

selves to the consideration of a single plane, we have no easy method of describing precisely what the course of the ray is. Now this is not precisely a system of quantity; but it is closely analogous to such a system, and that it serves precisely the same purpose will appear when we remember that that same theorem can easily (though not so easily) be demonstrated by means of the barycentric calculus. Although, then, it is not true that all mathematics is a science of quantity, yet it is true that all mathematics makes use of a scaffolding altogether *analogous* to a system of quantity; and quantity itself has more or less utility in every branch of mathematics which has as yet developed into any large theory.

I have only to add that the hypotheses of mathematics may be divided into those *general hypotheses* which are adhered to throughout a whole branch of mathematics, and the *particular hypotheses* which are peculiar to different special problems.

CHARLES S. PEIRCE

MILFORD, PA.

(To be continued)

II.

THE PROBLEM OF OCCUPATION FOR COLLEGE WOMEN¹

When the college woman sets out to earn a living, the chances are that she will think first, as a matter of course, of teaching, and, in nine cases out of ten, that she will finally decide to take up that pursuit.

The records of Bryn Mawr College show that of the 57 per cent. of its graduates who have at some time engaged in paid occupations, 86 per cent., or 49 per cent. of the whole number graduated, have been or are now teachers. These records were chosen for reference in the study of the present problem notwithstanding the comparatively brief period they cover, because they have been kept with unusual care, and afford an unusual amount of detail; and that they present a case fairly typical, not merely of collegiate but of general conditions, may be inferred from the testimony of general statistics. The census of 1890 gives 311,682 women following professional pursuits,—a class roughly comparable to the total class of wage-earners shown in college records,—and of these, 245,230, or about 80 per cent., are teachers, a figure very near to the 85 per cent. which represents the proportion of teachers to all occupied among the graduates of the College just mentioned.

The records of a man's college would show a different state of things. Not 57 per cent., but practically all graduates engage in some remunerative occupation, and, of those occupied, a far lower proportion than among women-graduates are engaged in teaching. General statistics, also, show a reversal between the proportions of men and women teachers to all employed of each sex respectively. From the census of 1890 it is found that, of the 632,641 men in professional pursuits at that time (again comparing this class to that of

¹A paper presented to the Association of Collegiate Alumnae.

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JOHN LOWELL, JR.

The Founder of the Lowell Institute

From the only portrait extant, painted in Egypt at the time of the execution of the will endowing the Institute

The History of The Lowell Institute

By
HARRIETTE KNIGHT SMITH



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THE Author and Publishers gratefully recognize their obligations to representative New Englanders, for numerous courtesies received during the writing of this history; but especially to Augustus Lowell, Esq., Benjamin E. Cotting, M.D., and Professor William T. Sedgwick, for confirmation and approval of their united labors.

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Preface

SOME years since, in the course of other professional work, it became necessary for me to make intelligent mention of the Lowell Institute in connection with Professor Henry Drummond's presence in America, as its lecturer, — at which time I discovered with surprise that this noble endowment had no written history. An intense love of my native land prompted me to make a thorough review of this unique American institution, and the following pages are the result of three years of delightful investigation.

"How do you estimate the influence which the Lowell Institute has had upon the intellectual life of the country?" I asked of Dr. Oliver Wendell Holmes, within four months of his death.

"When you have said every enthusiastic thing that you may, you will not

have half filled the measure of its importance to Boston—New England—the country at large,” he replied.

“I myself,” he added, “feel that its benefits have been of the largest significance to me, since at the time I was invited to deliver a course of lectures on the English Poets, I was not a well-equipped critic, but as an honest man I went about fitting myself for this important public service—which resulted in almost re-making my intellectual life, in its larger outreach. No nobler or more helpful institution exists in America than Boston’s Lowell Institute,” he concluded.

To the memory of John Lowell, Jr., the founder,—and to the memory of John Amory Lowell, first trustee of this beneficent foundation, this brief history is dedicated by a citizen, as a grateful tribute to the Institute’s first threescore years of life and effective work, in a country whose early history is fast waxing old.

HARRIETTE KNIGHT SMITH.

Boston, March, 1898.

The Lowell Institute

AMONG the numerous educational institutions of Europe and America there is doubtless not one so unique and individual in its character as the Lowell Institute, of Boston, a foundation which has existed for almost sixty years, without ostentation, and with no written history, yet whose influences have been so far-reaching that it has taken rank as one of the noblest of American institutions, and is perhaps even better known among many circles in the Old World, through the men eminent in literature, science, and art who have crossed the sea to give before it courses of lectures. It is so substantially endowed as to be able at all times to command almost any man it may name as lecturer, and to remunerate him generously for the careful preparation which it always demands.

To understand how the Lowell Institute came into being, one must look backward and learn something of the intellectual life of early New England. In the old days the rigorous Puritan conscience forbade all worldly amusements; and the playhouse, above all, was absolutely prohibited. Courses of lectures on religious subjects, however, were encouraged as essential to the training of the young. These lectures, which in Massachusetts were numerous, became so long and burdensome, although after all they seem to have been the delight of the Boston people, that in 1639 the General Court took exception to the length of them and to the ill effects resulting from their frequency, whereby it was claimed that “poor people were greatly led to neglect their affairs, to the great hazard also of their health, owing to their long continuance into the night.” Boston expressed strong dislike at this legislative interference, “fearing that the precedent might enthrall them to the civil power,

and besides be a blemish upon them with their posterity, as though they needed to be regulated by the civil magistrate, and raise an ill-savor of their coldness, as if it were possible for the people of Boston to complain of too much preaching.” The magistrates, fearing trouble, were content to apologize and abandon their scheme of shortening the lectures or diminishing their number, resting satisfied with a general understanding “that assemblies should break up in such season that people dwelling a mile or two off might be at home before late night-fall.”

With the British troops in the Revolutionary period came the first American theatrical performances,—given by the redcoats as simple matters of diversion in their rather stupid existence. The more worldly-minded of the colonists were to some extent affected by the curiosity, at least, which these plays awakened.

