Fourteen years later, in April of 1882, Charles Thompson wrote a letter to the trustees of the Institute to tell them two things to which he characteristically gave equal emphasis. The first concerned the need for an instructor in chemistry; the second, his intention to resign. Actually the two were one and the same thing, for he himself had been the teacher of chemistry. The letter was nevertheless divided neatly into two parts as if he wished to postpone the real issue as long as possible. “I find myself at an age,” he finally wrote with distaste, “when no man can safely defer longer some preparation for possible infirmity and for the comfort of his family.”

For three years, he explained, his salary had not covered his expenses. The new position which he had accepted was the first presidency of Rose Polytechnic Institute in Indiana, where he had been offered considerably more salary, a house free from rent, and a bonus of ten thousand dollars for moving. There was also to be a ten-month trip to Europe.

It would never have occurred to Professor Thompson to ask the Institute to match this extravagant offer. He knew all too well “if there is an increase in the treasury, it will be met by a corresponding increase in the needs of the Institute.” The school had attempted far more than that which would normally be expected from a school with such limited income. That it had done so well was accountable to the most stringent economy and sacrifice on the part of its teachers.

The first reaction to Professor Thompson’s letter was shock. “We accept his resignation with anxiety and concern for this Institute,” said Stephen Salisbury.

Then strangely the school on the hill stood straighter. Destiny had reached across the multitude to tap the shoulder of a favorite son; the whole community basked in the warm compliment.

In the first interview Charles Thompson had had with Emory Washburn and Seth Sweetser, long before the school was built, ten years had been set as the time allowed for the educational experiment. Now the decade had passed, and the flattering invitation to Professor Thompson was good proof that the experiment had been successful.

As John Woodman had prophesied at the dedication of Boynton Hall, the graduates of the school had made its reputation. Professor Thompson proudly reviewed the achievements of his boys. At least ninety-five per cent were engaged in the occupations for which the school had trained them. And, he added happily, “almost all are leading virtuous lives.” He ought to know, because he

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**CHAPTER IV**

*Broader and Brighter* * * * * * * * 1868–1882

*It is small consolation that if the Institute did not want money it would probably want something else.*

—Charles O. Thompson, 1876

*The whole scheme must be regarded as an experiment in American education, which, at the present stage, is sufficiently promising to warrant its further prosecution.*

—Catalog, 1871

*This day closes the first decade in the history of the Free Institute. It has been a period of discovery, settlement, crowded with the perplexities and anxieties inseparable from new enterprises. We have done our best with what we have had during all these ten busy years of anxious study and experiment.*

—Charles O. Thompson, 1878
had written hundreds of letters by hand to these boys. And they had answered. They had replied when he asked for information about their accomplishments and again when he asked, now that they were out of school—which is more useful, French or German?

By 1882 the school had two hundred and seven graduates. They had become civil engineers and mechanical engineers, employed by railroads, industries, and municipalities. They were carpenters, bookkeepers, teachers, chemists, clerks, and farmers. A few had gone on to further study.

These graduates were the school’s best assets. One manufacturer told Professor Thompson: “Their training enables me to cut the year or two of lost motion for which the employer has to pay in the case of most men fresh from school.”

Two years after the first graduation, the alumni formed their association. There had been a dinner “after which,” it was reported with a candor which has not often since been matched, “further remarks upon no subject in particular were made by several persons.” At the next meeting, however, they flexed their new muscles of influence and agitated for certain changes at the school. The first serious matter to which they gave attention was the diploma which each had been given at graduation. Although by charter the school was entitled to give degrees, it had modestly settled for diplomas with the intention of giving later rewards for “professional success.”

The graduates found their diplomas to be an embarrassment. Henry Armsby, the first man to be listed as a graduate of the school by virtue of the alphabetical position of his name, complained that the diploma had prevented his receiving a doctor’s degree at Yale University. A spirited debate developed between alumni and trustees. Stephen Salisbury petulantly said he didn’t like the word “bachelor.” It signified “one of the greatest calamities in life,” yet, he supposed, no other word would be so well understood. Reluctantly agreeing to “conform in some degree to established customs,” the trustees voted to confer a Bachelor of Science degree on all future and former graduates.

That the alumni had made such a creditable impression was as much to their own credit as to that of the school. These boys who came to the Institute were serious students. They had to be. Professor Thompson had written to their parents: “Your son is a member of the Free Institute . . . All the time of every student is demanded for study, recitation, drawing, and practice.” He warned the parents against evening entertainment and advised the provision of a well-warmed, well-lighted study room. He frowned upon the evil influence of riding to and fro on the horse cars, a deterrent to “enthusiasm and singleness of purpose,” and he firmly stated the school was “not to be regarded as an easy road to knowledge.”

