural support. In truth, farmers were a diverse group of individuals, often with varying and conflicting political views. The Grange could not be all things to all people.

Frederick Robie

The years from 1881 to 1889 typify the plastic nature of rural politics, and demonstrate that even within the Grange, categorical political labels did not always hold. Frederick Robie, State Master Thing’s successor, was far from a stereotypical left-wing agriculturalist. Robie was a physician by trade and had a heavy hand in business interests. As Simon Guptill



River scene, Maine College of Agriculture and Mechanical Arts, 1873. F.W. Hardy, photographer. The passage of the 1862 Morrill Act provided federal funding and land grants for the establishment of state colleges focused on agriculture and the mechanical arts. The Maine College of Agriculture and Mechanical Arts, later the University of Maine, opened its doors on September 21, 1868. University Photographs Collection. Courtesy of Special Collections, Raymond H. Fogler Library, University of Maine.

notes, “Robie stands out as a paradoxical agricultural leader for his primary personal interests were political and business.” Robie was a director of the First National Bank of Portland, at the time the largest bank in Maine. He held similar positions with the Portland and Rochester Railroad Company, the Eastern Telegraph Company, the Union Mutual Life Insurance Company, and for a time served as the business manager for the Portland Press Publishing Company. These institutions would not have been considered friends of the Grange a decade earlier, and Robie himself was an avowed Republican. This suggests a change in political orientation after the depression of 1873. Still, he “helped the order grow until Maine became the banner Grange state.”³²

State Master Robie served from 1881 to 1889. During his tenure, Robie was also the Governor of Maine from 1883 to 1887, which put him in an advantageous position to advance the Grange agenda. Historians Edward D. Schriver and Stanley R. Howe suggest that Robie’s ascent to power indicates that the Republican party successfully absorbed “the

agrarian discontent that had fed the Greenback movement earlier.”³³ Yet in 1882, the State Grange chose Daniel Thing, the Greenback Congressional candidate, as lecturer. The Grange was in a period of political flux, and it is inappropriate to equate it with one party or another.

At a time when the national Grange was in decline, the Maine State Grange under Robie’s leadership survived and prospered because it focused on education in addition to politics, co-ops, and insurance programs. As early as Thing’s administration, Grangers clearly supported agricultural education. They requested uniform textbooks in public schools, more funding for the College of Agriculture, and a reorganization of the school districts to favor the farmer.³⁴

Robie, like Thing, was a staunch supporter of institutionalized agricultural education. The Grange provided a means to this end and allowed Robie to revitalize the state of agricultural education in Maine. Under his leadership, the State Grange nearly doubled in membership. Robie thus used his political position to advance the institutional system of agricultural education that replaced the network of farm clubs and fairs.

At [his] inaugural [as Governor] in January, [Robie] suggested that the [agricultural] college farm at Orono be used as an experiment station under the direction of the professors of agriculture and chemistry and that bulletins and circulars be used to diffuse the fruits of its labors among the farmers of the state. Eventually, in 1885, he signed legislation which created the Maine Fertilizer and Control Station . . . A Granger, Ziba Gilbert, was appointed one of the station’s managers.³⁵

Robie chaired various national Grange committees and, through his influence at the national level, helped mobilize support for the Hatch Act of 1887, which inaugurated federal support for experimental agricultural stations. “[He] requested that each Subordinate Grange start a group to promote reading and the study of agriculture.” Robie supplemented this educational outreach plan with annual reading lists and courses of study.³⁶ During his tenure, the Grange, together with the Experiment Station and the College of Agriculture, eclipsed the farm club and fair network.

The Maine College of Agriculture

The Maine College of Agriculture (which later became the University of Maine) traces its origins to well before the rise of the Grange.