Instruction by means of lectures had always been a favorite method among New Englanders, so much so that when

theatrical plays were later attempted in Boston, during the autumn of 1792, it was found necessary to call them "moral lectures" in order to secure public interest.

College professors taught their classes by means of lectures, and instruction in the professional schools of law, medicine, and theology was also largely given in the same manner. These professors and the clergymen were called upon to deliver not a few such lectures for the benefit of the various communities, while the lawyer, if the town had one, was also expected to assist, and the village doctor, seldom a ready writer, now and then contributed a discourse of a practical if less pretentious character. Almost any one, therefore, possessed of an idea and the least facility in expression was quite certain of being asked to deliver himself of it in public, for a fee ranging from five to fifty dollars, according to the standing of the individual and the financial ability of the society employing him. A high city official, a gentleman with one lecture and that verbose

and extravagant, boasted at the end of a season during this period, that "he had delivered his one lecture ninety times, and for ten dollars at each delivery." Wendell Phillips at a later date delivered his famous lecture on "The Lost Arts" two thousand times, we are told.

He could name his own time and price for it: audiences were carried away and were in almost a constant state of applause, during its delivery; every paragraph seemed to elicit especial response. When asked by a near friend how it was possible to secure such an effect at the close of each sentence, the lecturer replied that "when he found that one form would not do it, he altered the phraseology; that not succeeding, he made other changes, or substituted another paragraph, until the whole was satisfactory."

The mention of Phillips of course brings us to the time of the New England lyceum. Agencies were established to organize the required courses of lectures, and

for a percentage to attend to all necessary details. It was not "good form" in an influential family not to encourage some one or more of these lecture courses, and generally the tickets were readily sold at prices which insured pecuniary success. From 1825 to 1850 or later lectures may be said to have been epidemic in New England. Various organizations, like the Mercantile Library Association in Boston (composed of young merchants and clerks), the Society for the Diffusion of Useful Knowledge, the Mechanics' Institutes and others, provided courses of lectures to replenish their funds. At times the people seemed to become satiated with the more serious discourses, and various novelties were introduced to sustain the public interest, like the interpolation of a concert or two or the exhibition of a juggler. In some localities really solid work was attempted, like continuous courses on literary, historical, or scientific subjects. These, however, were usually but partially successful financially, and it was difficult to



THE ODEON

Corner of Federal and Franklin Streets, Boston

obtain lecturers of sufficient ability or public spirit to undertake such ventures.

The prejudice against the theatre had not subsided, but was rather intensified. The theatre itself, as it was then conducted, was largely responsible for this. Boston's first building especially appropriated to public amusements was Concert Hall, erected in 1756, at the head of Hanover Street. It was designed for concerts, dancing, and other entertainments, and was doubtless the place in which, for the most part, the British officers conducted their amusements while in possession of the town. A law of the province, passed in 1750, prohibited theatrical exhibitions under a severe penalty. This law was considered "unconstitutional, inexpedient, and absurd"; and years later, in obedience to public wishes, the theatre in Federal Street, at the corner of Franklin, was built and opened — in 1794.

During the time when the English held Boston, the North End, in the vicinity of Copp's Hill and North Square, was

the court end of the town. But after the Revolution the neighborhood in which the theatre was built had become the residential centre of the wealth and refinement of Boston. Near here were the Federal Street Church (afterward Dr. Channing's) and Trinity Church on Summer Street, besides the only Roman Catholic Church in the city, and its bishop's house, together with many handsome private residences.

In 1796 the Haymarket Theatre was built at the foot of the Common, near Avery Street; later the Washington, Tremont, Lion, and National Theatres and the Howard Athenæum, the latter on the site of Miller's Tabernacle, a great barn-like structure, occupied by the Millerites, who flourished in the early forties. These theatres were all constructed after the manner of the English theatres of that period — with "refreshment rooms" so called, which were in reality common grog-shops, contiguous to them or within easy access, with an entrance directly from the

pit and the first row of boxes. Free admission was granted to women to the "third row." To make no mention, therefore, of the performances of the poor, degraded stage, these places were in themselves sufficiently demoralizing to condemn them to the religious and respectable of the community. This religious element resolved "that the theatre must go, and go forever." The Federal Street Theatre had already been taken by the Boston Academy of Music; and under the direction of the president, Mr. Samuel A. Eliot (the father of President Eliot of Harvard University), changed into the Odeon. The National, or Warren, subsequently died of inanition. The Tremont Theatre building still remained. The Baptist denomination secured this, and made it over into Tremont Temple, dedicating it in 1839, "henceforth to religious purposes," while it was openly declared that "there was never to be another theatre in Boston."

These, then, were the conditions of the

educational and amusement life of New England preceding the foundation of the Lowell Institute. People were yet desirous of intermingling instruction with their diversions, but much profitless work was being done in the miscellaneous, desultory lecturing which, after the theatres were closed, seemed the only recreation left to the people. During the winter of 1837-38 twenty-six courses of lectures were delivered in Boston, not including those courses which consisted of less than eight lectures; and it is estimated that they were attended by about thirteen thousand persons. These facts sufficiently show the importance and the popularity of the lectures at this time in the neighborhood of Boston, and the questions of reform and improvement involved.

In two points this lecture system was evidently defective. First, the means of the organizations under which the lectures were given were usually too meagre to induce men of talent and broad culture to undertake the preparation of thorough

and systematic courses; therefore the work was almost wholly miscellaneous, and no thorough series upon any particular branch of knowledge could be permanently sustained under such financial conditions. Secondly, it was evident that the system contained no principle for a steady improvement in the nature of the instruction it could furnish, unless it could raise the standard of the literary character of its work.

Mr. John Lowell, Jr., whose public spirit, farsightedness, and generosity, always exercised with the modesty of which the Lowell Institute is but typical, was the individual who solved for New England the problem of the higher lecture for the average citizen—which in reality closely resembles what the leading colleges and universities elsewhere are now establishing in what is known as university extension. This plan of Mr. Lowell's was in harmony with the New England lecture system, yet went beyond it by making its work systematic and thorough.