This was no secret to the boys. Nevertheless, in the traditional fashion of schools everywhere, the boys began to huddle together in little groups of their own. Their embryonic activities, ranging...
all the way from glee clubs to an athletic association, were main-
tained independently without approval of the teachers. The prayer
band seemed to be the only acceptable extracurricular activity; if
of any other nature, that, too, might have been considered a waste
of time.

To tell the truth, there were few free moments. Sometimes the
boys would shoo the cows to the edge of Stephen Salisbury’s field to
make room for a game of ball. Sometimes they coasted on the new
street which had been extended from West and Highland and
called Bliss Street. There was roller skating at Bigelow’s rink,
and there was fishing in the mill pond below the campus. In the
summertime the boys often followed the stone wall down to a big
apple tree which marked the edge of their swimming hole. There
they bathed happily in the nude until a complaint came to the
school from the only house in sight that the boys could be seen—
that is, with opera glasses.

There were a few boat races on the big lake at the other end of
town and several outbreaks of walking fever when “legs were culti-
vated at the expense of brains.” There was one interval when the
trumpet call of the Civil War could still be heard that the
Salisbury Guards were organized for military drill. The Massachu-
setts Legislature requisitioned muskets for the boys, but the slow
process of law could not keep up with the pace of student enthusi-
asms. When the boxes of guns arrived, no one even bothered to
open them.

The boys never lost interest, however, in ceremonies conducted
each year, when an effigy of poor Chauvenet—who had done
nothing worse than write a textbook on trigonometry—was carried
in a coffin properly “Made in the Washburn Shops” to a high hill
for cremation. Leading the solemn procession of boys in tall plug
hats were the “twenty silver cornets” of the Blowhards.

When the class of 1877 decided to organize a football team, all
the boys wanted to belong, and most of them were willing to be
captain. The difficulty, they remembered later, was not to select the
team but to find enough men to stand on the hill and cheer. At the
bottom of Boynton Hill a crude track was laid out for the first
Field Day competitions in 1881. This event was intended “to pro-
mote merriment rather than athletic prowess,” and included potato,
sack, and wheelbarrow races along with sprints, hurdle races, and
jumping.

The boys talked endlessly and uselessly about a gymnasium. As
far as the school was concerned, it was like asking for wine
when there was still need for bread. Finally the ingenious boys im-
provised their own gym in the pine grove north of the machine
shops. It provided plenty of good fresh air, and its equipment con-
sisted of horizontal and parallel bars, a pair of rings hanging from a
cross bar in two trees, and a rope tied to a high limb.

Beyond the petty attention to tardiness and absence from classes,
which was almost unpardonable, there were so few episodes in

When a student is absent without previous
excuse, he shall present two excuses, one
for the absence and one for failure to
secure permission to be absent.
—Rule, 1874
which discipline was involved that those few have received an emphasis far greater than they deserved. There was one occasion when the whole student body protested and was suspended because of the suspension of one boy. There were raids on Oread Castle, the use of the teachers’ sleighs for sleds, the defacing of crates in the shop, unapproved bonfires, impromptu parades, class rivalries, and pranks with goats and horses.

Nevertheless, Professor Thompson said he could count on one hand the dollars of damage done by more than five hundred students. No bell had ever called his boys to study, he declared with satisfaction, and there had been only one law at the Institute, that there “the boys must begin to be men.” When the boys substituted a dictionary for the big Bible during chapel, Professor Thompson unperturbably recited the ninety-first Psalm as if he hadn’t noticed. There was no doubt that he understood his boys and was fond of them. In his personal papers, a penciled note to one of the teachers tells the story of his consideration: “Clement is in a bad way and needs a respite. Suppose we try excusing him from reciting for a week.”

Of course the boys brushed off such solicitude and sometimes spoke disrespectfully of their teachers. In their ill-mannered publications, labeled as “scurilous pamphlets” by Professor Thompson, they complained about “that elusive thing called Technical education” and the “myth called the personal mark.” This mark, a bone of great contention, was the sum of classroom competence plus personal attitude, a kind of mathematics which was bitterly resented by the boys.

When the Reverend Seth Sweetser died—he had been feeble from a spine injury for many years besides being almost blind—the boys reported his death with the heartlessness with which young people often treat imponderables: “Holiday, while Mr. what’s his name of the School Board, has his funeral.”

