CHAPTER X.

ESTABLISHMENT OF THE SCHOOL OF INDUSTRIAL SCIENCE OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

1865-1868.


While awaiting the completion of the new building upon the Back Bay, it was decided to make a beginning of the School of Industrial Science in the rooms already occupied by the Society of Arts. These rooms, as has been said, were in the Mercantile Building, No. 16 Summer Street, on the north side between Hawley and Arch streets. The announcement of this "Preliminary Course of Instruction in the School of Industrial Science of the Massachusetts Institute of Technology," included the following statements:
The building intended for the use of the School of Industrial Science, now in process of erection, will, it is expected, be in readiness for occupation next winter, when the various departments of the School will be permanently organized, and put in operation.

In the mean time, to facilitate the progress of students who may wish to qualify themselves more completely for entering on the regular courses of study and practice, and to save the time of others more proficient in elementary studies, who may desire to enter, in advance, the second year's course, it is proposed to open some of the classes in February, in the rooms of the Institute, in Summer Street.

The studies and exercises of the School are so organized as to provide a complete course of instruction and training, suited to the various practical professions of the Mechanician, the Civil Engineer, the Builder and Architect, the Mining Engineer and the Practical Chemist; and, at the same time, to meet the more limited aims of such as desire to secure a scientific preparation for special industrial pursuits,—such as the Direction of Mills, Machine Shops, Railroads, Mines, Chemical Works, Glass, Pottery and Paper Manufactures, and of Dyeing, Print and Gas Works; and for the practice of Navigation and Surveying, of Telegraphy, Photography and Electrotyping; and the various other Arts having their foundation in the exact sciences.

The Courses of Instruction, while thus providing for the scientific study of the Constructive and Manufacturing Arts, offer a variety of general as well as special studies, which may be advantageously followed by students preparing for commercial occupations, and they present to such as are desirous of becoming teachers of science in our schools and other institutions the opportunity of equipping themselves for this profession, by practice in manipulations, as well as by an ample course of scientific studies.
The classes proposed to be opened at this time are as follows:—

Elementary Mathematics, with Practice in the Use of the Chain, Level, etc.;
Elementary Physics;
Elementary Chemistry, with Manipulations;
Drawing;
The French Language.

This preliminary course will cover a period of four months, commencing, it is expected, about the middle of February. The precise date of its commencement, as well as the programme of instruction in the several classes, will be made known as soon as their organization has been determined on.

William B. Rogers,
President, Massachusetts Institute of Technology.

By order of the Committee on Instruction of the Institute.

The preliminary course here announced opened on February 20, 1865, in the rooms of the Institute, No. 1 Mercantile Building. Professor Rogers's entry in his diary on this date is: "Organized the School! Fifteen students entered. May not this prove a memorable day!" The next day he writes: "At the Institute at 9 A.M. Watson and Runkle met their classes. My first lecture at twelve. Very attentive class." On the same day the following newspaper notice appeared:—

School of Industrial Science.—The preliminary course of the School of Industrial Science was opened yesterday in the hall of the Society of Arts of the Institute of Technology, by a brief address from Professor Rogers, explaining to the students and their friends the methods of instruction to be pursued in the several classes, pointing out the few simple rules to which the students were expected to conform, and
setting before them the value and dignity of the practical professions for which they aimed to prepare themselves. Professor Rogers will have the general supervision of the course, besides taking charge of the department of Physics. The other branches will be given as follows: Mathematics by J. D. Runkle, Civil Construction by William Watson, Chemistry by Francis H. Storer, French by Ferdinand Bocher, Free-hand Drawing by W. T. Carlton.

MR. ROGERS TO HIS BROTHER HENRY:

Boston, February 28, 1865.

... I have my hands entirely full with the Institute matters, including now the superintendence of the classes recently opened in a preliminary form in the School of Industrial Science. ...

You can scarcely conceive the excitement prevailing among speculators and others on the subject of petroleum. All western Virginia is, even at this season, the object of the most greedy explorations, and companies are springing up almost daily in Philadelphia, New York and Pittsburgh. In Boston, too, the fever is rapidly rising. The new discoveries of the precious metals in Nevada, Colorado, Idaho, etc., are giving a new impetus to mining adventures in that direction also. Benjamin Silliman, just returned from California and the adjacent territories, has made such reports of native bitumen and petroleum near the Pacific shore, and of gold and silver in the newly discovered regions, as to have inflamed cupidity beyond all precedent. A petroleum company has been formed in New York with a capital of $10,000,000. Silliman is reported in our papers as having last night entertained a large party of our merchants, etc., in the Tremont House, with an account of the fabulous wealth of these regions in oil and the metals. To show how the wind blows I may mention that C. T. Jackson, State Assayer, advertises that he is about to
visit the Pacific and Rocky Mountain regions for the purpose of explorations, and invites parties to avail themselves of his services. In the month of December, one hundred and fifty-seven new petroleum companies were chartered, chiefly in Philadelphia, New York and Pittsburgh. Of these but a small fraction will be in existence two years hence. . . .

I send you to-day's "Daily Advertiser." You will see how grand has been Sherman's progress. Besides Charleston and Columbia we now possess Wilmington! What amount of opposition he may encounter in his passage across North Carolina I know not. Lee will strain every point to check him, and I shall not be surprised to hear in a few days of the evacuation of Richmond, though Grant will, I doubt not, endeavour to hold Lee firmly in that cage. You see that the rebel leaders are reduced to their last card, and have been strenuously advising the arming of their negroes. But the rebel senate has defeated the bill which passed the lower house. I believe it would have availed little at any time, and now it is too late. We must, however, look for some heavy fighting yet. But the spring campaign can hardly fail to bring to a close all the large operations of the war.

George P. Bond, the most brilliant of American astronomers, was buried a few days since, having died of consumption at the early age of thirty-nine. His merits have earned him a high reputation abroad, and have brought to his tomb, but too late to cheer his heart, the highest testimonial of the Royal Astronomical Society of London.

Professor Cooke has just closed a Lowell course on the "Sunbeam," including a repetition of most of Tyndall's fine experiments. Agassiz began his course to-night on "Glaciers." . . . He spent a part of last summer in the mountains of Maine, and speaks in rapturous terms of the glaciation which he saw there. Whitney is spending the winter here, writing up his report on the California survey. He has a large
party, including good geographers, topographers and naturalists, and has collected a large amount of new and important information, some of which he has been giving in detached papers to the American Academy. . . . Gold is now about or below 200. . . .

Professor Henry Rogers had been ordered by his physicians to Mentone, France, for the benefit of his health. From there he wrote to his brother William:

MENTONE, March 2, 1865.

MY DEAR WILLIAM,—I am busy at my pen for some three or four hours daily and on some days for five hours at my text-book, or rather my course of lectures on Geology. I alternate this pleasant light sedentary work with a lounge in the olive groves and lemon orchards in the rear of our hotel, or sometimes spend the afternoon in the saddle on a donkey, with a little girl in attendance, searching into the geology of this fascinating coast region. Imagine the finest flexures and foldings of Jura limestone and cretaceous shells and nummulitic, Middle Eocene Tertiary Limestone, coming out in bold relief, open to the view and waiting my study for miles to the east and the west of me along all this picturesque coast. Dr. Henry Bennet, in the midst of a lucrative medical practice here, is occupying his vacant hours and leisure alternate days in revising and rewriting his charming book on "Mentone and the Riviera," and I am doing all I can to aid him in making it more correct in its scientific portions, especially the geological. Just now we have a Mr. Poole, a patient and guest here, sketching a scene which exhibits a superbly picturesque synclinal fold in the Tertiary Eocene Limestone, elucidating a discovery of an inversion of the cretaceous rocks, where all these had been regarded as Miocene or Pliocene by the uninitiated tyros in structural geology. Mr. Poole is a good topographical draughtsman, being a graduate of Wool-
wich, where he took his honours for skill in this branch. . . .

**Pension Anglaise, Mentone,**
March 15, 1865.

. . . Your letters are an immense comfort to me, for I am here, though in the midst of company, very lonely for lack of intercourse with those I love and with whom alone I am in thorough sympathy. All the English here at Mentone learn and know nothing of American affairs but through the misrepresenting columns of the "London Times," and I am sick of the falsities of that print, and of the cantings and mis-statements I habitually hear from the people around me. Your good letters are a thorough corrective to all this, a sort of mental anti-bilious medicine, keeping me clear of the jaundice.

Ever affectionately yours,

H. D. ROGERS.

**MR. ROGERS TO HIS BROTHER HENRY.**

1 Temple Place, March 21, 1865.

. . . Of late I have been hard pressed by correspondence and class-room work of the Institute, to which has been added the perplexity of considering some changes in the roof of our building for the purpose of securing an additional story. These architects are great plagues when they persist in disregarding utility for the sake of their notions of outside appearances. . . .

I shall be keen to see the book of Dr. Bennet, to which you refer. Talking of Geology calls to my mind an article in "Silliman's" March number, entitled "Note on the Geological Age of the New Jersey Highlands as held by Professor H. D. Rogers," in which the author exposes very clearly the misstatement of Logan and Hall in the Proceedings of the Natural History Society of Montreal, ascribing to you the opinion "that the crystalline rocks of the region
were altered lower Silurian." After going over the ground, the writer says, "I think the above reclama-
tion is due, in his absence, to Professor Rogers, whose untiring energy and devotion to Appalachian geology did so much to lay fundamental views, which our Canadian friends will find it beyond their power to do more than illustrate." This is well said, as are many other things in the article.

Your old assistant, Whelply, a great invalid, is living in Boston, and doing well by an ingenious invention for pulverizing minerals and ores. He described it some weeks ago before our Institute, and called upon me a few days after. He talked of you with much feeling, saying that he owed to you the greatest obligations for intellectual awakening and guidance in science: that no one could be with you without being made a deeper and broader thinker; and adding that he felt daily how inadequate was the appreciation that your and my labours in structural geology had yet received. I mention these occurrences to show you that even those persons who have behaved so ill towards us are not wholly without compunctions or lost to justice. The truth is that all the assistants are feeling more and more how superior was the method and philosophy of your investigations to those of the rest of the leaders of exploration in the early day. . . .

I find my two lectures a week in physics and my other Institute matters give me as much to do as I can wisely undertake. . . . General Rosecrans is on a short visit to Boston. You know he is famous for some of the greatest battles of the Southwest, and was superseded by Sherman after the first affair at Chickamauga. He came to see me immediately on his arrival to make inquiry about the Institute, having at heart to establish a similar institution in Ohio. I have seen much of him, and find him a very genial man of large liberality, and like a majority of our leading military men, bent upon the arts of peace
as soon as the war is closed. He is greatly interested in the geology of coal, iron, petroleum, etc., and knows a good deal about these subjects. I showed him this morning, after he had finished breakfast with us, your Pennsylvania Report and Atlas. He was full of admiration, and asked at once where it could be purchased. . . .