The confiding of the whole management of the Institute, financial and intellectual, to one individual is its most marked peculiarity, distinguishing it from all other similar endowments. In his will Mr. Lowell thus prescribes:—

"I do hereby constitute and appoint the trustees of the Boston Athenæum for the time being to be visitors of the said trust fund, with power to require accounts of the administration thereof and to compel the appropriation thereof to the use aforesaid, but without any power or authority to prescribe or direct by whom the said lectures shall be given, nor the subjects thereof; considering it best to leave that high personal responsibility upon the trustee or trustees of the fund for the time being.

"Each trustee shall appoint his successor, within a week after his accession to the office, in order that no failure of a regular nomination may take place.

"In selecting a successor the trustee shall always choose in preference to all others some male descendant of my grandfather, John Lowell, provided there be one who is compe-

tent to hold the office of trustee, and of the name of Lowell."

Mr. Lowell came of a distinguished New England family, whose later descendants have at the present day an international renown in the departments of science and law. Of John Lowell, Jr., it has been said: "He was a young Bostonian intended by nature for a statesman, whom the caprice of fortune had made a merchant."

The great-grandfather of John Lowell, Jr., was the first minister of Newburyport. His grandfather, Judge John Lowell, was among those who enjoyed the public confidence in the times which tried men's souls, and bore his part in the greatest work recorded in the annals of constitutional liberty,—the American Revolution. In 1779 he was chosen a member of the convention for framing a constitution of state government.

He it was who in 1780 introduced the clause in the Massachusetts Bill of Rights,

under which the Supreme Court of Massachusetts freed every slave in the state who sought his freedom.

This was the first prohibition of human slavery in any statute or constitution which was ever written, and every loyal American should be willing to accord to Judge John Lowell his reverent gratitude for this momentous and historic act of patriotism.

In 1781, he served in the Continental Congress,—and on the adoption of the constitution, he was appointed by Washington a judge of the District Court of the United States, and later chief justice of the Circuit Court.

Of the three sons of Judge Lowell, the eldest, John, was an eminent lawyer and writer upon political and agricultural subjects. His only son was John Amory Lowell. The second, Francis Cabot Lowell, the father of the founder of the Institute, was a merchant, who during the War of 1812 conceived the idea of manufacturing in this country the cotton goods



John Amory Lowell

which he had been wont to import from India, and by reinventing the power-loom did more than any one else to establish that industry in America. The youngest, the Rev. Charles Lowell, was the eminent Boston minister, the father of several distinguished children, the youngest of whom was James Russell Lowell.

John Lowell, Jr., like his father, was a successful merchant. Early bereft of wife and children, he passed the few remaining years of his life in travel, and died in Bombay, March 4, 1836. He was only thirty-four years of age when he made his will giving half of his property to the support of public lectures for the benefit of his fellow-citizens. This sum bequeathed by Mr. Lowell, with its accumulations, amounted at the time of the opening of the lectures to nearly two hundred and fifty thousand dollars. The trustee appointed by the will was Mr. John Amory Lowell, a cousin and intimate friend of the founder, who thoroughly justified the expectation of his

kinsman. When told by his lawyer that he could find no one capable of carrying out his purpose, Mr. Lowell replied, "I know the man." During an administration of more than forty years John Amory Lowell had the sole charge of the endowment, selected the lecturers and the subjects to be treated, and managed the finances with such skill that the property nearly doubled in his hands. Seldom has so responsible a duty been imposed upon any one man. But Mr. Lowell was rarely endowed for the position. To his eminent qualities of strong sense, great courage, and large acquirement, which enabled him to select wisely, he added knowledge of affairs and great singleness of purpose. Modest and retiring, he never appeared in the management farther than was absolutely necessary, but was content with a silent authoritative control.

The list of the lectures and lecturers subjoined will give some idea of the amount of work involved, as well as the

extent of the benefit which the community must have derived from the establishment of this noble institution,—of which the influences may be said to have only begun, since it is to last forever.

By the terms of the will, as previously described, the trustee for the time being must appoint as his successor some descendant of the grandfather of the founder and of the name of Lowell, if a suitable one can be found. Under the exercise of this authority, the present trustee, Mr. Augustus Lowell, has held the position for the past fifteen years. Under his administration the work of the Institute has been extended by the establishment of new courses of lectures, and the enlargement of those already founded, until now there are delivered annually between five and six hundred lectures,—all under Mr. Lowell's personal management. The value of bringing all these riches of knowledge to the very doors of Boston and her suburbs, without money and without price, is a continual reminder of

the opulent wisdom of Mr. John Lowell, Jr., in the founding of the Lowell Institute, and of the integrity with which the trust is sustained and developed in influence and power.

Notable as has been the history of the Lowell Institute, it has been unusually fortunate in the management of affairs in its relations with the public. These duties have been delegated to one named the curator by Mr. John Amory Lowell, the first trustee, and therefore so termed at the present time. The first curator, who served for three years, was Dr. Jeffries Wyman, the eminent comparative anatomist, whose early death took from the ranks of American science one of its most brilliant and thorough students; of him James Russell Lowell has said:—

"He widened knowledge and escaped the praise;
He wisely taught because more wise to learn;
He toiled for Science, not to draw men's gaze,
But for her lore of self-denial stern."



Jeffries Wyman

Associated with him from the commencement, and his successor after 1842, was Dr. Benjamin E. Cotting, who for a period of fifty-eight years (until his death May 22, 1897—in his eighty-fifth year) attended from the first discourse nearly every lecture delivered, and had the responsibility of serving Mr. John Amory Lowell and his son and successor in the administration of the business connected with the lectures, including the advertising and distribution of tickets, and the arrangements in the several halls in which the lectures have been given. These duties require a man of affairs and ready adaptability, acquainted with physical science and modes of lecture demonstration, together with a readiness to catch the peculiarities of the lecturers and to make for each all necessary arrangements in a way satisfactory to him.

In Dr. Cotting all these essentials were united, and the Lowell Institute was most judicious in retaining in its service for more than half a century this gentleman, whose

position in his profession of medicine and surgery was of the highest, not only in its practice, but in the life and literature of his profession,—he having been successively secretary, councillor, orator, and president of the Massachusetts Medical Society.