The boys always spoke of Stephen Salisbury as “ancient” or “venerable”—as indeed he was—yet they looked forward to the reception which he held for the whole town on graduation night. This was probably the City’s most important social occasion. Chinese lanterns hanging along the walks of Mr. Salisbury’s extensive gardens lighted up his beautiful Elias Carter home until it became part of an enchanted other world. In appreciation the seniors always presented an album of their photographs to Mr. Salisbury.

As president of the board, Mr. Salisbury had maintained constant supervision of the school. It was he who conducted the school’s first placement bureau, always making sure that leading manufacturers and proprietors were invited to his reception to meet the young graduates. When a delegation of students once complained that a guilty boy had “gone without punishment” although others had been suspended, he replied in a wisdom as old as the world itself, “Yes, young gentlemen, we always punish those we catch.”

On the other hand, when some of the better students were involved

Nothing is too good for a boy.
—Charles Thompson

It is a very difficult thing for a man born to the position of wealthiest man in a wealthy community to fill that important station wisely and usefully. Most men so situated deem themselves exonerated from the obligation to work. Our friend has borne his full share of the personal labor of all public undertakings with as much fidelity and public spirit as if he had nothing but his labor to contribute.
—George F. Hoar, of Stephen Salisbury II, 1873
in a disciplinary episode near graduation time and he was asked if this infraction should prevent their receiving prizes. Stephen Salisbury emphatically directed, “No.”

The prize in question was one he had originated himself with a fund of ten thousand dollars. It was not for conduct, not for brilliance. It wasn’t even for needy boys, and he spoke with a sympathy of those “poor” boys “who are deprived of their healthful consciousness of the necessity of effort by the indulgence of industrious and frugal parents.” It was rather a prize for students “who shall finish,” intended only as incentive for those students who would otherwise not have had the necessary persistence.

Stephen Salisbury had supported the school again and again by making up deficits and giving additional plots of land. There also had been an appropriation of fifty thousand dollars from the State, a fund given with the understanding that the Institute would admit twenty students a year from outside Worcester County.

The acceptance of students from outside the County had been one of Mr. Salisbury’s greatest concerns. Much of his benevolence was given with the condition that this be so. Even before the school had opened, he had argued that a limited number outside the County should be admitted with a moderate rate of tuition, and Mr. Boynton, who wanted a “free” school, had agreed to a charge of sixty dollars in such instances. But when a proposal was made in 1866 to alter the constitution to allow a similar charge for County boys “when it seemed expedient,” the motion was lost by several votes.

There was still an inclination to base the success of the school on its contribution to the local community. It was carefully noted that ninety-one graduates were working in Massachusetts and fifty-four in Worcester County. Some of the names of these Worcester boys were to become even more familiar in later years—Lyman Gordon, H. Winfield Wyman, Dwight Goddard, Fred H. Daniels, Charles G. Washburn, John C. Woodbury and J. Fred Wilson.

Gradually it nevertheless became apparent that the Institute was offering an education for which people were willing to pay. In 1882 fewer than half of the entering class came from Worcester County. There were boys from as far away as Japan, Brazil, and Honolulu. Tuition was so low, however, that the total income from this source failed to support even one teacher.

There had been other gifts in addition to Mr. Salisbury’s. The first scholarship had come from George Hoar to cover the tuition of three students from the Congressional District which he served as United States Senator. There had also been sizeable gifts from David Whitcomb, from other trustees and friends. Often treated as a poor but deserving relative, the Institute fell heir to a strange assortment of gifts, ranging from minerals, maps, busts, and clocks to a human skeleton and many old periodicals, which became more valuable with the keeping.

On display at the Commencement exercises in 1876 was a
carved, embroidered chair which had been exhibited at the Centennial Exhibition in Philadelphia. This was a deluxe edition of the folding chair made famous the world-over during the Civil War by Edward Vaill. At its back were two muskets; at its front, two Continental figures. The whole was surmounted by a shield and eagle, with a “glory of flags” in black walnut. The upholstery was blue and gold floral brocade, and on the back was a medallion portrait of George Washington. Unsat on—this monstrosity sat on the platform all day through the exercises, and no one knows what became of it afterwards.

William Knowlton, a manufacturer in Upton, was often so impressed with the graduation ceremonies that he said his thank-you with pocket money for “current expenses.” Once the sum was large enough to build a stone wall at the bottom of the hill.

The students themselves gave the school one of its first gifts—a clock which struck each hour of the day with a curious metallic clang. The clock was placed in the tower of Boynton Hall, and even though its weights alone weighed fifteen hundred pounds, it was surprisingly accurate—within thirty seconds in a week. Sometimes the boys thought as much was expected of them.