TO HIS BROTHER ROBERT.

Boston, March 31, 1865.

MY DEAR ROBERT,—Next week we shall be holding our first monthly examinations in the school. This looks like work, does it not? Next season I shall occupy myself but little with the details of instruction, intending to have an assistant appointed in physics, so that I shall lecture only occasionally and leave all the drudgery to him.

You have doubtless seen by the papers that Agassiz is going, with a large equipment, on an exploring and collecting expedition to South America. He was expected to sail in the new steamer Colorado from New York to-day.

Have you heard anything of affairs in and about the University of Virginia as observed by Sheridan's party? Do be very careful, my precious brother, of your health, and write soon to

Your ever devoted brother,

WILLIAM.

TO HIS BROTHER HENRY.

1 Temple Place, April 4, 1865.

MY DEAR HENRY,—My heart is so overflowing with joy that I can scarcely write anything connectedly. Richmond and Petersburg are ours. By a happy turn of retributive justice, a division of colored troops under Weitzel were the first to enter and take possession of the rebel capital.

The fighting has been severe, but the consummate
skill of Grant and the valour and persistency of his officers and troops have secured the greatest victory of modern times, the noblest triumph for human rights that has perhaps ever been achieved. . . . Our losses in these successive battles have been considerable, but far less than I should have estimated them a week ago. The result is so grand, and has been so rapidly attained after the first great manoeuvre of Grant, that it has made us all crazy with joy. I have a great flag flying out of my window, and in all the principal streets here and all through the cities of the North you are greeted by long vistas of rejoicing banners. . . . The consummate skill of Grant in planning and directing the vast game, in which for so many months he has seemed almost an idle participant, in holding Lee fast in Richmond with the flower of the rebel troops, and bringing Sherman, Schofield, Thomas and others in a continually contracting circle towards the rebel capital, and then the master stroke in which he has been so well seconded by Sherman and others, must give him the highest place among soldiers, while the gratitude of the world in all future time will express the greatness of his services.

We have just heard of the death of the liberal patron of the Institute, Dr. William Walker, of Newport. I go to-morrow to his funeral as the representative of the Institute. Just now the first monthly examination is in progress in the school of the Institute. It goes on very well. . . .

Boston, April 11, 1865.

In this season of exultation and delight I scarcely know in what words to speak of the national affairs. Since my last the whole country has been thrilled by the news of the surrender of Lee and his entire army, which is in effect the end of the rebellion. We shall soon hear of Johnston giving up, the only remaining army on this side of the Alleghenies; and as for the small forces in the Southwest, including those of
Mobile, they will of course be glad to surrender. . . .
Ere the summer we may expect to have a new and wholesome order of things established throughout the rebellious States. What a grand consummation! Great as has been the cost in precious treasure and infinitely more precious lives, it will be well repaid in the new liberty of the regenerated nation. Surely the world will give us credit for having fought nobly for the noblest cause that ever inspired a nation’s patriotism,—the cause of freedom and a higher civilization, not for ourselves merely, but for the world and for all coming time. . . .

But I have another piece of news of great interest: Dr. Walker, the patron from whom the Natural History Society and Institute have already received so much, has very lately died, leaving an immense fortune which, after providing handsomely for his family, bequeathes to each institution a very large sum, probably as much as $250,000. This will enable us to expand our plans far more rapidly and successfully than we had expected. If I can only prevent the expenditure of any considerable part of this in brick and mortar I shall feel grateful indeed. The liberality of this man to education is something noteworthy. He has within the past four years given to the Institute, the Natural History Society, Amherst College, and a new college not far off, an aggregate of over $400,000, and now divides $1,000,000 between the four institutions. It is possible the will may be disputed, but I think it will be in vain. . . .

Yesterday the city was in a delirium of excitement: meetings of congratulation were held in the churches, in the business squares down-town, in the club houses and other places, and at night, in spite of rain, the whole city was ablaze with gas and fireworks. A large flag, the glorious stars and stripes, floats before my window, and every house in Temple Place has a similar display. . . . Gold has got down to about 140. . . . I am curious to see how the “Times” will
talk after seeing that the "invincible Confederacy" has proved its empty rottenness. Will not republican constitutions rise in European estimation? What empire is there of them all that could have stood the strain of this gigantic rebellion as we have done, growing actually stronger under it? . . .

TO HIS BROTHER HENRY.

Boston, April 18, 1865.

MY DEAR HENRY,—The public sorrow that fills every heart almost disqualifies me from writing. Do not suppose that this appalling crime has in any degree weakened the confidence of the North in an early completion of its triumphs. The wheels of government were not arrested for a moment, and the interests of freedom are not less earnestly pursued, or less certain of being secured, under President Johnson's administration than under that of the pure-hearted, brave and beloved magistrate whose grand career has been cut short by the hand of an assassin. . . . This life, so precious to the nation, because in singleness and uprightness of purpose and in wise firmness blended with a womanlike tenderness and mercy, was ever devoted to the public weal. This life might seem to have been so inwoven with every great public interest that to sever it would be almost to bring anarchy upon the nation. Such might be the thought of those who understand not our republican organization. But thank Heaven! no one life, not even that of our good and great President, is essential, even at such times as this, to the orderly and firm conduct of affairs. . . .

The whole city—all the cities—and even the country villages are draped in mourning. The ten thousand flags that were waving gladly a week ago in token of our joy are now fringed with crape, and almost every house is festooned in the black and white habiliments of grief. Never in this country, perhaps never in all history, was a nation's mourning so per-
vading, so touching and so true. Every household was familiar with the wise sayings, the cheerful, kindly anecdotes, the manly firmness tempered with gentlest mercy, and the noble, persistent truthfulness and unclouded clearness of principle and logic, which marked the heart and mind of our good President, and every household in loyal America this day feels as if one of its own revered inmates had been snatched away.

Beside, if not above, the name of Washington will stand that of Lincoln, in the hearts and the history of this country, and where in the history of other times or nations can we find one more worthy of reverence and affection? To-morrow is set apart by the nation for his funeral.

The assailant of Mr. Seward has been caught, and there is little doubt that Booth also will be captured. The public detestation of the treason and its great instigators and helpers is most intense.

Boston, April 25, 1865.

... Of home matters I have very little to tell. Just now I am much exercised, as the Methodists say, with plans for putting an additional or Mansard story on our building now going up. The architects are dead against the change, yet I think it will be done. I am anxious to secure such ample space in this one building as will enable us to concentrate all our means for education and the museum within its walls. Some of our friends, who think that buildings make colleges and museums, would rather have a plea to spend one or two hundred thousand dollars on a second building, even at the cost of crippling our working capital so as to keep us continually in the attitude of beggars. ...

Great regret is felt here at the death of Cobden, whose long service in behalf of free institutions of all kinds has caused his name to be reverenced by the liberal-minded on both sides of the Atlantic.
esteem myself fortunate in having had the privilege of hearing him make one of his cogent speeches in Parliament last autumn.

In the midst of these exciting political events the work of the School of Industrial Science went steadily on, and plans for the opening of the first regular session in October were gradually matured. The pamphlet entitled "Scope and Plan of an Institute of Technology," etc., published in 1864, was the guide which was followed. As early as April, 1865, correspondence was begun with Mr. William R. Ware, then a practising architect of Boston, in regard to the establishment of a department of Architecture. As a result Mr. Ware wrote out at much length, under date of April 27, 1865, his views of what was needed, and what was possible, in architectural education.

HENRY ROGERS TO HIS BROTHER WILLIAM.

SHAWLANDS, GLASGOW, April 29, 1865.

MY DEAR WILLIAM, . . . I stayed over night and the following forenoon at Avignon, purposely to call on J. Stuart Mill, the eminent political economist and reformer. I bore a letter from John Nichol, his confidential friend, introducing me. I found Mr. Mill residing some three miles out of Avignon, in a most lovely district, amid the beautiful fields and gardens for which that part of southern France is so renowned. He received me with warm cordiality, and I had a most interesting and cheering interview with him. As I anticipated, I soon discovered him to be intimately and wisely acquainted with the history of our native country, and with the working of its institutions. He calls this American struggle the test phenomenon in the civilization of the nineteenth century, and predicts enormous benefits from it to
all mankind. He and my other good friend, Mr. Edwin Chadwick, of Richmond, are candidates for Westminster for the House of Commons. If Mill succeeds it will be a great triumph, for his programme is an extremely liberal one. He declines altogether canvassing for votes, and advocates a wide enlargement of the electoral franchise. I feared he would lose the election, but he told me that he was surprised to perceive the heartiness of response expressed by the press of all shades of politics at his independent programme. . . .

I turn now to that dreadful calamity, the assassination of good President Lincoln. The news I got three days ago, Wednesday morning, in London, perfectly unnerved me. I hastened away to the American Embassy to learn if it were true, and found Moran and Mr. Adams in great grief from the telegram the latter had just got from Mr. Stanton. The news has made a profound sensation all over Europe. I only hope and trust there will be no cruel retaliations, but that the soul of the North will rise to the demands of the occasion, a firm observance of justice, with a strict discrimination between the guilty and the not guilty in all the punishments to be visited. We are awaiting further news with intense anxiety. . . .

MR. ROGERS TO HIS BROTHER HENRY.

Boston, May 7, 1865.

My dear Henry,—I picture you now returned to your home at Shawlands, where I trust you have found a softer and more genial air than the chill northeaster we have been having here. Our spring has on the whole been unusually pleasant, and marked by a very profuse display of verdure and early flowers. But even this has not exempted us from the sharp tooth of the wind that takes its ill-natured character from the Arctic current.

E. and I expect to make a short visit to New
York, leaving on Tuesday and returning on Thursday night, to attend the convention of the several freedmen's aid societies. Governor Andrew, John Jay, H. W. Beecher and others of note will take part. The purpose of the meeting is to combine into one organization the several societies that have been working in this great cause without proper concert of action. I shall perhaps have some news of New York to give you by the close of the week.

I shall be anxious, dear Henry, to hear of your health after your return to Scotland. You have been very good and thoughtful to write me so regularly while at Mentone. I trust you will be able to continue this, as your letters are so dearly welcome to me.

1 Temple Place, Boston,
May 23, 1865.

I have time this evening for only a brief letter, having much to do in preparing my report as secretary of the Academy and getting ready also for the annual meeting of the Institute, to be held on Thursday next. . . .

Our Institute examinations are now in progress. Four weeks more will bring the school to a close, except perhaps some outdoor work in the use of instruments. I fear we shall not have the new building ready in time for the opening in October, but at any rate we shall occupy a part of it before the winter sets in.