Dr. Cotting was ever recognized as a gentleman of rare business instincts and calm judgment, interblended with most gracious social qualities, which rendered his official relations with the leading men of America and the Old World alike pleasing to the lecturers and valuable to the Lowell Institute.

In April, 1897, William Thompson Sedgwick, professor of biology in the Massachusetts Institute of Technology, succeeded to the curatorship, Dr. Cotting having resigned this office on account of advancing age and infirmities. Professor Sedgwick's association with the Lowell Free Courses in the Institute of Technology, and his familiarity with scientific and other educational developments made his appointment logical.



B. E. Cotting

On the evening of December 31, 1839, the last day of the year, an interesting discourse was given in the Odeon, which seated about two thousand persons, by Edward Everett, consisting of a memoir of Mr. John Lowell, Jr., together with some anticipatory suggestions of the value of such an institution. This discourse was repeated on the evening of January 2, 1840. Then followed the regular courses in a manner similar to that which has since prevailed; and the Lowell Institute was established.

The first lectures were a course given by Professor Benjamin Silliman of Yale College, on geology. Mr. Silliman was at that time one of the most noted of American lecturers, a man prominent in science, but whose reputation abroad was perhaps chiefly due to his long and able management of the periodical known as *Silliman's Journal*. So great was his popularity, that on the giving out of tickets for his second course, on chemistry, the following season, the eager crowd filled the

adjacent streets and crushed in the windows of the "Old Corner Book Store," the place of distribution, so that provision for this had to be made elsewhere. To such a degree did the enthusiasm of the public reach at that time in its desire to attend these lectures, that it was found necessary to open books in advance to receive the names of subscribers, the number of tickets being distributed by lot. Sometimes the number of applicants for a single course was eight or ten thousand.

From the advertisements of those days we find that tickets were distributed, according to necessity, to those who held numbers divisible by 3, 4, or 5. This plan was followed until the number of applicants did not much exceed the number of seats. When this occurred, the tickets were advertised to be ready for delivery, to adults only, on a certain date. At the time and place appointed a line was formed, that the first comers might be the first receivers of tickets. For some years past a large hall has been secured, capable of

receiving under cover several thousand persons at a time,—so that applicants, no matter how many or how eager, can be arranged in line and receive their tickets in the order of their coming.

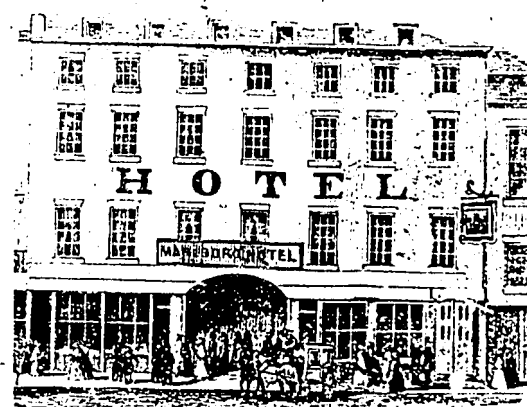
The several lecture courses, with time, place, and conditions for obtaining tickets, are announced in certain Boston newspapers, usually at least a week in advance of each course. Such tickets, with reserved seats, are good for the entire course, but always to be shown at the door. There are a limited number of admission tickets, without reserved seats; while admission to single lectures may also usually be obtained at the hall by waiting in line for a few moments just before the lecture.

During the season of 1895-96, a somewhat larger privilege was granted citizens, in obtaining course tickets, by the announcement in connection with the advertisement of lectures that any tickets with reserved seats, which remained after the line distribution, could be secured by appli-

cants who enclosed *stamped* and *addressed* envelopes to the lecture management. This method has proved a great convenience to the public, and larger audiences have, in consequence, greeted the lecturers since this additional favor was bestowed.

To prevent interruption and secure a quiet audience, certain rules were adopted: first, the closing of the hall doors the moment a lecturer began speaking, and keeping them closed until he had concluded. This rule was at first resisted to such a degree that a reputable gentleman was taken to the lockup and compelled to pay a fine for kicking his way through an entrance door. Finally the rule was submitted to, and in time praised and copied as, in certain measure, at the Boston Symphony concerts. The lectures were also limited to one hour; and in general the audiences have gradually been induced to applaud the lecturer only when he enters and retires.

The lectures were given in the Odeon from their establishment in 1839 until



MARLBORO HOTEL
Showing passageway to the Marlboro Chapel

1846, when that building was converted into warehouses. The following season they were given in Tremont Temple. After this they were held in Marlboro Chapel, previously a lecture-room formed of an L of Marlboro Hotel on Washington Street. The hall itself was in that mysterious square which only a born Bostonian can understand. It was bounded by Washington and Tremont, Winter and Bromfield streets. Music Hall was in the same square, and a close neighbor to the Marlboro Chapel. The entrance to the lecture-room was through an unattractive arched passageway, which all Bostonians of mature age will remember for its aromatic odors and the resonant notes of practising musicians thereabout.

This chapel had for some time previous been the rendezvous of all the ultra associations, which found it difficult to obtain lecture-rooms elsewhere, being composed, as Dr. Holmes puts it, of "lean, hungry, savage anti-everythings." In 1846 it was thoroughly remade into a reputable

lecture-room; and in it the Lowell lectures were given until 1879, when again commercialism invaded and it was closed to educational purposes and given up to traffic.

The best available hall was then found after much search to be Huntington Hall, in the Rogers Building of the Massachusetts Institute of Technology. Its situation was thought, in 1879, to be quite removed from the lecture centre of the city; now it is not only such a centre, but nearly the centre of population of the city itself.