Keeping the mechanism of the clock in good order was a duty added to the chores of the monitor, who lived in the little room at the foot of the stairs near the tower. It was also he who had charge of raising and lowering the flag each day, an operation which he maneuvered with pulley and crank. There was one precarious incident when the gear slipped and the mechanism dropped clear through the building to the bottom floor. By a hair’s breadth it missed a workman who had at that moment stepped through the door to read the gas meter.

The school was constantly being appraised both inside and outside its walls, especially because of its attempt to combine theory and practice. “This feature is spoken of and watched with more interest than any other,” said Professor Thompson.

The Institute had many opportunities to tell its story to a world audience in the exhibitions of Vienna, Paris, London, and Philadelphia. For the Vienna Exposition the man in charge of the Massachusetts exhibits was none other than Elmer P. Howe, a member of the Institute’s first class and its valedictorian. The Institute was thereby given generous space to exhibit its machine shop wares and Professor Thompson’s voluminous report of the school which, he said, had grown out of a need for a system of training “for active life which is broader and brighter than learning a trade and more simple and direct than the so-called liberal education.”

Unfortunately, Ichabod Washburn did not live to defend his dream of “practical education.” On the last day of 1868, a little more than a month after the school opened, Mr. Washburn died after a long and distressing illness. In a meeting of the Institute trustees just before the funeral service, Dr. Hill told of his visit

First, it is an experiment; secondly, as far as the experiment has gone, it has resulted in a highly satisfactory degree of success. The problem of education is a progressive one. The conditions are perpetually changing, and to a certain extent, these changing conditions peremptorily dictate corresponding changes in means and methods.

—Rossiter W. Raymond
Commencement, 1879
with Mr. Washburn just before nightfall, a few hours before his death. “He had had a peculiarly happy day,” remembered Dr. Hill. “He had been driven out to the scientific school and spoke with especial pleasure, melting as he spoke.” Mr. Washburn had longed to see the shop completed. “Oh, let me but live to see that!” he had weakly exclaimed. “How would I like to beat out the first piece of iron in that building.”

It was not to be.

Stephen Salisbury stood and sadly gave the signal for his old friend, “We must now follow the procession to the funeral.”

Afterwards, a special meeting of the trustees was hurriedly called to name Milton Higgins the official superintendent of the Washburn Shops.

This choice had been a foregone conclusion for several months, since the young man’s graduation from Dartmouth’s Chandler Scientific School the previous June. Heartily recommended by John Woodman, professor of engineering at Dartmouth, Mr. Higgins had made such a good impression in Worcester that arrangements had been made for him to work at the wire mill until the shops at the school were completed.

Being chosen for the position of superintendent was no small compliment. Mr. Washburn had specified that the selected man must have good morals, good character, and a good education. He was to be a mechanic and a teacher of mechanics. He was to manage the business of the shop, do all the purchasing, make contracts, have charge of the finances, hire and fire journeymen, accept and dismiss apprentices, teach the apprentices not only how to be workmen but also how to run businesses of their own. Moreover, he was to see that they cultivated habits of industry, conduct, discipline, and moral training. For all this, he was to receive the respectable salary of eighteen hundred dollars a year. And everything was, of course, to be accomplished “with the approval of the trustees.”

In March of the following year, Mr. Washburn’s estate was settled; by April the shops were completely equipped and named the Washburn Shops. There was much speculation about their role, but by 1882 the arguments had pounced out a workable pattern. Now the shop practice was not optional, but obligatory for all mechanical engineering students. It had been so soon discovered that boys could not learn how to make saleable products in the few hours available during the school year that an apprentice time of five months had been added to the original three-year course. The program was actually a revised version of apprenticeship, whereby paid workmen did the bulk of the work and apprentices the heavy learning. The main difference was that the apprentices were not paid the usual fifty-cents-a-day wage.

Periodically the space allotted to the Shops had become inadequate. The original building had sprouted out in all directions and once its space had been doubled. There was still not enough room,
but Professor Thompson thought the classroom-shop combination “the best way. I would not do anything to change this relation.”

From the beginning the Shops were a commercial venture, producing a line of lathes, machine tools, and school apparatus. The main products were adjustable drawing stands and twist drill grinders designed by a young journeyman, Oakley S. Walker. For many years there was considerable anxiety because the Shops did not meet expenses, but by 1882 the Shops had a credit balance which eventually rose to as much as thirty-three thousand dollars a year.