War news is happily at an end. To-day the great farewell review of the army has come off in Washington, where twenty-one miles of troops have passed before the White House!! . . . The spring has made such unusual progress that the trees on the Common are in leaf and the grass is being shorn. In a week or ten days we hope to flit away to Lunenburg, for the city is at times intolerably warm. I shall not get permanently away until towards the last of June. . . .
The preliminary course of the School of Industrial Science, as has been indicated, was drawing to a close. The total number of students, as we learn from a letter of Mr. Rogers, had been about twenty-five. The instructors had been Mr. Rogers himself, and Messrs. Runkle (mathematics), Storer (chemistry), Watson (mechanical drawing), Böcher (French), Carlton (free-hand drawing). A chair of chemistry was now offered by President Rogers to Professor Charles W. Eliot, who was at this time in Vienna.

TO CHARLES W. ELIOT.

1 Temple Place, Boston,
June 6, 1865.

My dear Sir,—I write in great haste to be in time for the mail. You will, therefore, excuse the brevity and bluntness of my communication.

You have doubtless heard of the bequest of Dr. Walker to our Institute. This will put us in possession by August next of from $160,000 to $170,000, the chief part of which will be set aside as a fund to aid in supporting our school. In this department we have made an encouraging beginning; and with the organization which I trust may be secured this summer, I feel very sure that we shall be able to open our regular courses next autumn in the new building with a large class. We have now in our preliminary course some twenty-five pupils, of whom some will be ready to enter on the second year's course at that time.

My great anxiety now is to make up a good faculty of instruction, and I want you to be one of the number. What say you to taking charge of the laboratory, with such other chemical matters as you and Storer might arrange between you? We shall need at the beginning two chemical professors, one having general chemistry, including lectures on some of the chemical arts, and the other laboratory instruction in
its various branches, including metallurgy; but the details might, in many cases, be interchanged, if found expedient and agreeable. As yet there has been no formal action of the government of the Institute on these subjects. We have been awaiting the final adjustment of the Walker bequest. But I have talked with several influential persons in the government, including Mr. John A. Lowell, and I feel safe in promising you for the first year a salary of $2,000. I shall be greatly disappointed if through the extent of our class and other sources a larger salary should not be granted the next year. Indeed, I look forward to making these professorships sufficiently remunerative to place the professors at ease in regard to income. But there is much work to be done, and you can greatly aid in doing it.

Hearing some time ago of the large offer made you at Lowell, I feared that you might be tempted to give up science as a profession. It was with no small satisfaction that I learned a few days since, your determination to hold to your scientific pursuits. I believe you will never regret that decision.

Our present temporary faculty consists of Runkle and Watson, dividing the mathematics and mechanical drawing between them; your friend Storer in chemistry; Bøcher in French, while free-hand drawing has been in charge of Carlton, of the Lowell drawing-school. Most of these will, I presume, be continued as permanent instructors, having given proof of skill and capacity during our experimental course. I am hoping to get Henck to take charge of engineering.

Please, at your earliest convenience, let me know your views of the proposition herein made. I wish you were here to see, as I do, the proofs of the hold we have secured on the public confidence, and the basis on which I build such assurance of success. With kindest remembrances to Mrs. Eliot,

Yours very truly,

WILLIAM B. ROGERS.
To this Professor Eliot made a frank reply, looking favorably upon the proposition, but in view of his long absence in Europe asking for further and more detailed information about the Institute. Mr. Rogers replied as follows:

TO CHARLES W. ELIOT.

LUNENBURG, Mass., July 17, 1865.

MY DEAR SIR,—In replying to your welcome letter of the 20th ult., I must premise that it is out of my power by a written statement of what has been done or is proposed by the Institute to make you fully acquainted with its position and prospects, and that from the nature of the case some of your queries must remain almost unanswered.

The charter founding the Institute confers upon it the power to act as a Society of Arts, and to establish and carry on a School of Industrial Science and a Museum of Practical Arts.

The State has no participation in its management beyond what grows out of the provision that the Governor, the Chief Justice and the Secretary of the Board of Education are the ex-officio members of the government of the Institute.

This body, by our present Constitution and By-laws, is invested with the entire control and management of the Institute, governing its several departments through the medium of appropriate standing committees, as seen in the printed sheet which I herewith send you. The general body of the Institute, acting as a Society of Arts, is represented in the government by the Chairmen of the several Committees of Arts, which are elected by those committees independently of the government. The choice of officers and appointment of standing committees, as well as the supplying of vacancies in the government, rest wholly with that body itself, which devotes its annual meeting in part to these purposes. Thus the element of stability is
well provided for at the same time that the reno-
vating and more democratic influence of the Institute
has a fair representation through its committees of
Arts. As, however, I am informed that Mr. Storer
has sent you the several pamphlets relating to our
organization and plan of operation, I will say nothing
further on this head. You will be able to infer from
the printed list of the government something of its
general tone and character.

The "new building" referred to in my letter is
intended for the use of the school and such part of
the Museum as will be first collected, consisting of
models and materials directly auxiliary to the instruc-
tion of the school. This building, 150 by 100 feet,
will, I trust, afford sufficient space for all the opera-
tions of the school for many coming years. The
lower floor will accommodate laboratories and arrange-
ments for motive power, the other floors will be given
to lecture-rooms, class-rooms, cabinets of models and
other apparatus and materials of instruction, together
with ample space towards the top for the drawing-
school of the Lowell Institute, which will, I presume,
be transferred to this building as soon as the apart-
ments shall be prepared.

The building will, I trust, be roofed in before the
close of this month, after which the finishing of the
interior work will be pressed forward so as to provide
accommodation for our classes early in October. . . .
In the lower or basement story I propose to have two
and perhaps three rooms finished by that time for
chemical purposes, including, at least in outline, a
regular working laboratory. Our provision as yet of
the apparatus and materials of instruction is incon-
siderable. But there is a second small purchase of
models now on its way from Darmstadt, and I count
very confidently on being authorized to provide for
the chemical and other departments a satisfactory
equipment in time for the opening of our session.

As regards the practical arrangement of the course
of studies, I can only speak from my own convictions of what is most expedient. The question has not been formally acted on in the Committee of Instruction, but I have little doubt of its being harmoniously disposed of. By the Constitution and By-laws this Committee has general control of the organization and business affairs of the School of Industrial Science, but the practical arrangement of the course of studies in each department will, I doubt not, be left in a great measure to the professor or professors having charge of the department, subject to such control of the faculty of instruction as may be needed to secure coöperation and prevent interference. Long experience has taught me the importance of giving to each professor a wide latitude in the choice and use of his plans and means of instruction, making him, in fact, within reasonable limits, the sovereign in his department, but at the same time holding him of course responsible for its successful administration.

The object of the school being to afford instruction to all who are prepared to benefit by its teachings, whether in a continuous curriculum of studies or in some particular division of them, its policy in the admission of students and in the individual distribution of studies will be one of pliancy rather than rigidity, helping the development of a special talent, as well as the general capacity of the pupils; at the same time stimulating and enforcing industry, and maintaining good order by stated oral and written examinations.

Of the class of men to which the Institute may look for sympathy and pecuniary help, the enclosed list of names will be a sufficient indication. Of assistance from the State further than already given we make no calculations, nor should we desire it if accompanied by legislative control and political management.

Professor Eliot, on receiving the foregoing, accepted the offer of Mr. Rogers, in a letter dated Paris,
July 31, 1865. In his first letter, dated Vienna, June 20, 1865, he said:

... That the school is new and its success something to be conquered does not make it any less attractive to me. Nothing has struck me more in Europe than the great and prompt success which all the well-organized Polytechnic Schools have had,—Paris, Carlsruhe, Stuttgart, Zurich, Vienna,—all illustrate the wonderfully rapid growth and wide usefulness of these technical schools. Looking at such schools, I have often felt how useful would be the work in which you have been engaged these several years in Boston, provided only that the community gave you an adequate support. What governments do in Europe individuals must do with us, and ours is infinitely the best way in the long run. ...

Let me say in conclusion that I am very sensible of the honour you have done me in making me this proposition.

With many thanks, I am,

Very sincerely yours,

CHARLES W. ELIOT.

MR. ROGERS TO HIS BROTHER HENRY.

1 Temple Place, June 13, 1865.

... Our examinations and the approaching close of our experimental session in the Institute, added to the cares of the building committee and our removal to the country, made it impossible for me to write to you by the last steamer. ... Robert, from whom I heard a few days ago, was still in Philadelphia finishing up his University business, and expecting, though not confidently, to visit his old resort at Long Branch early in the summer. We count upon having him at Sunny Hill, especially while you and Eliza are with us. The summer heat has already set in, and there is no escape from it. It has already wilted me down,
and threatens to bring back that dreadful sleeplessness from which I had for some months been comparatively exempt. This is quite as bad in the country as in town, but I trust that after closing the Institute business a continued rest at Sunny Hill will build me up a little. For the Institute this is a critical season. I have to organize a permanent faculty and make our plans for commencing work in the new building next autumn. But after next week I shall not be needed in the city more than once a week for part of a day. At present I come down on Monday morning and return on Wednesday evening, having much to do during these three days. . . .

The final examinations in the preliminary or experimental session of the School of Industrial Science were held in June, that of Professor Rogers in Physics falling on the 20th. A copy of the questions used by him on that occasion has been preserved.

FROM HIS BROTHER HENRY.

5 Elgin Villas, Shawlands, Pollockshaws, June 23, 1865.

My dear William, . . . We are strongly tempted to take one of the steamers of the line which at this season plies between Glasgow and New York, especially if we can go in the new commodious screw steamer of this line, the Hibernia, about the 8th of August, and Captain Cook assures me that the oscillation is no more in one of these new screws as they now construct them, than in the best paddle-wheel vessels running. And if we can get away in the first half of August, we may count upon a smooth passage at all events. Starting so close from our own home would much promote our comfort. Professor John Nichol will go along with us, if his fears about the screw do not prevent. Eliza, ever heroic when a crisis demanding courage arrives, is quite willing to take the screw steamer.
Another very stanch and influential British friend of the United States, Mr. John H. Eastcourt, has written to me a letter I got yesterday, (confidentially) mentioning a "project to establish in New York an international weekly or semi-weekly paper, to be edited and conducted by Englishmen, and to be supplied with matter by first-class English and American writers; to be liberal in politics, advocate non-intervention in foreign affairs, free trade in commercial legislation, sympathetic with all popular progress, and a faithful record of the times." He adds, "We want to know each other better and to mutually educate, and this done, the rivalry between the two nations will be honourable and mutually beneficial." He asks my views on the matter, and says he would be glad to know whether I could be a contributor to its columns.

I shall reply to-day, and cheer him on all I can toward the undertaking. I have long wished to see just such a journal. I shall recommend that they include one or two able Americans as assistant editors in the editorial conduct of the paper. No Englishman, unless thoroughly Americanized by long study and personal residence in the country, can duly understand American affairs. There is a vast amount of aristocratic jealousy of republicanism to be fought against or counteracted in this country, and it is high time there should be an organ devoted to so peace-making, so holy a task. . . .