In the spring of 1850 Mr. John Amory Lowell, the first trustee, wished to establish in connection with the Lowell Institute a free drawing-school. Dr. Cotting was requested to undertake this work during Mr. Lowell's absence in Europe. Two plans were devised and presented in writing to Mr. Lowell. He selected the one which was afterward followed, principally on the ground of its being the more elementary. It was peculiar, in that it required the

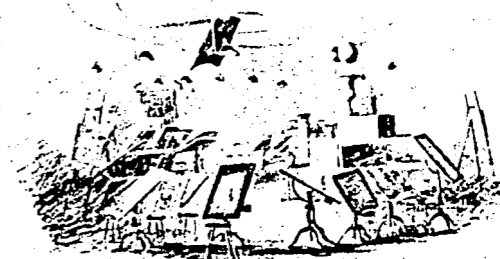
pupil to *begin* and *continue* through his entire course to draw from real objects only — "the round," as it is technically called, from rectangular forms up to the living models, and never from copies or "flat surfaces." The principle and plan, as well as most of the details, were of the curator's devising. In few drawing-schools in the country, if in any, had "the round" found any place at all up to that date, — and its exclusive use in none, so far as known.

It was not easy to secure a suitable teacher willing to undertake to carry out this plan. By chance an artist was overheard to express at random views which were similar to the curator's. After much persuasion, and with great distrust on the artist's part, his services were secured. He proved a most successful teacher; and during its entire course of more than a quarter of a century remained the school's chief. Mr. Hollingsworth's enthusiasm was the school's life; his devotion its un-failing support.

The school began in the autumn of 1850. At first it met with much ridicule from professional teachers, art critics, and others; but it soon grew popular with its pupils. Many curious and amusing anecdotes might be told of its early history and later progress. Prominent teachers and artists, some of whom later became famous, at times attended the school to obtain its peculiar advantages. Mr. Hollingsworth was an original and his assistant, Mr. William T. Carleton, had many valuable parts.

The school was eminently successful in establishing correct methods of drawing, and had the satisfaction of being imitated all over the country, almost to the entire revolution in the teaching of drawing. Nowadays no school is without its "real objects" — on its programme, if not in actual use.

In 1879, on the loss of its rooms in Marlboro Chapel, the school, to the regret of many students, came to an honorable end.



THE LOWELL DRAWING-SCHOOL ROOM
In Marlboro Chapel

From December 31, 1839, to January, 1898, there have been given under the auspices of the Lowell Institute four hundred and twenty-seven regular courses of lectures, — or four thousand and twenty separate lectures; these, with those repeated, bring the number to four thousand three hundred and twenty-five, — all absolutely free lectures, prepared by the best minds of the age, and representing the highest developments in all the various departments of science, literature, and art.

In addition to these there have been given five courses in the name of established local societies (*e.g.* the Academy of Arts and Sciences, and the Massachusetts Historical Society) by representative members named by the societies themselves. Sixty-one such lectures, added to the number of regular and repeated lectures, make the grand total five thousand four hundred and twenty-five, given by three hundred and fifty-two different lecturers.

Crude theories and plans for moral and political reforms are not to be found in

the Lowell lectures. The selection of lectures and lecturers is made from a broad and comprehensive knowledge of the safe thought and intelligent study of the time, and with an active sympathy for the varied interests of the community.

The income of the fund, with the exception of one-tenth, which must annually be added to the principal, is applied, in strict accordance with the founder's desires, directly to the maintenance of the lectures, and never has been, or can be, invested in buildings. Hence the generous remuneration, which in early days was sometimes larger for a single course of lectures than the annual salary of the most distinguished professor in any American college or university. The same liberality is yet a marked financial feature of the Institute, its lecture fees continuing to be much larger than those of any other American educational institution.

In the long line of men who have lectured on the specialties for the Lowell Institute mentioned,

in science, the names of Silliman, Lyell, Agassiz, Gray, Lovering, Rogers, Cooke, Wyman, Peirce, Tyndall, Whitney, Newcomb, Ball, Proctor, Young, Langley, Gould, Wallace, Geikie, Dawson, Cross, G. H. Darwin, Farlow, and Goodale.

The four gentlemen who have given the largest number of lectures, all of which were illustrated by experiments, are Professors Lovering, Agassiz, Silliman, and Cooke — Lovering leading the list with one hundred and sixty-eight, followed by Agassiz, who gave one hundred and sixteen, — next to whom is Silliman, who delivered ninety-six, while Dr. Cooke was heard ninety-two times.

Among the lecturers on religious subjects are the honored names of Palfrey and Walker, Andrew P. Peabody, J. L. Diman, George P. Fisher, Richard S. Storrs, Lyman Abbott, Mark Hopkins, Henry Drummond, and William J. Tucker.

Literature, philosophy, art, history, and education have been represented by men like Edward Everett, Sparks, Felton,

the Lowell lectures. The selection of lectures and lecturers is made from a broad and comprehensive knowledge of the safe thought and intelligent study of the time, and with an active sympathy for the varied interests of the community.

The income of the fund, with the exception of one-tenth, which must annually be added to the principal, is applied, in strict accordance with the founder's desires, directly to the maintenance of the lectures, and never has been, or can be, invested in buildings. Hence the generous remuneration, which in early days was sometimes larger for a single course of lectures than the annual salary of the most distinguished professor in any American college or university. The same liberality is yet a marked financial feature of the Institute, its lecture fees continuing to be much larger than those of any other American educational institution.

In the long line of eminent men who have lectured on their several specialties for the Lowell Institute may be mentioned,

Bowen, J. R. Lowell, Child, Whipple, Norton, William Everett, Barnard, Channing, Howells, Perkins, Bascom, Clapp, Hale, Lanciani, Fiske, Bryce, and Eliot.

The course delivered by Oliver Wendell Holmes in 1852-53 was exceptional; being all freshly written lectures, of which he said "that the ink thereon had hardly time to dry,"—and each of which was concluded with a new and original poem.

James Russell Lowell's course in 1886-87 on "Early English Dramatists" was also a memorable one; indeed so popular that great difficulty was experienced by the management in handling the immense audiences which applied during the evenings without tickets.

Professor Drummond's course, and the recent one by Edward Everett Hale on "The Local History and Antiquities of Boston," have drawn perhaps as large and enthusiastic audiences as any in recent years.