This new prosperity was largely due to the success of Mr. Higgins’ hydraulic elevator. Elevators run by steam had been in use for several years in America, but they were painfully slow, very expensive, and used only for freight. In search for a product which would not compete with local manufacturing, Mr. Morgan (the trustee chairman in charge of the Shops) suggested that Mr. Higgins design an elevator and let the boys build some of the parts. Adapting his ideas from a hydraulic crane which he had seen in operation, Mr. Higgins made his elevator with a long plunger to go down into the ground as far as it went up into the air. The first elevator made at the Shops, installed at Washburn and Moen Company, became the best publicity the school ever had.

The Shops had had many advisers. One of them was John Woodman. After his visit to the school in 1868 he had written to Mr. Higgins: “I was gratified upon your own good appearance and acceptance among the better citizens of the place,” perhaps suspecting even then that this promising young man would someday be the one to do the “accepting” in the community. Professor Woodman suggested that Mr. Higgins send him a monthly report about the progress of the Shops. “You are ascending manfully and steadily. You are doing well. Don’t be impatient,” he cautioned. “There is time enough.” But how can anyone know for sure, and how much time is enough?—these were the unanswered questions.

Even before the Shops were opened, Seth Sweetser had expressed his misgivings. He wrote to Mr. Higgins that the experiment would be a success only if students did not expect to be paid, yet work as hard as if they were. “There should be no fancy work and no indolence.” Other manual labor ventures had failed “because they could not put saleable products into a competitive market.” This pitfall by all means should be avoided. The Shops should be run on the same principle, he said, “as if they had no connexion with the Institute. The boys coming in is an important feature, but it is a feature added to an establishment complete in itself without the boys.”

It was not easy to follow so many contradictions. It might have been even more difficult if Mr. Higgins had not had some ideas of his own. He had become a man with a mission. It had taken no more than a few conversations with the ailing Mr. Washburn for the mantle to shift from old and tired shoulders to the broad and

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The state of business has diminished the demand for chemistry and civil engineering and increased applications for mechanical training.

—Stephen Salisbury II, 1879

The shop is a business establishment and not a school. The school is only incidental. —Stephen Salisbury II, 1869

Hydraulic plunger elevator, designed by Milton Higgins
capable ones of the younger man. There had been frequent opportunities before Mr. Washburn’s death for the two men to talk long and deeply. Dreams had become so fused that all during his later life Milton Higgins was obsessed with one wish—his own and Ichabod Washburn’s—to teach young men to study and work at the same time.

In 1870 the first class of apprentices had arrived at the Shops in the prescribed calico jackets and overalls. The boys reported first to Mr. Higgins’ brother, Orlando, in the “wood room.” Later they progressed to the “iron room,” where Mr. Higgins himself presided. Sooner or later they spent several weeks in the blacksmith shop and then in the engine room, where there were two boilers—one for heating the buildings, the other for running a steam engine. On the first floor of the building, near the entrance, Mr. Higgins had his office.

As time went on, the Higgins children could be seen almost anywhere and everywhere in the Washburn Shops—Aldus (the oldest son) perhaps in the wood room mending or painting a sled, John (named in deference for Professor John Woodman) more likely in the iron room or at the forge. Katharine often helped her father with letters in the office, while Olive wandered at will upstairs and down, sharp eyes all the while taking pictures for the stories she would write in later years. Sometimes she hailed a ride on one of the big lathes in the iron room. Almost always she dropped by the engine room for a visit with good-natured George Humphrey and his big black cat.

Even Mrs. Higgins was involved in the activity of the Washburn Shops, for at her big desk in the home across the street, she did much of the bookkeeping for the business. It was because of her insistence on a middle initial in her husband’s signature that Mr. Higgins added the name Prince. (There had been a Prince Higgins among his ancestors). In later years this middle name became so much a part of his identity that many persons spoke of him in a friendly way as “M.P.”, while his biographers invariably used the full name—Milton Prince Higgins.

Mr. Higgins and his venture of the Shops became so well known that he was invited to establish similar operations for the Georgia Institute of Technology and the Miller Manual Training School in Virginia. For the venture in Georgia his inseparable friend, George Alden, accompanied him, and there Worcester’s future had one of its narrowest escapes when the two men were invited to stay in the south. Fortunately for the City, they both declined.

Mr. Higgins and Professor Alden worked very closely together. From their first time of meeting, they had been good friends, boarding together near the school and establishing a life-long habit of partnership. Both had been bachelors for a few years after coming to Worcester, but in 1870 Milton had married his capable Kitty and George had married Mary Lincoln. The young Mrs. Alden had died in 1876, and now Mr. Alden lived on Boynton
Street with his pensive little daughter, Clara, who had only sedate
grownups and an occasional visiting seamstress for company. Later
Mr. Alden was to marry Kitty Higgins’ cousin, Martha, or Mattie,
as she was more familiarly known.