GLASGOW, June 30, 1865.

. . . Two evenings ago I dined at Mr. Crum's, and passed the evening and next morning there, going into Glasgow in company with Dr. Livingstone, the African explorer, — an interesting man, full of curious information, actuated by high feelings and much good sense, a rare contrast to some of the over-vaunted African travellers, like Burton. Livingstone has just finished his notice of his last expedition, and sets forth a month hence on another equally bold and
arduous one,—to penetrate Central Africa from the east coast, under lat. about 10° south of the equator.

A Rev. Mr. Stewart, a member of my class, is training here in scientific studies to fit himself to rejoin Livingstone some eighteen months hence, he going to the countries about 25° south lat. He was with Dr. L. on the Zambesi.

All Scotland, indeed all Great Britain, is full of excitement connected with the approaching Parliamentary elections. I am looking sanguinely to the success of some of those candidates who are sworn friends of our dear native land: J. Stuart Mill for Westminster, and Duncan McLaren, the brother-in-law of John Bright, for Edinburgh. . . .

TO HIS BROTHER HENRY.

SUNNY HILL (date uncertain).

. . . Please get from Archer 1 a statement of the annual appropriation and expenditures for his museum, and any documents he has published relative to it. I am anxious rather to keep back this department of our Institute until the school is decently provided, as I know that in the way of building, etc., it would soon swallow up all our means. In the new building I am setting aside one grand large room for the beginning of the Museum; shall first provide a complete set of models, of machinery, or rather mechanism, and of architectural and engineering combination, etc., to help our instruction, as well as to form the beginning of a museum raisonné. Our prospects are good, and I am delighted with the results of the experimental school. . . .

The following is the formal announcement of the opening of the first regular session of the School of Industrial Science of the Institute:—

1 Curator of the Edinburgh Museum.
MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

SCHOOL OF INDUSTRIAL SCIENCE.

The regular courses of this Institution will be opened on Monday, October 2, and be continued without interruption through a period of eight months. Applicants for admission into the first year's course should be familiar with the subjects usually taught in our English schools, including expertness in the leading rules and processes of Arithmetic and a ready use of the pen. They should, moreover, be familiar with the elementary operations of Algebra, and have a clear knowledge of the earlier theorems of plane Geometry.

There will be no formal or extended examination, and no classification of candidates prior to admission into the first year's course, but all such students will be required to pursue their studies in common, until the first stated examination (in November), after which they will be classified into an upper and a lower section, according to the preparation and aptitude shown by them in this and in their daily examinations.

Candidates for admission into the second year's course will be expected to be familiar with Algebra so far as treated in the ordinary text-books, excepting the general theory of equations, and with Geometry and plane Trigonometry in general, as well as the application of the latter to the similar class of problems. They must also be acquainted with the elements of Physics and Chemistry, and have made some progress in Free and Geometrical Drawing and in the rendering of French into English prose.

Students who, from unequal preparation in different departments, could not profitably enter all the classes of the second year will be allowed, after due examination, to enter partly on the first and partly on the second year's course, and they, as well as all
other students, may in the progress of the session be advanced to a higher or remitted to a lower class of studies, according to the results of the daily and stated examinations.

Students not intending to take an entire course may enter any one or more of the scientific departments on giving suitable evidence of preparation for the same.

The fee for the entire course, either of the first or of the second year, will be one hundred dollars, payable one half at the time of matriculating, and the other during the first week of February following.

Students desirous of entering the school are requested to call at the office of the Institute, No. 1 Mercantile Building, 16 Summer Street, Boston, between 11 A. M. and 1 P. M. on or after September 20, for conference with one or more of the Professors.

A detailed programme of the organization, and the regular courses of the school for the whole four years, as well as of the evening courses, will soon be ready for distribution.

WILLIAM B. ROGERS,
President, Massachusetts Institute of Technology.
INSTITUTE'S ROOMS, September 1, 1865.

FROM PROFESSOR J. S. NEWBERRY. ¹

Cleveland, September 5, 1865.

... I want to talk Academy to you. As you will have learned, it will be expanded and rendered more democratic and popular at the next meeting or expire. Which shall it be?

I want, too, to talk over with you the fossil plants of the Richmond horizon. I have lately been studying up the subject, and, when I can get access to specimens of all the species, shall, I think, be able to make some very interesting deductions from them. I have lately received a collection of fossil plants from

¹ At this time Director of the State Geological Survey of Ohio.
Mexico, which includes your Strangerites Magnifolia, Pecopteris falcatus of Emmons, P. ballatus, Bunbury, and Otozamites Macombii, Newb., a beautiful Cycad, which I obtained from Marcou's Jurassic of New Mexico, etc., etc., all associated with unmistakable Triassic mollusks.¹

I want much to get access to Emmons's collections, and to see the nervation of your specimens of Pecopteris Whitbiensis.

Can you not obtain good suites of Triassic and Jurassic (European) plants for your new cabinet in the Technological Institute? Nothing would help our geology more just now.

Professor Henry Rogers's proposed visit to America was made in the autumn of 1865, and therefore but few letters belonging to this period are found.

The School of Industrial Science of the Institute was opened, as announced, on October 22, 1865. About seventy students were registered; and the faculty, as published in the first annual catalogue (1865), numbered ten, namely:

President, William B. Rogers, LL. D.; John D. Runkle, A. M., Professor of Mathematics and Analytical Mechanics; William B. Rogers, LL. D., Professor of Physics and Geology; Frank H. Storer, S. B., Professor of General and Industrial Chemistry; Charles W. Eliot, A. M., Professor of Analytical Chemistry and Metallurgy; William P. Atkinson, A. M., Professor of English Language and Literature; Ferdinand Böcher, Professor of Modern Languages; John B. Henck, A. M., Professor of Civil and Topographical Engineering; William Watson, Ph. D.,

¹ See, also, Appendix No. 1, by J. S. Newberry, in "Geological Researches in China, Mongolia and Japan," by Raphael Pumpelly, Smithsonian Contributions, 1866.
Professor of Descriptive Geometry and Mechanical Engineering; William R. Ware, S. B., Professor of Architecture; James D. Hague, Professor of Mining Engineering; William P. Atkinson, Secretary.

On October 4, 1865, the "American Association for the Promotion of Social Science" was organized in Boston. In this undertaking Professor Rogers took a leading part, and he was elected as the first President of the Association. In its development and labors his interest continued unabated as long as he lived.

A week later, namely, on October 12, 1865, he delivered an Address before the Massachusetts Association of Teachers in the Music Hall, Hon. J. D. Philbrick in the chair. In the course of this address Mr. Rogers said: "I claim to be an old member of the fraternity of teachers, and I am proud that it has been my lot to officiate in all the grades, from the humblest country school to the University."

TO HIS BROTHER ROBERT.

Boston, November 12, 1865.

... The Institute matters move on quietly, though from our bad accommodations in Summer Street I have daily concern and embarrassment. Seventy lads and young men, overflowing with life, are not readily kept in perfect order in the intervals of class work, where there is no room to retire to for recreation or study. But I shall to-morrow take possession of some additional apartments quite near, where some of the classes will meet, and where a room will be provided for their own special use between hours. I am endeavouring also to secure the services of an efficient aid, who shall keep the class records and have a general eye to the discipline. This, should I succeed, will be a great relief to me and to the faculty generally.
Those tardy architects have not yet got ready the chemical rooms in the new building, but they are at last working earnestly upon them, and I hope to have all the chemistry transferred by the beginning of next month. . . .

The Trustee of the Lowell Institute, Mr. John Amory Lowell, who was also one of the Vice-presidents of the Institute of Technology, now proposed to establish at the Institute free evening lectures on special scientific subjects, to be given by members of the faculty. This step, which marked the formal beginning of a close connection between the Lowell Institute and the Institute of Technology, was welcomed by the government, and Mr. Lowell's offer was gratefully accepted.

FROM JOHN AMORY LOWELL, ESQ.

William B. Rogers, Esq., President, Massachusetts Institute of Technology: —

Dear Sir,—I propose to institute evening courses of instruction to be opened gratuitously to the public under such regulations as may be deemed advisable.

It has occurred to me that these courses might with advantage be delivered, in the first instance, under the supervision of the Massachusetts Institute of Technology and by their professors, the programme of course to be acceptable to me. . . .

If such an arrangement would be acceptable to the government I shall be happy to confer with you on the subject.

Yours respectfully,

John Amory Lowell.
TO JOHN A. LOWELL, ESQ.

1 Temple Place, Boston,
November 15, 1865.

DEAR SIR,—I had the pleasure to lay before the government of the Institute at their meeting yesterday afternoon your letter relating to the evening courses of instruction, and I herewith send you a copy of the vote of the government on the subject.

I shall be ready to confer with you at your convenience as to the conditions of admission of pupils, or other matters which you may suggest as important; and Mr. Beebe, the Chairman of the Finance Committee, will be ready to meet you, should there be occasion for any business arrangements.

With warmest personal thanks,

Very respectfully yours,

WILLIAM B. ROGERS,
President, Massachusetts Institute of Technology.

Up to this time the official title of the head of the School of Industrial Science had been "Principal;" but on November 14, 1865, this was changed by the government to "President." Mr. Rogers, who was already President of the Institute (in its function as a Society of Arts), thus became also President of the School of Industrial Science. On November 16, 1865, one of the Vice-presidents of the Institute, the venerable Dr. Jacob Bigelow, delivered before it a remarkable address on Technological Education, which was afterwards published under the title "An Address on the Limits of Education." His biographer, Rev. Dr. George E. Ellis, refers to this address

1 Jacob Bigelow, M. D., LL. D. (1787-1879), Rumford Professor in Harvard University (1816-1827). Author of Elements of Technology (1828), etc.
and to Dr. Bigelow's attitude towards technological education in these words:

... "Under the somewhat paradoxical pleading on the theme of the limitation of education, he stood in the championship for the extension of the means and elements of education, so that its benefits might be enjoyed and its honours claimed, not solely by those who had monopolized them as to be gained only through ancient and classic lore, but by scientific studies, and modern languages and learning. ...