Maine's early agricultural scientists, such as Dr. Ezekiel Holmes and Robert Hallowell Gardiner, had lobbied for a specialized school of farming in the first decades of the nineteenth century. In 1822, Robert Hallowell Gardiner founded the Gardiner Lyceum, the nation's first agricultural school. Dr. Holmes served as a professor there from 1824 to 1829. The Lyceum was innovative. It offered courses in natural sciences instead of Latin and Greek. What is more remarkable is that the Lyceum offered elective courses and short winter terms, and it was the first secondary school in the United States to teach agriculture. All of this was to the benefit of the farmer, who would have little practical use for a classical education, and whose seasonal constraints prevented commitment to the rigid schedules of traditional secondary education. Unfortunately, the Lyceum had only a local effect on agricultural education in the early nineteenth century. Only farmers in the immediate area benefited from its instruction. Moreover, the Lyceum closed its doors only nine years after opening, due to precarious finances and excessive debt.³⁷

Despite the occasional diatribe in the *Maine Farmer*, advocates for a college of agriculture accomplished little until the passage of the 1862 Morrill Act. This legislation provided federal funding and land grants to support "colleges for the benefit of agriculture and the mechanic arts." The Maine Legislature embraced the Morrill Act, passing enabling legislation in 1863. Five years later on September 21, 1868, the Maine College of Agriculture and the Mechanical Arts (MCAMA) opened its doors.³⁸

The mission of the new college was clear. This was not to be a university in the classical sense, providing a "superfluous" education in the humanities. Initially there were only four courses of study – agriculture, civil engineering, mechanical engineering, and an elective course. Remarkably, tuition was free, allowing the Maine farmer to pursue a technical education at the state's expense. MCAMA was designed to make scientific and technical education available to students who, having meager resources and coming from the lower social and economic strata, would never have dreamt of such an opportunity.³⁹

Grange members urged their sons and daughters (women were admitted to the college in the early 1870s) to attend the state college as means of self-improvement. This sentiment, however, was not universal. Many feared that the college was not preparing their sons and daughters to be better farmers, but was in fact educating them away from the farm. "Many boys and girls see nothing attractive about the farm," the 1887 *Annual Report* of the State Grange said. "To them it means nothing but drudgery." Only one third of the admitted students studied agriculture.

Additionally, many farmers considered the college to be an extravagance and questioned the farming prowess of the college professors. The college, of course, experienced a period of trial and error. There were no standardized textbooks and few qualified agricultural instructors. The college had yet to prove its mettle, and the skepticism that it encountered was frequently warranted.⁴⁰

But reactions suggest more than a critique of ineffectual education. Professionals sometimes wrote condescendingly about the “uneducated farmer,” and the new system of education contrasted starkly with the farm club system. Although the college provided free education, the faculty determined its pedagogy and curricula, reflecting a shift from “bottom-up” to “top-down” education.

The Grange was a driving force behind this shift. State master Robie was a staunch supporter of the College of Agriculture. Through the Grange, he campaigned for more funding, and Grangers were vociferous in their support for the college. The 1878 Maine State Grange Annual Report declared that “the husbandman needs agricultural colleges as much as the commercial men need commercial colleges, or professional men need their classical schools and colleges.”⁴¹

The college’s supporters believed that a scientific education, invigorated by experimentation and administered by professionals, was the best way to help the impoverished farmer. Once the tools of science and technology unlocked the productiveness of the land, the farmer would truly be the master of the nature around him. Consequentially, when confronted with opposition from the farmers themselves, supporters of the college—the Grangers—resorted to invectives and didacticisms. In the 1892 annual report, Grangers contended that “it will not take [the uninformed critics of the College of Agriculture] more than five minutes to tell all they know about the College, while they will spend half a day of their valuable time telling what they don’t know.”⁴² Grange support not only ensured the school’s survival, but it also reinforced its “top-down” approach to education. This trend brought science out of the farmer’s fields and into the college’s laboratory.