The Higgins family lived in a big house on the corner of Bliss
Street. The street was a real estate venture that somehow had gone
wrong. Really an extension of West (and later adopting its name)
the street was originally Bliss in deference to Harrison Bliss, a
prominent banker who had bought the property for investment
soon after the school was established. Six houses with mansard
roofs had been erected with the expectation that they would be-
come teachers’ homes, but the professors had clustered at the foot
of the hill rather than at its top. With the exception of the Higgins
house, the Bliss Street homes had turned into some of Worcester’s
first three-deckers.

Living for many years with the Higgins family was Grandfather
Aldus Chapin, the father of Mrs. Higgins. An experienced civil
engineer, he became an instructor in surveying at the Institute. Mr.
Chapin was twice as old as most of the other teachers, and in this
prerogative of seniority was given the lavish affection of teachers
and students. His surveying transit became as important an addition
to campus life as to family life; Salisbury Pond and Boynton Hill
became probably the most thoroughly surveyed areas in the United
States.

Mr. Alden, always the scholar, had not lost his interest in scien-
tific study. Along with his teaching he had managed to write and
publish several books of a technical nature. He also had developed
a dynamometer, unrivaled for measuring large units of power.
When the school had first opened, Mr. Alden had taught physics
and machine drawing in addition to being in charge of civil engi-
neering and mechanical engineering. But by 1882 the staff had been
increased to seven professors and two instructors. Mr. Alden’s in-
terests were now centered primarily in mechanical engineering.
Serious himself, he expected everybody else to be, believing more
in practice than in precept and talking as little as possible in his
classes.

Professor Alden’s most prominent facial characteristic was his
big nose, which burst into flame whenever he became excited or
annoyed. This convenient gauge of temper saved the boys more
than once from overstepping his patience. Not until a little step-
grandson many years later had the courage to ask Mr. Alden did
anyone know the story of how he had driven a stick through his
nose when a little boy in Templeton.

The successful procedure by which mechanical engineering stu-
dents learned the relationships of theory and practice soon influ-
enced all other departments of the school. “Practice” became the
popular term long before the word laboratory was used except for
chemistry. At least six hundred hours a year were prescribed in the
five departments. Whereas mechanical engineering boys built en-

As you walked up Salisbury Street there stood Two Twenty-eight exposed to all
the winds that blow and to all the eyes
that stared, with a kind of long-suffering
but defiant expression on its face. It was
the sort of house that had a face—eyes, nose, and a mouth.
—Olive Higgins Prouty,
Pencil Shavings
gines and lathes, the boys who took architecture worked with architects of the City on actual building projects. The civil engineers surveyed the campus or laid out imaginary railroad tracks. The chemists had their own small laboratory and the designers their drawing room; that is, when they weren’t out on sketching expeditions in the City. Usually the drawing excursions ended at the Oread Institute. It was so picturesque, the boys argued, and even Professor Gladwin had to agree.

Professor Gladwin, who had become a full-time teacher, was a fine artist and had the temperament to match the talent. “Converge! Converge! Make those lines converge!” he would insist when the boys became restless. When he found the tongue of his class bell missing or his blackboard sketches altered, he would withdraw into hurt dignity and declare: “There is a boy in the class.” Of sudden noises he was terrified. This the boys knew, and sooner or later one of them would deliberately drop something at his feet. He would mutter between his teeth: “I want you to know that I am on my edge.” Finally a loud crash would come from a corner of the room, his eyes would blaze, his hair fly, and he would scream: “An attempt on my life. An attempt on my life!”

It was all very harrowing, but somehow the professor always recovered and the boys learned to draw exceedingly well.

Drawing became so famous as a course of instruction that educators came from far and near to see the class in session. Its success coincided with the Legislation of 1869, which required any town of more than ten thousand persons to teach art to its citizens. Professor Thompson had been instrumental in the wording of this Legislation, and it was at the Institute that the first experiments were made. It soon became apparent, the law notwithstanding, that few art teachers were available. To help solve this problem, the Institute announced that with the cooperation of the Worcester School Board thirty evening lessons would be offered in art “if twenty shall apply.”

More than two hundred persons immediately asked for the course. The applicants surprisingly included only a few teachers but many blacksmiths, manufacturers, bootmakers, and machinists. Most of them had to walk at least two miles to class and at least two-thirds of them were always in their seats a half-hour early. All agreed they were learning what they should have known years before. The course was so popular for several years that Mr. Alden and Mr. Higgins helped Mr. Gladwin with the teaching and a branch course was also conducted in Fitchburg.