"The last of the great public services performed by Dr. Bigelow, having in view the largest and most important benefit for a vast community, was in the bold position assumed by him in the cause of education,—claiming that the privileges and honours which it carried with it should no longer be restricted to the study of the ancient languages and literature, but should comprehend pupils in modern wisdom, spoken tongues and profitable science natural and applied. ... In the stand which he took in this high and generous cause, and in the two admirable and energetic essays in which he advanced and defended his convictions, he came nearer to stiffened conflict and provoked opposition than in any other effort of his life. It is evident also that he threw into his plea and his defence of it the whole vigour and intensity of his mind, while he lavished upon it the wealth of his learning and thought. The foes likewise which he had to meet were able and worthy. ... When he pleaded that in these days of expanding and precious practical wisdom, knowledge and science, fresh throngs of pupils, ambitious of useful training, and to whom the community looked for all help and guidance, might be regarded as educated, as belonging to the privileged and honoured fellowship of scholars, without passing through the old classical curriculum, he touched a very tender nerve in the academic organ-
ism. If the ancient languages were dead, they were proved to have living representatives. The Rumford Professor of 1816 presented himself half a century afterward as all the more sage and earnest an exponent of the broadening compass and crowded fields of useful knowledge. He had taken a profound interest in the new Institution incorporated by the State in 1861 as the 'Massachusetts Institute of Technology.' As it was about to take possession of its noble hall, Dr. Bigelow was invited to deliver an Address before it on November 16, 1865. His chosen subject was the 'Limits of Education.' His object was to break or rather extend those limits, in a way to make education 'conduce most to the progress, the efficiency, the virtue and the welfare of man.' 'A common college education now culminates in the student becoming what is called a master of arts. But this, in a majority of instances, means simply master of nothing.' The value and interest of classical studies was carefully allowed for by him. He could speak as one who knew and enjoyed them. Dr. Bigelow assumed no extreme or one-sided view in this matter. His position was taken on grounds of absolute practical necessity and utility. Life is no less short now than it was for the Roman poet; but art is vastly longer.

"As it proved, Dr. Bigelow, by this moderate and it might seem axiomatic exposition of his own clearly apprehended views, aroused a sharp antagonism. The issue, though contested within a narrow circle, was earnestly tried, and, while the pleading was dignified, as became the parties to it, it engaged the ardour of protest and remonstrance. The position he had assumed was avowedly that of utilitarianism, for it was in that direction that we find the aim and range and outcome of his whole laborious and effective life."
Dr. Bigelow was also publicly challenged on the arena of the American Academy. He took a year to prepare for the welcome opportunity of what he might call his own defence, through a renewed championship of his plea. Those who were privileged to be present on the occasion will keep in memory the scene when, at a social meeting of the Academy, at his own house, on the evening of November 20, 1866, he read his [second] essay ‘On Classical and Utilitarian Studies.’ . . . The sparkle and brilliancy of its style, the exuberance of its playful humour, the keenness of its occasional satire, the compass and wealth of its scholarship, the cogency of its accumulating argument and demonstrative affirmations, may claim for that essay a very high distinction among the masses of our recent like productions. . . . One might suppose that he must have re-read his Homer and Virgil and his classical dictionary to furnish him afresh for all that discursive and playful revel of his wit and wisdom about the misbehaving gods and goddesses and the unheroic meannesses of the heroes of antiquity. But there was little variance of sentiment or conviction that he held his own ground and exposed the entrenched position of his antagonists. . . . The modifications by a wide range of electives, in our college curriculum, yield much that Dr. Bigelow claimed on his side. . . . The Institute of Technology, by its comprehensive range of practical and utilitarian studies, by the number of pupils who have availed themselves so diligently of the education and training there offered to them, and the varied services in which its graduates are engaged, has fully assured the cogency of the plea advanced for it by Dr. Bigelow.”
In January, 1866, was published the first Annual Catalogue of the Massachusetts Institute of Technology, for 1865.

TO GOVERNOR BULLOCK.

Rooms of the Institute, 16 Summer Street, Boston, January 13, 1866.

To His Excellency, Governor Bullock:

Dear Sir,—I have the honour of sending you herewith a copy of "The First Annual Catalogue of the Officers and Students, and Programme of the Courses of Instruction, of the School of the Massachusetts Institute of Technology," and of transmitting a copy of the same to each of the members of the General Court now in session.

The school was opened with a preliminary class in February last, and entered upon its first regular course of instruction early in October. Its plan of teaching is now fairly inaugurated, and the number and character of the pupils already attached to it would seem to give assurance of its success.

Hitherto the operations of the school have been carried on under great disadvantages, in hired apartments ill adapted to its purposes. But this inconvenience will not be of much longer continuance, as the new building will in a few weeks be in a condition to receive the chemical classes, and will, it is expected, early in the spring admit of the transfer of the other departments of the school, and of all the operations of the Institute, to the commodious apartments provided for them within its walls.

The meetings of "the Society of Arts of the Institute," held on the first and third Thursdays of each month of the session, are well attended and of growing interest and value. The communications, the discussions relating to the practical arts and sciences, and the exhibition of useful inventions, which occupy these meetings, are, it is believed, contributing mate-
rially to the advancement of the industrial sciences and arts, and of general education.

I have the honour to subscribe myself,
Your obedient servant,

WILLIAM B. ROGERS,  
President, Massachusetts Institute of Technology.

TO HIS BROTHER HENRY, IN PHILADELPHIA.

BOSTON, February 22, 1866.

... As for myself I am now with others in the midst of efforts to gather more money for the Institute, and I know nothing of the engineering ways by which others succeed so well in such endeavours. I think, however, that we shall raise the amount we want. The streets are gay with flags, and thronged with happy school-children, as well as older folks. Mary has been enjoying the bright mild weather which has brought the bluebirds out from their winter quarters and has entirely removed the snow from the Common.

We are now using one new lecture-room and laboratory in the great building, and find them as convenient as they are neat and beautiful. ...

Professor Henry Rogers returned to Glasgow on April 11, 1866, leaving his wife and daughter to prolong their visit in America.

TO HIS BROTHER HENRY.

1 TEMPLE PLACE, April 24, 1866.

... Since you left I have received from Mrs. Hemenway a promise of $5,000, which makes her gift in all $7,000.

In about six weeks I shall have closed the school for this session, and before that time the meetings of the Society of Arts will have been concluded. I trust that we shall be able to hold our final examinations in the new building, though with only temporary arrangements for most of the classes.
Your note from Halifax relieved me from much concern, and gave me almost the assurance that you were to have a comfortable voyage. . . . Your paper to the Natural History Society is in the press. . . .

I wish you could have stayed to congratulate Robert on his marriage. If possible, I shall be present. I may get off on Friday night, and thus have four days of pleasant holiday. . . . The Common is now quite green, and the young leaves are coming out on the elms. With you I suppose spring is far advanced. . . .

Youmans lunched with me yesterday. He has been quite successful in raising a fund to reimburse Spencer for losses incurred in his publications. He proposes going to Europe next month, and will probably call upon you. . . .

God bless you, my dear brother. You are daily in my thoughts. In the midst of the thousand tasks which, as you know, have so engrossed me since the summer, I was able to do little for your comfort or gratification; but the loving wish was never absent, and I trust that when we meet again I shall be able to give myself as I would wish to your happiness.

Your affectionate brother,

WILLIAM.

1 Temple Place, May 15, 1866.

My dear Henry,—You know how much my time is filled with Institute matters, and can imagine the special crowd of work which presses me now that the session draws to a close. You will therefore, I am sure, not be troubled by my long silence. . . . We have greatly enjoyed the society of our dear Robert and his excellent wife, and feel sure that he has great domestic pleasure in store to compensate for the sad suffering and wearying cares of former years. . . .

1 Dr. R. E. Rogers was married to Miss Delia Saunders, of Providence, R. I., on April 30.

In three weeks more I shall have closed the active work of the school for the season, and shall hope to obtain some continuous rest. Thus far the work has prospered quite as much or even more than I had a right to expect. Be sure to tell me all about the plans for the new building, and let me know of any new scientific matter on hand with Thomson or Rankine. Asking to be especially remembered to kind Mr. Crum and his family, and hoping very soon to get a letter from you, I am, dear Henry, as ever,

Your affectionate brother,

WILLIAM.

The following letter is given to show President Rogers's caution in recommending special inventions, always a matter of much difficulty for teachers of applied science.

TO DR. JACOB BIGELOW.

1 Temple Place, May 29, 1866.

My dear Dr. Bigelow,—Mr. Lowe, the manufacturer of Edson's hygrometer, tells me that you are desirous of having my opinion as to the merits of the instrument. This I cheerfully give, only regretting that the annual examinations of the Institute allow me no time for more than a very brief notice of Mr. Edson's improvements. I need hardly add that, from taste as well as a sense of duty to the Institute, I carefully abstain from recommending the merchantable wares of any inventor, however valuable I may think them, and that in the present instance I speak only to you, as a man of science, of the scientific value of the instrument. . . .

After a stormy voyage Professor Henry Rogers reached Glasgow April 22. He was, however, far from well, and during two public lectures which he gave at Norwich early in May was obliged to sit
throughout, while his voice was almost inaudible. Thenceforward he failed rapidly, and, erysipelas supervening, he died on May 29, in the 57th year of his age. The first intimation of the gravity of his condition was received by his brothers on June 6, whereupon they, with Mrs. Henry Rogers and her daughter, sailed from New York on June 9, in ignorance of the fatal termination of the illness. The news of his death was received by the little party on their arrival at Queenstown, the interment having already taken place. Professor Rogers's grave is beside that of his daughter Edith, in Dean Cemetery, Edinburgh.

The following notice from a Glasgow correspondent appeared in the "London Times:"—

... "Dr. Henry Darwin Rogers, Professor of Natural History in the University, died yesterday morning at his residence, Elgin Villas, Shawlands. As the course of instruction in Natural History is embraced in a summer session ending in July, the late Professor in August last year went on a visit, accompanied by his wife and daughter, to the United States, of which he was a native. He returned to this country early in April for the purpose of resuming his classes at the beginning of the present month, and with the intention at the end of the session of rejoining his wife and daughter in the south of France. It was evident, however, that the Doctor, who was naturally of a delicate constitution, was so shaken in health that he would not be able to resume his professional duties. His disease, which was of a nervous character, affected his brain, and rendered him completely incapable of any practical work. His complaint became still more alarming, and a few days ago excited the serious apprehensions of his personal friends. Their worst fears were realized yesterday morning, when death put an
end to his sufferings. The late Professor, who first appeared in Glasgow at the meeting here of the British Association, was appointed Regius Professor of Natural History in the University in 1857.

"We learn from the 'Men of the Time' that, though born in the United States, the late Dr. Rogers was of Scotch extraction, and a member of a family traditionally devoted to the culture of the exact sciences. It is doubtless in part owing to this innate predilection that we find him at the early age of twenty-one capable of holding the post of Professor of Chemistry and Natural Philosophy in Dickinson College, Pennsylvania. During a visit to England in 1831 he devoted himself to the study of Geology and Chemistry, and on his return to the United States almost immediately entered upon his great undertaking, viz., the geological survey of the States of New Jersey and Pennsylvania. Professor Rogers, with unintermittent industry, laboured during a period of twenty-two years at this undertaking, producing at the expiration of that time a valuable work in three volumes, illustrated with numerous engravings, and enriched with geological maps of Pennsylvania and its coal-fields. The execution of this duty established at once Professor Rogers's claim to a high position in the scientific world, and induced the principal scientific bodies of the United Kingdom to confer on him the distinctions of their respective corps. Thus Professor Rogers was speedily made a Fellow of the Royal and Geological Societies of London, and of the Royal Society of Edinburgh; the University of Dublin also conferred on him the honorary degree of LL.D.; whilst the University of Glasgow offered him in 1857 the appointment of Regius Professor of Natural History, a post which he sustained with much credit."