Among the many lecturers of the Institute, there is one whose history is so



Bryant
Josiah P. Cooke

interblended with its own, that he often called himself "a child of the Lowell Institute"; and in this close relationship both Dr. Josiah Parsons Cooke and the Lowell Institute are to be felicitated. It was the fulfilment of a relationship the like of which may have suggested itself to the far-sighted founder.

When a boy of thirteen years of age, Josiah P. Cooke—as he told the Boston schoolmasters in his address delivered to them in 1878, on "The Elementary Teaching of Physical Science"—attended the lectures of Professor Silliman at the Odeon. He was one among the throng turned away from the Old Corner Book Store, when the distribution of tickets was stopped, at the time the windows were crushed in by the eager applicants. So great was his disappointment on being unable to secure a ticket, that his father, ever thoughtful, purchased from a fortunate possessor, for a handsome price, his much-prized ticket, that the future great chemist might attend these

lectures. Of them Dr. Cooke said: "At these lectures I received my first taste of real knowledge, and that taste awakened an appetite which has never yet been satisfied. A boy's pertinacity, favored by a kind father's indulgence, found the means of repeating in a small way most of the experiments seen at the Lowell Institute lectures, and thus it came to pass that before I entered college I had acquired a real, available knowledge of the facts of chemistry. My early tastes and inheritances were utterly at variance with this interest in science, which was simply determined by the associations which satisfied that natural thirst for knowledge which every child experiences to a greater or less degree, and which I first found at the Lowell Institute lectures."

At sixteen years of age, in the year 1844, the young student entered Harvard, graduating in 1848. In September, 1849, after a year's absence in Europe, he returned to Harvard as a tutor of mathematics; and among his first pupils was

the present president of the University. At this time no chemistry was being taught to undergraduates; but within six months Professor Cooke began to give instruction in this science, in connection with his other work. This continued until December 30, 1850, when he was formally appointed to the professorship of chemistry, a position which he held for the remainder of his life, a period of forty-three years.

Dr. Cooke said of his preparation for this work: "When I was unexpectedly called upon to deliver my first course of lectures in chemistry, the only laboratory in which I had worked was the shed of my father's house, on Winthrop Place, Boston, and the only apparatus at my command was what this boy's laboratory contained. With these simple tools—or because they were so simple—I gained the means of success which determined my career."

The first course of American lectures illustrated by a stereopticon were those on

"Glaciers," given by Professor Louis Agassiz at the Lowell Institute, and illustrated for him by Dr. Cooke. The "vertical lantern" with which Dr. Cooke illustrated his own Lowell lectures on "The Chemistry of the Non-Metallic Elements," in the season of 1855-56, was invented by him for use on this occasion. The lantern has since become famous. But the desire to serve the Lowell Institute was the inspiration of its invention. In this instance the Lowell Institute, in having thus served to develop the genius of one who so long and successfully honored America's leading university and the Institute itself in the successive courses of scientific lectures delivered under its auspices, besides for many years serving the Academy of Arts and Sciences as its president, reached the ideal of a personal influence for which the legacy was provided. Dr. Cooke's association with the institution is full of significance; and his life-long impulse to emphasize the influence which the endowment accomplished

for him must ever be a matter of gratification to the descendants of John Lowell.

Noteworthy among the many things to be considered in connection with the Institute and its influence in Boston is the quality of the audiences which it usually assembles for the lectures. They are trained audiences, and the attention and interest which are given by them to continuous courses of even deep scientific lectures are remarkable. This has always been recognized by the lecturers, and especially by those from the Old World, who have often revised their work after their first appearance before the Institute audience; this being true even as recently as when Professor Drummond delivered his admirable course, after finding that he had entirely underestimated the intelligence of his average listener, and so rewrote his entire course after his arrival in Boston.

Another influence of such an establishment as the Lowell Institute, which,

though not so obvious at first, is nevertheless distinct and worthy of notice, is that on the lecturers themselves. One who is going to lecture must consider what will be his audience; and if he is a careful scientific man he will, in preparing such lectures, study to make everything clear, by statements couched in words of established meaning readily understood by the average intelligent listener not particularly versed in technicalities. In other words, learned and scientific men must make themselves clearly understood by the average auditor. This necessity is an influence which is most helpful for lecturer and community alike; and this good effect has often been seen and acknowledged by the Institute's lecturers themselves.

Literature has been enriched by the publication in book form of many courses of lectures prepared and first delivered for the Lowell Institute. The recent appearance of Professor Drummond's work, "The Ascent of Man," is a single illus-



L. Agassiz 1867

tration of this fact in this realm of science.

The indirect influences of Mr. Lowell's endowment are inestimable; for it has touched almost every educational institution in the United States. Professor Agassiz's engagement as lecturer for the Lowell Institute resulted in the establishment of the Lawrence Scientific School at Harvard, with this great man as its head.

In 1842 the Prince of Canino, a naturalist almost as ardent as Agassiz, opened a correspondence with the latter regarding a visit together to this country, in which Agassiz was to be the Prince's guest. Agassiz was then absorbed in the publication of his great work on fossil fishes, so that from year to year this visit was postponed. In 1845 Agassiz wrote the Prince: "I have received an excellent piece of news, which I venture to believe will greatly please you. The King of Prussia, through the ever-thoughtful mediation of Humboldt, will grant me fif-