The College’s Laboratory: The Maine Agricultural Experiment Station

Agricultural experiment stations created in the United States in the last decade of the nineteenth century are best viewed in the contemporary context of increased professionalism and institutionalization of science. Indeed, Dr. Ezekiel Holmes, Maine’s first professor of agriculture,

had argued for an institutional merger of science and farming since his early days at the *Maine Farmer*. The experiment stations in the United States were based on a European model of agricultural education. The 1840 work of German chemist Justus Von Leibig on the mineral requirements of plants essentially established the field of agricultural chemistry.⁴³

Maine has had a long history of agricultural experimentation, dating back to the farm clubs and the Lyceum. While the Maine Board of Agriculture had published its findings regularly, these reports lacked a standardized format and suffered from narrow circulation. The experiment station was an attempt to address this issue. The station would conduct research in agricultural science, and then disseminate the results to farmers free of charge. Before 1885, when the station was established, this task had been taken up by the College of Agriculture. For example, in 1869 agricultural professors tested at least seventy varieties of potatoes at the college farm in Orono. In 1885, Governor Robie signed legislation creating the Experiment Station, and the 1887 Hatch Act ensured the station's survival. Bulletins from the station were provided free of charge to any subscriber, and county extension agents demonstrated new techniques directly to the farmers themselves.⁴⁴

The Grange was instrumental in the rise of the experiment station. Not only did Grange master Frederick Robie endorse the legislation creating the station, but its first director, Ziba Gilbert, was a Granger. The State Grange advocated that the college be a research as well as an educational institution.

The idea of an experimental farm originated with British philosopher Francis Bacon.⁴⁵ In the Baconian tradition, experiment station scientists, under state patronage, tested new crop varieties; employed different means of planting, cultivation, and fertilizing; and disseminated their results—there was an explicit hierarchy of knowledge. As station director for an impressive span from 1896 to 1921, Charles Dayton Woods wrote in Fernald Merritt's *History of the Maine State College and the University of Maine* (1916):

It is difficult to realize at this day that only forty years ago the body of agricultural truth that is now so well established was so far from a *fact* that a professor of agriculture in his annual report could truthfully say that there were no text-books on the subjects which he was expected to teach and that "information could only be gathered here and there, from books and papers, from my own experience and that of others, as opportunity offered."⁴⁶ [emphasis is mine]

Woods's use of the terms "truth" and "fact" contain implicit values about the nature of science and the role of the scientist. Scientific knowledge, in his conception, was that which could be verified institutionally and officially published. The experiment station's mandate was to provide scientific guidance for farmers and to facilitate the flow of information from laboratory to practitioner. But by cloaking its work with the mantle of authority, the Experiment Station downgraded other forms of agricultural education. Whether or not station managers explicitly devalued the work of the agricultural clubs, their biases about scientific authority could not fail to result in judgments about who was qualified to perform science and who was not.

Conclusion

In concordance with the professionalism of science in the late nineteenth century, agricultural education became an elite affair. Professional scientists performed agricultural science and research in the laboratory and test plot. They were often not farmers themselves, or at best were only gentlemen farmers, and their new educational structure supplanted the traditional model of the agricultural fair, club, and local society, which had served as places where farmers met and exchanged scientific ideas.

With the encouragement of the Grange, agricultural education was institutionalized, standardized, and subject to bureaucratic control. As exemplified by the experiment station, this type of education and outreach is very much grounded in the ideas of western scientific thought: the pursuit of practical, unbiased, and universally-applicable knowledge.

Farm clubs reflected an older tradition of generating knowledge. Local clubs and agricultural fairs opened educational avenues to constituents of varying literacy. These opportunities were especially important in remote regions. The Grange and farm clubs may have employed similar methodologies, but their missions differed. The clubs sought to meet their members' needs; the Grange and the experiment stations sought to improve agricultural science more generally. The ascendancy of bureaucratic and institutional science and education over local science and education reflected a national, and perhaps inexorable, trend towards professionalism and institutionalization.