We quote also the following from an extended notice which appeared in the "Philadelphia Journal:"
... "The first geologists of Europe hailed with delight the appearance of a treatise [The Geological Survey of Pennsylvania] from a transatlantic brother, which, grappling with some of the most interesting problems, showed an ability to handle them in a true scientific spirit, and to advance and enforce the reasonings of the theorist by apt illustrations rendered attractive by the charms of a rich and graceful style.

"It is difficult, and perhaps impossible, in the compass of a notice like the present, to convey an adequate notion of the general attainments of Professor Rogers, or of his peculiar views in geological science. As a geologist he might be termed a paroxysmist, although prepared to give full weight to the operation of those ordinary causes which are gradually and silently working to bring about the changes everywhere recorded on the surface of the earth. But he believed that many of the more marked cosmical phenomena could not be sufficiently explained without a resort to the doctrine of catastrophes, and he deliberately though modestly announced his opinions in these respects. His acquirements in all departments of physics were considerable, to which he added the accomplishment of a large acquaintance with our own literature and that of other countries. Accustomed to consider closely the important social and ethical questions which engage the attention of enlightened men, he brought to their examination an accuracy and breadth of observation derived from his habits of scientific investigation. As a lecturer Professor Rogers's excellences will long live in the recollections of his Philadelphia auditors. His calm, impressive tone, thoroughly well sustained, and occasionally rising with the swell of his subject to a high pitch of eloquence, his quiet, gentlemanly bearing, his thorough mastery of and deep interest in his subject, never failed to kindle even in the most indifferent listeners at least a temporary glow responsive to the feelings of his own breast."...
DR. THOMAS H. WEBB.

After a brief stay in Scotland the brothers returned to America, arriving in New York on July 26. Mrs. Henry Rogers and her daughter remained somewhat longer, but finally returned to Boston, where they have since resided. The library of Professor Henry Rogers was afterwards presented by his widow to the Institute of Technology.

No one who has read the foregoing pages will need to be told that the loss of his favorite brother was a heavy blow to Mr. Rogers. Stunned by the loss and wearied by his journey, he was about to set out for Sunny Hill on August 2, when news came to him of the sudden death by heart disease of the Secretary of the Institute, Dr. Thomas H. Webb. Pausing only to visit the bereaved family, and to prepare for the "Advertiser" of August 3 a brief notice of Dr. Webb, of whom he speaks in his journal as "my dear friend, so faithful and upright," he went to Lunenburg thoroughly worn out, and fell ill of a slow fever which lasted many weeks and broke off all correspondence.

While he was still in Europe, Mr. Rogers was informed that the degree of Doctor of Laws had been conferred on him by Harvard College.

FROM REV. DR. THOMAS HILL.

HARVARD COLLEGE, July 18, 1866.

TO PROFESSOR WILLIAM B. ROGERS, LL. D.,

My dear Sir,—I take great pleasure in informing you that the University has this day conferred upon you the degree of Doctor of Laws in recognition of the distinguished success with which you have pursued physical inquiries, and of the successful zeal with which you have served the cause of education.

With great respect,

Very truly yours,

THOMAS HILL.
In 1867 the Legislature, in a resolve approved by the Governor on May 18, 1866, authorized the appointment of a Commissioner for Massachusetts to the Paris Exposition, and an appropriation not exceeding $10,000 to secure a proper representation for the State. On June 29, during his absence in Europe, Mr. Rogers was duly appointed by the Governor (A. H. Bullock) as the Commissioner or chief representative of the State. Illness, however, compelled Mr. Rogers to defer even the consideration of the subject until a much later date.

The Institute opened most auspiciously (except for the illness of its President) in September. Professors Runkle and Atkinson kept Mr. Rogers informed of the progress of affairs by frequent letters until he was able to come to Boston early in October. The financial situation had been one of the burdens which had contributed to the anxieties of the President of the new institution. A large and costly building had been begun in 1864 at an estimated expense of $157,000. It was to be ready for use in the autumn of 1865. In point of fact it proved much more expensive than had been estimated, and was not completed for a year after the appointed time. Much of the spring had been spent by Mr. Rogers in endeavoring to raise funds to finish the building; the following postscript of a letter from Professor Atkinson to Mr. Rogers at Sunny Hill shows, however, that in the autumn there was still cause for grave anxiety.

September 18, 1866.

... I presented the bills for our salaries yesterday, but found no funds. Mr. Endicott wanted me to get in the students' fees, but said he would give

1 William Endicott, Jr., Treasurer of the Institute of Technology.
me his own check if they were not forthcoming fast enough.

FROM H. L. WAYLAND, ESQ.

PROVIDENCE, R. I., November 1, 1866.

President Rogers:

Dear Sir,—If I am not in error, you were at the University of Virginia when my late father, Francis Wayland, and Mr. Z. Allen visited the University in 1850, and it was at your house that they were entertained.

I venture to make an inquiry or two to aid me in preparing the part of his biography relating to the new system then introduced into Brown University. May I ask when and by whom was the system then in use at the University introduced? Was it in accordance with Mr. Jefferson’s original plan? Was the method successful? Was it substantially the same introduced in Brown University, as recommended by my father in his Report of 1850? How far is the Institute of Technology a result or carrying out of the plan adopted in the University of Virginia?

Permit me to add that if you recall anything of interest connected with his visit, or if you have any letters from him of any moment, I should esteem myself greatly favoured by receiving them, the letters, of course, to be returned.

I beg leave to express my sense of the value of the work done by your admirable Institute. While very much of my past life has been invested in classical studies, I am painfully impressed with a sense of their inadequacy to the wants of the mind or the demands of the age. I remain, sir,

Very truly yours,

H. L. Wayland.

To this Mr. Rogers replied:—
H. L. Wayland, Esq.:

Dear Sir,—I must beg you to excuse my long delay in replying to your letter of November last, which reached me when I was just recovering from a severe and prolonged illness.

I am truly pleased to learn that you are engaged on a biography of your father, for whose great abilities and distinguished services in the cause of education and human progress I have a sincere admiration. I wish it were in my power to give you any valuable aid in this interesting work, but President Wayland's visit to the University of Virginia in company with Mr. Allen was a very brief one, and as it was a visit of inquiry, I remember no incidents connected with it further than the interest which he inspired among the members of the faculty, and the extraordinary enthusiasm with which he was greeted by the students upon making a short address to them from my doorsteps. I have not a copy of your father's Report of 1850 within reach, but I remember that at the time of its publication we at the University regarded it as recommending a system analogous in its main features to that founded by Mr. Jefferson, which at the time of your father's visit had been moulded into a more practical shape by the experience of the faculty.

In regard to the success of the method I have no hesitation in pronouncing it to have been great, whether we consider the number of students attracted to the school (more than seven hundred at the breaking out of the rebellion), or the really substantial training and attainments of the graduates of the University.

You ask, "How far is the Institute of Technology a result or carrying out of the plan adopted in the University of Virginia?" To this I would answer
that while my experience at the University aided me in framing the scheme of the Institute, the scope and objects of the latter have required in most respects a different organization.

I had no correspondence by letter with your father, though I had the pleasure of meeting him on various occasions in Boston and elsewhere after my removal from Virginia. [Unfinished.]

Mr. Rogers, in writing to Governor Bullock to decline the appointment as Commissioner to the Paris Exposition of 1867, which he felt that the state of his health and his duty to the Institute demanded, ventured "to suggest the name of Mr. Charles L. Flint, Secretary of the Board of Agriculture, as a suitable person for the office."

In spite of his determination, however, Mr. Rogers was finally persuaded to accept the appointment, and immediately began to make active preparations for a suitable exhibit from Massachusetts.

The question of the admission of women to the regular classes of the Institute was now raised. The following letters from women attending Professor C. W. Eliot's evening course of Lowell Free Lectures upon chemical manipulation called for a decision.

TO EDWARD ATKINSON, ESQ.

58 Pinckney Street, January 30.

DEAR SIR,—I believe that you are one of the Board of Instruction of the Institute of Technology, and in that capacity I want to ask a favour of you. The time of the "Lowell" class in chemical manipulation is drawing to a close, and some of the ladies of the class, who are very much interested in the subject, wish to go on with it.

Will it be possible for them and me to join any
class now formed in the Institute so as to continue our studies? If so, what would be the conditions as to terms and time? We hear that there is to be a meeting of the Board of Instruction this week. Could you bring the matter before them and so very much oblige,

Yours truly,

A. R. CURTIS.

Mr. Atkinson sent this letter to Mr. Rogers, endorsing it as follows: —

Boston, February 1, 1867.

DEAR SIR,—The enclosed note speaks for itself. Can there be any objection to ladies entering as special students except possibly want of room in the laboratory?

Yours very truly,

EDWARD ATKINSON.

ANITA E. TYNG AND REBECCA K. SHEPARD TO N. THAYER, ESQ.

Boston, January 30, 1867.

DEAR SIR,—At our interview this evening we stated to you that four ladies, regular attendants of the present Lowell class in chemical manipulation, wish to continue the study of Chemistry in the Technological Institute.

Relying upon your kindly presenting our wishes before the meeting of the Committee of Instruction, we remain

Very truly yours,

ANITA E. TYNG.

REBECCA K. SHEPARD.

To this request President Rogers, authorized by the Committee of Instruction, replied as follows: —
TO N. THAYER, ESQ.

1 Temple Place, Boston,
February 4, 1867.

DEAR SIR,—In reply to the communication of Misses Tyng and Shepard, please say to them that the Faculty and the Committee of Instruction appreciate the earnestness with which they and their associate lady pupils in the laboratory are disposed to pursue their scientific studies and would gladly afford them such opportunities of systematic instruction as are compatible with the objects and plans of the Institute, but that we could not comply with their present request without seriously embarrassing the organization of the laboratory and other departments of the school as connected with the regular courses now in progress.

The plan of evening (including afternoon) instruction, forming a department distinct from the so-called regular courses of the school, has been incorporated into the general organization of the Institute for the purpose of enabling lady students, as well as gentlemen, to have the benefit of systematic scientific instruction under the conditions best suited to their convenience and advantage, and to the interests of the school at large.

This department of the Institute, embracing the Lowell free instruction as a part, will, it is hoped, be so organized in another year as to meet the wants of the ladies whom your correspondents represent, and I need hardly add that the Faculty and Committee will gladly welcome them to the classes thus organized.