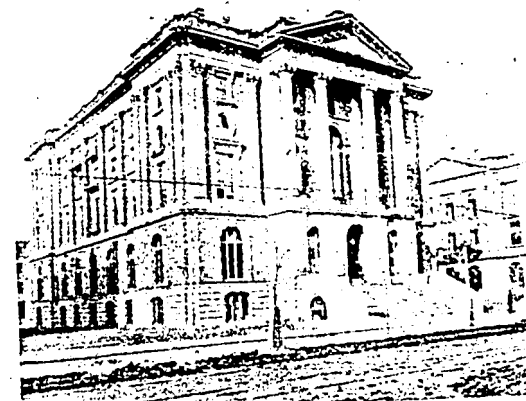
teen thousand francs for our scientific mission to America." At the suggestion of Lyell, a mutual friend, Mr. John Amory Lowell in this same year invited Agassiz to come to Boston and deliver a course of lectures before the Lowell Institute. Thus encouraged by invitation and pecuniary aid, he crossed the Atlantic in October, 1846, and in December made his *début* in America as a Lowell Institute lecturer. He was not accompanied, however, by the Prince of Canino, who then found this visit inexpedient. Hitherto Agassiz had been the brilliant discoverer; now he was to become the explorer and teacher. He lectured, and was delighted with his audience and the spirit of research that his work aroused. The Lowell Institute was intended by its founder to fertilize the general mind, rather than to instruct the select few; consequently its audience, democratic and composed of strongly contrasted elements, had from the first a marked attraction for Agassiz. A teacher in the widest sense, who sought and found

his pupils in every class, but who in the Lowell Institute's audience for the first time came into contact with the general mass of the people on this common ground, this relation strongly influenced his final resolve to remain in this country. This purpose was reached in 1847 through an offer of Mr. Abbott Lawrence, who then expressed his willingness to found the Lawrence Scientific School in connection with Harvard University, and to guarantee a salary to Agassiz as professor of zoölogy and geology. Thereupon Agassiz obtained an honorable discharge from his European engagements, and fixed his abode in this country, associating himself with Harvard's great scientific school. Agassiz came to Harvard with a new method of teaching: he brought power and accuracy of observation, and accuracy of record; this revolutionized completely the methods followed in all departments of the college; thereby giving a new impulse to science throughout the entire continent. In his son, Professor Alex-

ander Agassiz, America has also inherited from Agassiz a representative of the highest scientific ability and acquirement.

Professor Tyndall's enthusiasm for American science and scholarship and their development led him, after his Lowell lectures, to give back to America the ten thousand dollars he had received for his American lectures in gifts for scholarships to the University of Pennsylvania, Columbia College, and Harvard University. These institutions now have men studying abroad as the result of Professor Tyndall's interest in higher education here,—a direct influence of the Lowell Institute in having first led Professor Tyndall to know us and appreciate our possibilities.

In carrying out some other provisions of the will, chiefly that in which it is stated "that besides the free courses given for the general public there may be others given, more erudite and particular, for students," the trustee, in 1866, entered into an engagement with the Massa-

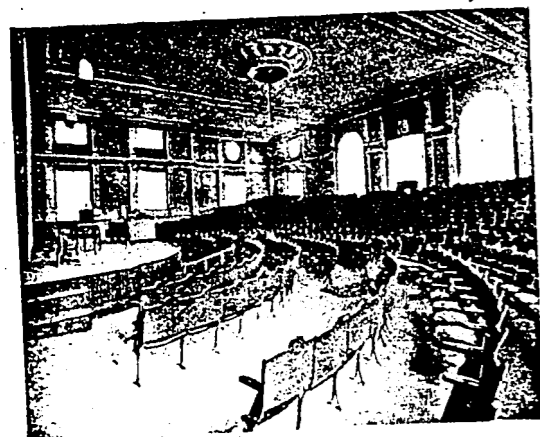


ROGERS BUILDING
Massachusetts Institute of Technology

Massachusetts Institute of Technology, whereby any persons, male or female, might, without expense to themselves, attend courses of lectures for more advanced students; the appointment of the lecturers and the subjects of the lectures to be made with the approval of the trustee. These courses are generally given in the evening, in the class-room of the professors; from year to year they are more or less varied, in their entire scope including instruction in mathematics, mechanics, physics, drawing, chemistry, geology, natural history, biology, English, French, German, history, navigation and nautical astronomy, architecture and engineering. Of these lectures (known as the Lowell free courses of instruction in the Institute of Technology) there have been given, during the thirty-one years of their existence, four thousand two hundred and sixty-five. The only conditions of attendance on these courses are: first, candidates must have attained the age of eighteen years; secondly, their applications must be made

in writing, addressed to the secretary of the faculty of the Institute of Technology, specifying the course or courses they desire to attend, mentioning their present or prospective occupation and the extent of their preliminary training.

For many years past the Lowell Institute has also furnished instruction in science to the school-teachers of Boston, both by lessons and lectures, under the supervision of the Boston Society of Natural History, and more recently has furnished instruction by lectures to workingmen under the auspices of the Wells Memorial Workingmen's Institute, upon practical and scientific subjects. For the purpose of promoting industrial art in the United States, the trustee, in 1872, also established the Lowell School of Practical Design. The corporation of the Massachusetts Institute of Technology, having approved the purpose and general plan of the trustee of the Lowell Institute, assumed the responsibility of conducting it; and in the same year the first



HUNTINGTON HALL
Rogers Building

pupils were admitted. The expenses of this school are borne by the Lowell Institute, and tuition is free to all pupils. The school occupies a drawing-room and a weaving-room on Garrison Street. The weaving-room affords students opportunities for working their designs into actual fabrics of commercial size, in every variety of material and of texture. The room is supplied with two fancy chain-loom for dress goods, three fancy chain-loom for fancy woollen cassimeres, one gingham loom and one Jacquard loom. The school is constantly supplied with samples of all the novelties in textile fabrics, such as brocaded silks, ribbons, armures, and fancy woollen goods. Students are taught the art of making patterns for prints, gingham, silks, laces, paper hangings, carpets, oil-cloth, etc. The course is of three years' duration, and embraces (1) technical manipulations; (2) copying and variations of designs; (3) original designs or composition of patterns; (4) the making of working drawings and finishing of de-

signs. Instruction is given personally to each student over his work, with occasional general exercises. Information regarding this school is also obtained from the secretary of the Institute of Technology. The school has been most successful, and in its practical results and extensive influence is one of the noblest and most helpful of the Lowell Institute's great benefactions.

Such is the history of a truly noble endowment, which has been well defined as "a public beneficence to be kept in the Lowell family and dispensed by it for the public good."