NOTES

1. Dale R., Steinhauer, ed., *Pioneer Presque Isle*, vol. 1 (Presque Isle: 125th Anniversary Committee, 1984), p. 93.
2. Steinhauer, ed., *Pioneer Presque Isle*, p. 57.
3. Edward Wiggin, *Aroostook: Extracts from the Address of Edward Wiggin, Esq., Delivered before the Farmers' Club, at Boothbay, Dec. 14, 1885* (Portland: Ticket Printing House, 1887), p. 5.
4. Clarence A. Day, *Farming in Maine, 1860-1940* (Orono: University of Maine Press, 1963), pp. 180-181.
5. Paul W. Gates, *Agriculture and the Civil War* (New York: Alfred A. Knopf, 1965), pp. 255-256.
6. From 1850 to 1870, the illiteracy rate in Aroostook County was twice the national rate. See (2004). Historical Census Browser, University of Virginia, Geospatial and Statistical Data Center: <http://fisher.lib.virginia.edu/collections/stats/histcensus/index.html>.
7. Rexford Booth Sherman, "The Grange in Maine and New Hampshire, 1870-1940," Ph.D. Dissertation, Boston University, 1972, pp. 49-50.
8. Richard W. Judd, Edwin A. Churchill, and Joel W. Eastman, eds. *Maine: The Pine Tree State from Prehistory to Present* (Orono: University of Maine Press, 1995), p. 259.
9. Day, *Farming in Maine*, p. 180.
10. *Fifteenth Annual Report* [1870], Maine Board of Agriculture (Augusta: Maine Board of Agriculture) 1871, p. 7.
11. Day, *Farming in Maine, 1860-1940*, p. 10.
12. Day, *Farming in Maine, 1860-1940*, pp. 182-3.
13. Sherman, "Grange in Maine and New Hampshire," p. 51.
14. *Fifteenth Annual Report* [1870], Maine Board of Agriculture (Augusta: Maine Board of Agriculture) 1871, 39.
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17. Thomas S. Kuhn, *The Structures of Scientific Revolutions* (Chicago: University of Chicago Press, 1996).
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22. Buck, *Granger Movement*, pp. 34-49.
23. Dennis S. Nordin, "A Revisionist Interpretation of the Patrons of Husbandry, 1867-1900." *The Historian* 32 (August 1970): 631-633.
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26. Day, *Farming in Maine*, p. 185.
27. Maine State Grange, *Journal of Proceedings* (Augusta: Maine State Grange, 1874).
28. Day, *Farming in Maine*, p. 184.
29. Day, *Farming in Maine*, p. 186.
30. Day, *Farming in Maine*, pp. 186-187.
31. Albert Pease, "The Grange System," *The Maine Farmer*, April 24, 1880, in Sherman "Grange in Maine and New Hampshire," p. 66.
32. Simon Guptill, "The Grange in Maine from 1874-1940," M.A. Thesis, University of Maine, 1973, pp. 41, 43.
33. Day, *Farming in Maine*, pp.187-188; Judd, Churchill, and Eastman, eds., *Maine*, p. 375.
34. Day, *Farming in Maine*, p.187.
35. Sherman, "Grange in Maine and New Hampshire," pp. 139-140.
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37. Clarence A. Day, *Ezekiel Holmes: Father of Maine Agriculture* (Orono: University of Maine Press, 1968), p. 31.
38. Day, *Farming in Maine*, pp. 224-226.
39. Day, *Farming in Maine*, p. 226
40. Sherman, "Grange in Maine and New Hampshire," pp. 121-122; Day, *Farming in Maine*, p. 227; Maine State Grange, *Journal of Proceedings* (Augusta: Maine State Grange, 1887); Merritt Caldwell Fernald, *History of the Maine State College and the University of Maine* (Orono: University of Maine Press, 1916), p. 91.
41. Maine State Grange, *Journal of Proceedings* (Augusta: Maine State Grange, 1878).
42. Day, *Farming in Maine*, p. 229; Judd, Churchill, and Eastman, eds., *Maine*, p. 406; Maine State Grange, *Journal of Proceedings* (Augusta: Maine State Grange, 1878).

43. Gates, *Agriculture and the Civil War*, p. 255.
44. Sherman, "Grange in Maine and New Hampshire," pp. 137-139.
45. Francis Bacon, *The New Atlantis* (1626).
46. Merritt Caldwell Fernald, *History of the Maine State College and the University of Maine* (Orono: University of Maine Press, 1916), p. 269.