I remain, yours truly,

WILLIAM B. ROGERS.

DR. ROBERT ROGERS TO HIS BROTHER WILLIAM.

1004 Walnut Street, Philadelphia, Wednesday.

MY DEAR WILLIAM, ... Your letter greatly interested me. How I wish you had less of the task
of teaching, and could thus recreate yourself with the pleasanter matters of experiment, such as you are now upon. I should so like to see your sound arrangement, and talk over the musical tubes of Tyndall with you.

Early in the winter I made for my own amusement a long revolving arm, a gas tube, making a circle of five feet. Upon revolving it rapidly after the gas is lighted, the effect is very pretty; the peculiar play of colours throughout the ring of fire is as handsome as a pyrotechnic wheel, while it gives a perfectly roaring noise. . . . When in New York I saw a Holtz machine which they say gives five inches good spark. It was then in pieces for some little change. I have one under way which I believe is novel in device, and which I think will act well. Since there is danger from the rapid speed of the revolving plate causing it to fly, I make two plates revolve in opposite directions, and thus obtain a safe relatively high velocity.

FROM PROFESSOR E. L. YOUMANS.

New York, April 18, 1867.

DEAR SIR,—I am about to bring out a volume from the press of D. Appleton & Co., entitled "The Culture demanded by Modern Life," an extension of the book I printed in London some months since, under the title of "Modern Culture" (Macmillan, official publisher to Oxford, being a little afraid of my title). The book is one of authorities on the educational claims of the various sciences. I am prefixing to the American edition a somewhat elaborate introduction on "Mental Discipline in Education," designed to show the superiority of the sciences over the classics for this purpose, with some strictures on certain portions of Mr. Hill's late address. I have been thinking I should like to give this argument in Boston in the shape of a lecture before its publication, of course with no pecuniary intention, and I now write
you to ask whether you think it may be worth while, seeing the discussion is to be published so soon, and if you think it might be well to do so, whether the Technological Institute would be a suitable place for such a lecture. . . .

With great respect,

Yours very truly,

E. L. Youmans.

TO PROFESSOR E. L. Youmans.

Boston, April 21, 1867.

Dear Sir, . . . The recent discussions here and elsewhere on the relative value of scientific and classical culture in our schools and universities seem to threaten an antagonism which has no proper foundation in experience or philosophy. Some advocates of the old system are trying to make the impression that the friends of progress in education are, as a matter of course, the enemies of classical studies, while, as you know, we would have such studies not excluded from, but duly subordinated in, a complete curriculum of training and instruction. The intellectual and aesthetic discipline obtained in the study of languages, modern, as well as ancient, is of undoubted value, and ought to be provided for in every comprehensive course of education. But this training can in no degree replace the invigorating exercise of the observing and logical faculties so peculiarly the function of scientific studies. Let the classics have their place among the instruments of intellectual culture, but in a general education let them be kept within the modest limits appropriate to them, in which they shall not, as they now so often do, stand in the way of the broader, higher and more practical instruction and discipline of the natural and social sciences. . . .

On May 31 the Annual Meeting of the Institute (Society of Arts) was held, President Rogers giving
an historical sketch of the development of the Institute and a statement of its condition and prospects. (See Boston "Transcript," June 6, 1867.) On June 4, accompanied by Mrs. Rogers, and with Professors Eliot and Storer as assistants, Dr. Rogers sailed for Liverpool as Commissioner from Massachusetts to the Paris Exposition. From London he wrote to Mr. Savage.

PORTLAND PLACE, June 25, 1867.

MY DEAR FATHER, . . . At Birmingham we passed a day or two very profitably for my objects in viewing some of the great manufactories, particularly the glass works of Chance & Brothers, the most extensive producers of common and coloured plate glass in the world. There I had an opportunity to study a new furnace, of which an account was given some time since at our Institute, and which I was very desirous to see in action. We all saw at Boulton & Wales's old establishment in Soho near Birmingham, some of the old engines and bellows of Watts's original construction, and which are still in daily use. . . .

. . . We have called on the Adamses, and Mr. Adams has left his card for us, but as yet we have not met. Lady Lyell made the kindest inquiries about you, and her husband did the same.

I have spent many pleasant hours already at the rooms of the Royal Society, and at the Museum of the Geological Survey, and shall to-morrow call upon General Sabine, the President of the former, who was a good friend of my dear brother Henry, and was formerly very polite to me. London interests me more than ever; and were you here with us to enjoy the British Museum and other libraries, I think E. and I would be willing to breathe its smoke for many weeks in order to enjoy its art and science and history. . . .

Your affectionate son,

WILLIAM B. ROGERS.
The friends of the Institute had for two years been making earnest efforts to raise a fund of $100,000. The following cheering letter from the Treasurer was received by Mr. Rogers in Europe: —

FROM WILLIAM ENDICOTT, JR.

Boston, July 9, 1867.

My dear Friend,—You will be pleased to learn, as I am extremely gratified to write, that the ten names of $5,000 each have at last been obtained to the subscription for the Institute. Mr. Bowditch obtained one, which he enters as from a friend, and Mr. Edmands has the promise of $5,000 from Mr. John Foster, of Foster and Taylor. I now propose to send a note to each of the ten, asking them to pay as soon as convenient, and hope that, on your return, the Institute will be out of debt. Mr. Thayer has put his name down for $25,000, which he will pay in October, and wishes it to be a foundation for the Professorship of Physics. Professor Atkinson informs me that the new class will probably contain one hundred members, so that the new year will open with good promise.

There is not much of interest transpiring in the political world here. The work of reconstruction seems to be going on very well at the South, and it is probable that the Republicans will carry some of the Southern States with the negro vote. It is all-important that the power of those States shall no longer be wielded in the interest of the rebels, and now is the time to settle it.

I hope that you find your health improved by your voyage. With kind regards to Mrs. Rogers, believe me,

Truly yours,

W. Endicott, Jr.
FROM E. C. PICKERING.¹

Andover, July 19, 1867.

Professor William B. Rogers:

Dear Sir, . . . I congratulate you on the improved financial aspect of the Institute, and the at least partial removal of the greatest difficulty we have had to contend with. The universal opinion seems to be that there will be no difficulty in making up the remaining $10,000 in small sums, and we hope it will be accomplished before your return. . . .

Have you heard anything about a little machine exhibited before the London Society of Arts, intended as a substitute for writing? By pressing down keys the letters are printed instead of written, producing them, of course, with great legibility and rapidity. As the instrument is said to be cheap and portable, I should think, if successful, it would be one of the greatest inventions of the day. Unfortunately the Academy only receives the Journal of the Society once a year, and I have been unable to find out anything definitely about it. . . .

TO JAMES SAVAGE, ESQ.

Rue Pauquet de Villejuste, Paris,
July 27, 1867.

Dear Father, . . . The work I find to do at the Exposition fills up each day until four or five o'clock in the afternoon, and thus far we have done little general sight-seeing. My brother Robert aids me very much in my observations and note-taking, and we are in hopes in the course of another fortnight to have

¹ Assistant Professor of Physics in the Institute. Afterwards full Professor, and later Director of the Observatory of Harvard University.
completed what I propose doing in the way of systematic exploration. The field of work is, however, so immense that I and my assistants can only aim at studying some of the departments of the useful arts, as here illustrated, with a view of gathering materials for a Report....

As soon as we have got through with the work of studying the Exposition, we intend to make ourselves as merry as we can with the endless variety of resources which are at hand. The number of persons daily crowding the Exposition, though on the decline, is very large. Even during the rainy weather of last week it rarely fell below 40,000, and to-day (Sunday), a bright day, it may perhaps reach 60,000. Each of these counts one franc, and hence it is not difficult to imagine that the six months' show will prove a profitable speculation to those who undertook the financial risks connected with it.

As an exposition, it far transcends in richness and extent all that I had imagined. I have but one fault to find with it, which to superficial observers is, I suppose, its highest merit,—it is too vast. The student who seeks to gather instruction from its collections in any one great department is overwhelmed by the multitude of the objects before him, and could, I think, profit more by a gathering of the really new and original or very superior products, undistracted by the crowd of things which, excellent in their way, are but repetitions of other previous exhibitions....

I see the British newspapers talk of a renewal of trouble between France and Prussia. But we hear nothing of it here....

FROM PROFESSOR W. P. ATKINSON.

Cambridge, August 18, 1867.

... Application has come from one young woman, a rather remarkable teacher, who desires to avail herself of the Institute. I was sorry to have to reply...
that nothing was open to her save the Lowell courses. There is a large and increasing class of young women who are seeking for something more systematic in the way of a higher education. If we continue a special technical school, ours will not be the place for them; but if we should expand into a modern university, and I am confident there is room for one, by taking the bold step of opening our doors freely to both sexes I believe we should distance all competitors. It is a step sure to be taken somewhere.

I am going to ask Andrew White, the President of the new Cornell University, who is at Worcester, to come and spend a night with me, that we may have a good talk. His Report on the organization of his college is capital. They have buildings and a fund of $700,000!

On August 13 Mr. Rogers fell ill of pneumonia. This illness seriously interfered with his official duties, but he recovered sufficiently to sail for home from Liverpool on September 21. On his return he took up the routine work of the Institute, lecturing on physics and geology while serving also as President.

On October 30 he wrote in his diary, "Heard this morning that Governor Andrew was struck with apoplexy last night. . . . The good, true, brave heart ceased to beat at 6.30 p.m. The note to me, so kindly expressed, perhaps the very last he penned."

Up to this time no specific authority to confer degrees had been granted to the Institute by the Legislature. As the time for graduating the first class drew near it became necessary to petition for such authority. Mr. Rogers therefore drew up the necessary document, and after submitting it to the Hon. George T. Bigelow, Chief Justice of the Common-
wealth, handed it to Mr. R. H. Dana, by whom it was duly introduced and cared for.

TO RICHARD H. DANA, JR.

1 TEMPLE PLACE, BOSTON,
April 29, 1868.

DEAR SIR,—In the accompanying catalogue and programme of the Institute of Technology (for 1867–68) I beg to refer you to page 27 for an enumeration of the Degrees or Diplomas established in the school, and to the preceding pages for the courses of study appropriated to each. In the petition which, by the advice of Judge Bigelow, Mr. Ingersoll Bowditch and other members of the government of the Institute, I have drawn up and placed in your hands, I have omitted to specify the degrees, supposing this to be unnecessary.

The examinations of our fourth year's class will begin next Saturday and continue until past the middle of May. Some twelve or more of the candidates will pass the ordeal, and will do credit to the degrees to which they aspire. I feel it to be but just to them and to the thorough course of studies which the Institute is labouring to establish, that we should have granted us the usual formal authority for conferring the appropriate degrees.