In addition to drawing, the school offered in 1882 four courses in all of which a student could earn a degree—mechanical engineering, civil engineering, chemistry, and physics. Language and mathematics were considered auxiliary departments. The teachers shifted the load from one to another, periodically hiring part-time instructors, and constantly endeavoring to keep a motley brood of subjects under their protective wing. Architecture had been

It is well known that this school was one of the first to establish a system of drawing and make it obligatory upon all students.

—Report for Vienna Exposition. 1873

Do not try to cultivate too large a field or travel too broad a road.

—Charles H. Morgan, 1879
dropped from the original list at an early date, chiefly because, as Professor Thompson explained, there had not been enough “funds or good examples in Worcester.” He supposed that if anyone should ask for the course (with a reminder of John Boynton’s letter of gift “to make us feel guilty”) architecture would “have to be revived to save embarrassment,” but he hoped not.

If John Boynton’s letter had been used for this purpose or in a dozen similar cases, there might have been a great deal of embarrassment. The curriculum at best could only nibble at the corners of his requirements. To take care of a few stipulations, some subjects were covered by lectures. The course in geology may have developed into this type out of defense. When the visiting teacher, Paul Chadbourne, asked his class what caused the glacier period, one boy solemnly guessed it must have been a “change in the weather.”

In 1869 Professor Thompson had significantly increased his staff by adding John E. Sinclair, a classmate at Chandler Scientific School. Mr. Sinclair had come to Worcester with his two motherless little girls and the assurance of less salary but with the promise that he could rent a big house in which there would be spare rooms for Institute boys.

The sacrifice probably seemed negligible when in the next year Mr. Sinclair married Marietta S. Fletcher, the language instructor.

With Professor Thompson’s help, Miss Fletcher had been trying to teach all the French, the German, and the English. The school’s most conspicuous embarrassment was its inability to offer enough in this department of language. Stephen Salisbury cringed when the boys spoke at graduation exercises, especially when a letter from the examining committee referred to “the atrocious English” of papers and speeches. Mr. Salisbury responded in the best way he knew how by establishing a fund to be used exclusively in the language department.

Edward P. Smith was immediately engaged to take over this responsibility. A man with a luxuriantly imposing beard and a masterful eye, he had no difficulty in asserting the importance of language in a technical school. “Smith has a pretty tough time, harder than any of the rest of us,” confided another teacher, but Professor Smith was equal to the task. Years afterwards, a student remembered the scorching sarcasm with which he defended his department and the fascination with which the boys watched his large mouth “get rid of the words.” Professor Smith’s department had the help of a young man who eventually became the first graduate to become a professor, U. Waldo Cutler.

Helping Professor Sinclair in the mathematics department was Thomas E. N. Eaton, whom all the boys called “Tenny.” The chief challenge of turning Institute boys into engineers was to give them enough mathematics to make up for the low admission requirements. It was to this task that Professor Sinclair and Professor Eaton gave their full attention. They respected mathematics so

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We gave him [Professor Sinclair] not only respect, but our affection. He taught not only his subject, but that indefinite something character; and he taught us not only how to think, but also to rely on our own thinking. —Robert S. Parks, 1963

Marietta S. Fletcher (Mrs. John Sinclair)
much that they would never even call it “math,” and this deference they taught the boys.

“There’s no such thing as nearly right,” Professor Sinclair would say again and again. “If you solve a problem correctly, I mark you perfect; if there is the slightest error, I mark you zero.” As he warmed up to his subject, his voice would climb the scale, “If an engineer builds a bridge and has a decimal point wrong in his figuring—well (and here his voice would break with the drama of it all) the bridge falls!”

Graduation in 1882 followed much the same pattern as had all such previous occasions. The engraved invitations had gone out with their usual courtesy “desiring the advantage and the pleasure of your presence,” a wording which was used on all standard notices, even for committee meetings. Such forms were always printed, with the school’s printing bill often amounting to more than that for maintenance.

As usual the time specified for the exercises was “8½ o’clock” in the morning, and that’s when they started, although none of the board and only two of the examining committee were there in addition to the students and teachers. The hall was decorated with laurel blossoms and streamers of grey and crimson. One by one the examiners, appointed from outside the school, made their way to the front of the chapel. It was obvious that they now thought of this responsibility as more of a chore than an honor. No longer did they submit separate reports to be printed in the newspapers, and some members were brave enough to admit that they hadn’t even read the theses.