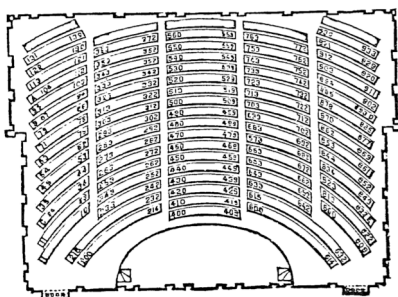
The few sentences "penned with a tired hand" by John Lowell, Jr., on the top of a palace of the Pharaohs, were the expression of a great and liberal spirit in its last aspiration for the welfare of home and native land.

As we leave with our readers, in conclusion, the complete list of the lectures and lecturers of these fifty-nine years, reflecting that we have seen only its first

half-century of existence, with the knowledge that so long as time lasts this memorial of Mr. Lowell's interest in our higher life will abide, we can but feel that it already has fulfilled what Mr. Everett in his opening address said it must accomplish.

"Let the foundation of Mr. Lowell's," he exclaimed, "stand on the principles prescribed by him; let the fidelity with which it is now administered continue to direct it; and no language is emphatic enough to do full justice to its importance. It will be from generation to generation a perennial source of public good, a dispensation of sound science, of useful knowledge, of truth in its important associations with the destiny of man. These are blessings which cannot die. They will abide when the sands of the desert shall have covered what they have hitherto spared of the Egyptian temples; and they will render the name of Lowell, in all wise and moral estimation, more truly illustrious than that of any Pharaoh en-

graven on their walls. These endowments belong to the empire of the mind, which alone of human things is immortal; and they will remain as a memorial of his Christian liberality, when all that is material shall have vanished as a scroll."



PLAN OF HUNTINGTON HALL

62 The Lowell Institute

No. of Lectures Announced		No. of Lectures Given
12	Rev. J. C. Zachos. English Poets	12
12	Prof. William D. Whitney. Language and the Study of Lan- guage	12
3	Col. Francis J. Lippitt. On Entrenchments	3
12	Prof. Josiah P. Cooke, Jr. The Sunbeam, its Nature and its Power	12
6	J. Foster Kirk. Life and Manners in the Middle Ages	6
8	Prof. L. Agassiz. Glaciers and the Ice Period	8

1865-66

12	Prof. Francis Bowen. Finances of the War	12
6	Rev. E. Burgess. Indian Archæology	6
12	Richard Frothingham. American History, Union	12
12	Samuel Eliot, LL.D. Evidences of Christianity	12
12	Prof. J. P. Lesley. Anthropology	12

The Lowell Institute 63

No. of Lectures Announced		No. of Lectures Given
12	Rev. J. C. Fletcher. Pompeii	12
6	Edward A. Samuels. Music and its History	6
12	Prof. Joseph Lovering. Sound and Light	12
12	Prof. P. A. Chadbourne. Natural Religion	12
4	Dr. Burt G. Wilder. The Silk Spider of South Carolina	4

1866-67

12	Prof. L. Agassiz. Brazil	12
12	Chas. S. Peirce, S.D. The Logic of Science and Induc- tion	12
12	T. Sterry Hunt, F.R.S. Chemical and Physical Geography	12
12	Wm. P. Atkinson. English Literature	12
12	E. Geo. Squier. The Inca Empire	12
12	Rev. E. Burgess. The Antiquity of Man	12
12	R. H. Dana, Jr., LL.D. International Law	12

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No. of Lectures Announced		No. of Lectures Given
7	Augustus Le Plongeon, M.D. Ancient American Civilization . . .	7
6	Prof. William Rotch Ware. Equestrian Monuments . . .	6

1890-91

6	Hon. John A. Kasson, LL.D. Diplomacy and Diplomats . . .	6
7	Louis Fagan. Treasures of the British Museum	7
8	Prof. Barrett Wendell. English Composition . . .	8
8 (r)	Mr. Henry A. Clapp. Dramas and Sonnets of Shake- speare . . .	16
8	Prof. Charles E. Munroe. Explosive Substances . . .	8
6	George M. Towle. The Era of Elizabeth . . .	6
8	Francis G. Peabody, D.D. The Ethics of the Social Question	8
10	Prof. James Geikie, D.C.L., LL.D., F.R.S. Europe During and After the Ice Age . . .	10
3	A. Lawrence Rotch, S.B. Mountain Meteorology . . .	3

The Lowell Institute 87

No. of Lectures Announced	1891-92	No. of Lectures Given
6	Oliver W. Huntington, Ph.D. Meteorites . . .	6
6	Charles W. Eliot. Recent Educational Changes and Tendencies . . .	6
8	Charles Valentine Riley, Ph.D. Entomology . . .	8
8	Rev. Lyman Abbott, D.D. The Evolution of Christianity . .	8
8	William Everett, Ph.D., Litt.D. Saints and Saintly Service . .	8
8	Prof. A. V. G. Allen, D.D. Christian Institutions; their Ori- gin, Development and Results	8
10	Prof. G. Frederick Wright. The Origin and Antiquity of the Human Race . . .	10
6	George L. Fox, M.A. The Public Schools of England .	6
8	John Murray, Ph.D. Oceanography . . .	8

1892-93

4 (r)	Mr. Henry A. Clapp. Dramas of Shakespeare . . .	8
6	Prof. T. C. Mendenhall. Earth Measuring . . .	6

No. of Lectures Announced	No. of Lectures Given
12 Mr. C. S. Peirce. The History of Science 12	
8 Prof. Josiah P. Cooke, LL.D. Photograph Sketches of Egypt . 8	
6 Louis C. Elson. Music, its Origin and Develop- ment 6	
6 George H. Martin, A.M. Evolution of the Massachusetts School System 6	
12 Prof. George L. Goodale. Ceylon, Java, Australia, and New Zealand 12	
8 Prof. Charles R. Cross. The Acoustic Phenomena Under- lying Music 8	
9 A. Lawrence Lowell, Esq. The Governments of Central Europe 9	
6 Prof. Gaetano Lanza. Engineering Practice and Educa- tion 6	
12 Prof. Henry Drummond, LL.D., F.R.S.E., F.G.S. The Evolution of Man 18 The last six repeated.	