With great haste, I am, dear sir,
Yours truly,

WILLIAM B. ROGERS.

In May, 1868, Mr. Rogers was invited by Dr. N. H. Morison, Provost of the Peabody Institute in Baltimore, to deliver the following season "four lectures on some branch of Geology." On the 21st of the same month was held the eighty-third meeting of the Institute, being the seventh annual meeting, and the fourteenth as a Society of Arts for the sixth year.
President Rogers occupied the chair, and fifty members were present. A full report of the proceedings was printed in the "Transcript" of May 27, from which we learn that the students in the School of Industrial Science numbered 175. The Treasurer, William Endicott, Jr., Esq., "presented his annual report, from which it appears that the Institute has received by donations and legacies during the year $104,800, and that its income from the school fees, invested funds, assessments, etc., has been $34,230, and its expenses $42,650, with a balance of cash on hand $7,244."

The President, in his address on the progress and prospects of the Institute, said:—

"In closing this brief reference to the growth and present condition of the Institute, I may be pardoned for some allusion to the not inconsiderable influence which it would seem that our school is beginning to exert. That the scope and plan of education, which we are endeavouring to carry out, should have suggested changes elsewhere, tending in the same practical direction, and should even have led to enterprises closely imitating important features of our school, ought to be a cause of satisfaction to our friends. Such a result may at least be accepted as evidence that the objects and organization of the school of the Institute commend themselves to the promoters of sound education, and ought to assure us that they will continue their sympathy and help, while we endeavour faithfully to carry out the system of practical instruction which we have established, and which it is not too much to say the School of the Institute is now successfully pursuing. Let us, while working in our selected field of instruction, bid Godspeed to all who are labouring in behalf of letters and of science."

On June 10 Mr. Rogers was notified by Miss Abby
W. May, Secretary of the Executive Committee of the American Social Science Association, that it had been unanimously voted to hold the annual meeting of that body in Boston "in October, and that the President is requested to deliver the annual address."

Mr. Rogers had for some time wished to relinquish the duties of the professorship of Physics which, with his administrative duties, had become too heavy, and as the prospects of the Institute now seemed to warrant the step, Mr. Edward C. Pickering, who had been Assistant Instructor in Physics and Assistant Professor, under Mr. Rogers, was promoted to the Chair of Physics.

TO EDWARD C. PICKERING.

LUNENBURG, July 29, 1868.

MY DEAR EDWARD,—The Committee of Instruction, at an unusually full meeting this afternoon, heartily endorsed my proposition to promote you to the place of Thayer Professor of Physics in the Institute, and their recommendation to that effect will without doubt be ratified by the Government next week.

Considering this action as conclusive, I bid you a hearty and affectionate welcome to the chair, a part of which you have already so satisfactorily filled. Let me say that, with all the urgency of other Institute duties, I should be quite unwilling to relinquish it to any other successor, so much do I love its exercises, and so sure am I that under your direction they will preserve the breadth and practical character which it has been my aim to give them. . . .

At the same time Mr. John Trowbridge was appointed "Director of the Department of Drawing and Assistant Instructor in Physics." Also, under date
of August 26, 1868, Professors Eliot and Storer recommended to the President "that Mr. W. R. Nichols be appointed (student) assistant in qualitative analysis for the ensuing year," at a salary of $100 and free tuition.

On October 2 the Professor of Organic Chemistry, Mr. C. M. Warren, who had been in poor health for many months, resigned his position.

The following letter indicates that increasing attention was being given to the subject of engineering education in Great Britain:

TO THE PRESIDENT OF THE TECHNOLOGICAL INSTITUTE, BOSTON, MASS., U. S. A.

THE INSTITUTION OF CIVIL ENGINEERS, 25 GREAT GEORGE STREET, WESTMINSTER, S. W.,
July 7, 1868.

SIR,—The Council of the Institution of Civil Engineers, being anxious to obtain the most complete and reliable information as to Engineering Education (other than Military Engineering) in different countries, have directed me to seek your assistance and cooperation, with a view to the collection of full particulars of the systems of instruction pursued in your country and elsewhere, their cost to the students and to the State, and the effect, or presumed effect, of such preparatory training upon the profession. . . . Having learned that at the Institute over which you preside attention is devoted, more or less, to prepare young men who are destined to become Civil Engineers, I have been instructed to ask you to be so good as to furnish the Council with such information, in response to the queries propounded, as it may be convenient to you to give.

I feel assured that you will willingly aid the Council of this Institution in their endeavours to get together such an amount of information as shall be, or shall be
likely to be, useful to the profession, and to all those in any way connected or identified with it.

I am, sir, yours very respectfully,

JAMES FORREST,
Secretary.

On October 14 of this year Mr. Rogers presided over the annual meeting of the Social Science Association, and delivered the opening address. In his diary we find on this day: "Address to the Social Science Association; well received, though I had great fears of failure. Resigned presidency. Dr. [Samuel] Eliot elected, and I am made first Vice-President."

A crisis now came in the health of Mr. Rogers, which is best described by himself in his diary entry for October 24:—

"Faculty Meeting at ten, all present but Ware. I felt as well as usual, though as the meeting proceeded the heat disturbed my head strangely. About twelve, slight faintness with giddiness, and all at once I perceived that my articulation was oddly obstructed on the left side of my mouth, and I soon found that I was struck with a slight hemiplegia. The meeting was broken up, and I was conveyed by dear Runkle and Atkinson and Storer in a carriage to my house. Dr. Putnam was called. . . . At 2 p. m. was assisted, slightly, upstairs, and in two or three minutes all the paralytic feeling vanished."

The next day he writes: "Had a comfortable night, dined and took tea downstairs. Some fulness of head, caused, perhaps, by conversation with friends in parlour."

On the 26th: "Tolerable sleep. This morning weak and a little dizzy. At desk, and evening walked in Common."

27th: "An uncommonly good night. Ate with
relish. Head still in tottering equilibrium, easily disturbed. What a bore to be ever conscious that you have a stomach and a brain!"

28th: "Only tolerable night. Interview with Professor Runkle. Gave him memorandum of the Lowell courses and directions about the examinations of the theses. Went at 8 p. m. with E. and little Mary to 90 Boylston Street, Mrs. Homans's, to witness the great torchlight procession. Very superb and curiously picturesque from the shining mantles of many of the corps, made of rubber cloth, red and steel-colored. One and a quarter hours in passing our window. I did not suffer."

Similar entries continue until November 5, when the following occurs:

"Wrote to Dr. Bigelow [one of the Vice-Presidents of the Institute], asking him to preside at meeting of Society of Arts to-night. What a struggle it costs me to be absent from this first meeting! But I hope yet to have strength to resume these duties."

November 6: "Wakeful until 1 a.m. Took valerian. Had a better night. Think I am getting better. Let me but have patience and give my brain rest for a little while longer, and all will go right."

November 7: "A decidedly better night. Wrote Runkle, asking for judgment of faculty on the theses. 'And the string of his tongue was loosed and he spake plain.' This day shows decided improvement."

The entries now grow briefer and rarer.

November 17: "Cannot apply thoughts continuously, dare not read. E. has read to me most of Mr. Parkman's 'Jesuits in North America.' A graceful, animated narrative. . . . The best day yet."

November 20: "Learn from Storer that M. P. W. presided last night at Society of Arts. How much more fitting to have had Runkle."
November 21: "Visit for an hour from my good friend Runkle. I bore this visit well, thanks to his calmness and my improved strength. . . . I am much better to-day than since my attack."

November 22: "Not so good a night. Visit from Copeland at lunch. I became excited in talking after lunch and felt the ill effects—giddiness . . . throughout the rest of the day."

December 3: "A comfortable night. Sent letter to Dr. Bigelow for action of government which meets to-day at 1 P. M., also form of diploma and the theses. Government granted my wish of one year, if needed, and that Runkle should perform my duties as President of the Institute meanwhile. Also Rockwell 1 confirmed (as Professor of Mining)—and Richards 2 appointed at $400 (as assistant)."

December 8: "Had a short interview with my good friend Runkle. Left for Philadelphia, via Bristol (R. I.) and Sound. Violent head wind. Heavy thumps of the sea."


With the last entry given, the notes cease altogether.

As will be plain to any one who has read the last two pages, Mr. Rogers, ever since the attack of October 24, had been in a very serious condition. Leave of absence was readily given him by the government of the Institute on December 3, and, as his diary relates, he removed to Philadelphia, to the house of his brother Robert.

His condition now became rapidly worse, and for many long months he was unable to walk more than a

1 General A. P. Rockwell.
2 Robert H. Richards, afterwards Professor of Mining and Metallurgy.
few steps in his room, to read or to listen to reading, or to do any mental work whatever. So delicate was his health that even the knowledge that an ordinary family letter had been received had to be kept from him, the slight excitement coupled therewith being more than he could bear.

It is therefore perhaps remarkable that as late as November 4 he had been able to prepare and send, in his usual handwriting, the following letter:—

TO DR. SAMUEL ELIOT.

1 TEMPLE PLACE, BOSTON,
November 4, 1868.

DEAR SIR,—My address before the Social Science Association was spoken extemporaneously with the exception of two or three pages at the beginning and a few scattered notes. I regret that I have been too unwell to recall and write it out for you, but as it was merely introductory to the more important papers, I think it will not be missed. This fact of its extemporaneous character might be mentioned, if you choose, as an excuse for its non-appearance.

Yours very truly,

WILLIAM B. ROGERS.

Mr. Rogers had been President of the Thursday Evening Club since the death of Dr. John Mason Warren, who had succeeded Edward Everett. His illness now made it necessary to secure another presiding officer.

FROM SAMUEL FROTHINGHAM, ESQ.

Boston, December 17, 1868.

To W. B. ROGERS:

My dear Sir,—The announcement of your illness to the Committee a few evenings since was received with the greatest sympathy and regret.

Feeling that we might be debarred your genial
presence and active coöperation much, if not the whole of the present season, the Committee have made choice of Mr. Theodore Lyman to act as Vice-President during your absence, which, I sincerely trust, may not be for a very protracted period.

With the highest regard,

Most sincerely yours,

S. Frothingham.

The action of the government of the Institute upon Mr. Rogers's application for leave of absence for one year was as follows:—

Massachusetts Institute of Technology,
Boston, December 3, 1868.

At a meeting of the government of the Institute, held this day, on motion of Edward Atkinson, Esq., the following vote was unanimously passed, twenty-two members present:—

Voted, "That while we sincerely regret that our President must leave us for a time, in order that he may regain his health and strength, sacrificed in part in our service, we grant to him the leave of absence for one year, which in accordance with our forms must be entered upon our records,—hoping and trusting that he may return to us again to give to us the service which he has so long rendered; and that we, his friends and associates, may once more coöperate with him in the work we have together undertaken."

A true copy of the record.

Samuel Kneeland,
Secretary.