The boys now did not have to read their entire papers, as they had at the first graduations, only the abstracts, but they were expected to illustrate them and defend them in an oral quiz. Their thirty-one subjects ranged all the way from saw mills, water pressure engines, interior decorating (the colors of a carpet should be neutral, containing nothing unnatural to tread upon) to electric lighting. This last subject caused much discussion. The telephone was also a subject of curiosity. One senior project had involved the erection of a telegraph line, for which there had been much volunteer help. The boys had ransacked Worcester County for fruit jars to constitute the improvised installation on the roof of a West Street house, and there were many shins still sore from climbing the oak tree which had supported the wire.

Generally, however, the theses were boring to the audience, and one examiner said aloud that the subjects were discussed in “too scientific and abstruse a manner to be thoroughly enjoyed.”

While the students droned on and on, guests continued to assemble. By noon the chapel was full and an overflow crowd had been seated in adjoining classrooms. The guests, who entered at the tower entrance, had been conveyed to the upper floor of Boynton Hall in a slow elevator used only for state occasions. It was said to be never intentionally at the disposal of students. Much to the em-
barrassment of all the mechanical engineers on the hill, this elevator had once stuck between floors and refused to budge until the graduation was almost over.

The only air stirring in the chapel that hot June day of 1882 came from the “moving of the ladies’ fans.” After lunch, served in the president’s office and Professor Eaton’s classroom, the Commencement exercises proceeded with Stephen Salisbury presiding as usual. He had mellowed with the years, even attempting an occasional turn of phrase to lighten the occasion. “Numbers are not cultivated in this Institute except in mathematics,” he said when speaking of the purposes of the school. He mentioned Dr. Thompson’s resignation with real distress: “I do not know where we will find his equal.” Then with equanimity learned with age he added with a twinkle, “But the trustees are now looking for him.”

One of the speakers was Henry P. Armsby, a graduate of the Institute’s first class and now president of an agricultural college. His presence in this capacity was a tremendous satisfaction to Professor Thompson.

Afterwards the class marched to the north side of the campus to plant their elm tree, “the ladies being prettily grouped on the shaded hillside overlooking the site.” The usual orations and poems were read, a song written by one of the mothers was sung, and everyone was loudly cheered, especially the janitor and handyman, John Hurley, “the indispensable functionary,” “the faithful friend and natural protector.”

Even while they cheered, Professor Thompson was on his way to board the steamer for Europe.

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“It will always be throughout its history, not exactly what he made it . . . but different from what it would have been but for his work upon it.”
—Daily Spy, 1882, of Charles O. Thompson

“It has not attempted to teach all Science. It has done far better than that. Instead of carrying us through as much as possible it has taught us to go alone.”
—Henry P. Armsby, 1882

“It’s a chilly day when John gives any of the boys away.” —Reminiscences, 1877
EXAMINATION OF THE SENIOR CLASS,

AT ST. YVON, A. M.

TREATY OF THE ARCH, ... Frederick W. Beaman.
DRAWING-OF-STORE, ... Walter L. Johnson.
THE PLY WARE, ... Samuel A. Johnson.
STORE, ... Elmer P. Howe.
BUILDING, ... Edward F. Young.
HISTORICAL REVIEWS, ... George A. Thompson.
A SHORT CARRIAGE FOR CORINTH STONE, ... Edward E. Hull.
TREATY AND PRACTICE OF STEEL, ... Henry T. Amory.
TOPOGRAPHY, ... Robert C. Holyo.
THE DURING, ... William A. Reins.
FOUR-HOUL, ... Frank G. Wetmore.
LINES AND VALVE ROTH, ... Henry M. Whipple.
THE WASHINGTON WARE WORKS, ... P. Walter Whitman.
THE CERAMIC REVIEWS, ... William R. Hoag.
SECTION AND ELEVATION OF A CLASSIC BUILDING, ... George H. Nichols.

GRADUATION OF THE CLASS OF 1871,

AT ST. YVON, P. M.

PRAYER.

MUSIC.

INTRODUCTORY ADDRESS.

BY THE PRESIDENT OF THE BOARD OF VISITORS.

ADDRESS,

PROF. WILLIAM P. THOMPSON.

MUSIC.

ADDRESS

On the part of the Class, with Valedictory,

Elmer P. Howe.

MUSIC.

AWARD OF DIPLOMAS.

BENVICIENT.

First graduation program, 1871

Above: Elmer P. Howe

Chapel in Boynton Hall
Sketch of Institute campus by George Gladwin

Salisbury Pond, at end of Boynton Street
Civil Engineering class with instructor at right, Aldus M. Chapin, father-in-law of Milton P. Higgins

Boynton Hall from West Street