

# The Tech Extra.

BOSTON, JUNE 21, 1882.

ISSUED BY THE

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————— '86.

The subscription price of THE TECH for the coming year will be \$2.00, and it would be a great convenience if subscribers would forward that amount to

I. W. LITCHFIELD,  
M. I. T.

AT a meeting of the Directors, held shortly after their election, it was voted to publish an extra containing a prospectus for Volume II. of THE TECH, accounts of the graduation and of the games at Beacon Park, and other articles which would be of interest to the students. Owing to the sad circumstances attending graduation, the character of the paper has been somewhat changed: the articles relating to our late professor, William B. Rogers, have been made the leading feature, the remaining articles being in consequence very much condensed.

The graduating exercises of the class of '82 will long be recalled with perhaps the most painfully solemn interest of any occasion within the annals of the institution. With it must ever be associated the sudden death of one of its founders, for many years its president, and up to the time of his death one of its foremost instructors and most zealous supporters. On all occasions connected with the affairs of the institution, Prof. Rogers has almost invariably been present, and in every way manifested his active interest in its welfare, and none of the public exercises of the school would have been deemed complete without his presence and participation.

## Commencement Exercises.

The day dawned without a cloud, and eleven o'clock found Huntington Hall well filled with the friends of '82, assembled to listen to the theses of the graduates and the addresses of those whom it is always a pleasure to hear.

A door at the rear of the stage opened, and headed by President Walker and the venerable ex-president Prof. Rogers, came the government and Faculty of the Institute, and the graduates.

The stage was without decoration, and the exercises partook of the practical nature which characterizes our Alma Mater.

In the course of a short address, President Walker introduced the graduates as having performed the work of their several courses in such a manner that they had fairly earned their diplomas, with a wide margin to spare. Of the twenty-four theses prepared, nine had been selected, he said, to be read in abstract, not because of superior merit, but with a view to representing the different departments.

The following is a list of the graduates and the theses (the abstracts read are marked with an asterisk):—

- \*1. Study of the Alcohol Thermometer at Low Temperatures. Anthony C. White, Taunton.
2. The Concentration of an Argentiferous Galena from Colorado. Henry F. Ross, Jamaica Plain.
- \*3. Report of a Boiler and Engine Test. Walter B. Snow, Watertown.
4. The Bill of the Common Fowl. Edward G. Gardiner, Boston.
5. Melting Points and Densities of Hydrated Crystallized Chlorides. Carrie L. Rice, East Boston.
- \*6. A Romanesque Church. Edward F. Ely, Providence, R. I.
7. False Work used in the Construction of the Broadway Bridge. Frank C. Morrison, Boston.
- \*8. Quantitative Experiments on the Deoxidizing Power of Formic Acid and the Oxidation of certain Organic Acids. Howard V. Frost, Belmont.
- \*9. On the Reduction of Vershire Copper Ore. James P. Munroe, Lexington.
10. A Comparison between the High and Low Speed Engine. William T. Ripley, Rutland, Vt.
11. The Action of Vegetable Acids on Lead and Tin. Francis P. Hall, Boston.
12. The Glazes applicable to Biscuit Ware. John F. Low, Chelsea.

13. Design for a Large Romanesque Church. Grenville Temple Snelling, Boston.

\*14. Indicator Diagrams obtained in Practice. Harry G. Manning, Wakefield.

15. Flax and its Manufactures. John H. Ross, Jamaica Plain.

16. Extraction of Gold from a New Hampshire Gold Ore. George W. Mansfield, Melrose Highlands.

\*17. Carson's Machinery for the Transportation of Earth. James W. Johnson, Chelsea.

18. Charge and Products of a Blast Furnace. Charles D. Jenkins, South Boston.

19. A Romanesque Church for a Large City. George L. Heins, Philadelphia, Pa.

\*20. Concentration of Calumet Sand. George Faunce, Jr., Kingston.

21. Water Motors. Harry A. Foss, Jamaica Plain.

22. The Extraction of Gold and Silver from Jewellers' Sweep. Charles A. French, Boston.

23. The Lowell Pumping Engine. Thomas B. Carson, Iowa City, Ia.

\*24. Chemical and Physical Nature of Cotton Fibre. Clara P. Ames, Jamaica Plain.

25. Report on Mines. Charles O. Parsons, Shirley.

*Class of '73, Mass. Inst. Technol., Course in Geology and Mining Engineering.*

The abstracts were received with marked attention, and occupied the time until twelve o'clock; whether by accident or design the clock had been stopped, and the hands in mute prophecy pointed to noon. At that hour President Walker arose, and in introducing Prof. Rogers, delivered what, in the light of succeeding events, proved a most fitting eulogy. It was a tribute of esteem and affection which found an echo in every heart. Prof. Rogers was visibly affected at this renewed evidence of the regard in which he was held by the instructors, pupils, and friends of the Institute; he arose and essayed to speak, but his voice was low and tremulous, and it was some moments before he recovered self-control. The first few sentences, in which he referred to the kind words of President Walker, were scarcely audible beyond the stage. He acknowledged that he had been an enthusiast, and was happy to know that he was not mistaken in his enthusiasm. He referred to his connection with the Institute, which began even while the diurnal tide was flowing over the spot where the building now stands. The theses, he said, were not intended to be literary productions garnished with the flowers of rhetoric, but the result of per-

sonal investigation in the laboratory or workshop, and were of real value as additions to our knowledge.

He spoke of the absence of music and flowers. "Our exercises are simple," he said, "and we are proud of our simplicity." There was a time when a wide distinction existed between science and practical art, but now ideas had changed and they were considered one and inseparable. He began to speak of the experiments of Stephen Hale with illuminating gas, when he suddenly stopped and bent low over the desk as though consulting notes. Those about him, however, knew that he had none; and the suspicion was but just beginning to dawn on them that he might be ill, when without an instant's premonition he fell prone upon the platform.

He was tenderly lifted and carried to the lecture-room of Prof. Runkle, where everything possible was done to restore him, but without effect.

Prof. Ordway returned to the platform a few moments after Prof. Rogers's removal, and amid the most profound silence distributed the diplomas and dismissed the audience, the larger part of which remained in the halls of the Institute until the result of the fall was ascertained. Silently they then dispersed, and an unusual stillness, like that of death, pervaded the building, — a stillness that will long be felt.

### Burial Services.

On Friday of Commencement week Prof. Rogers was buried from the hall that knew his voice so well. Here was a far different gathering from the one that assembled three days previously. On the door of the Institute building hung a little knot of crape, and the happy company of Commencement day was changed for one of mourning.

The National Academy of Science, of which Prof. Rogers was president, was represented by the following-named gentlemen: Prof. O. C. Marsh of New Haven, Vice-President; Profs. Wolcott Gibbs and Alexander Agassiz, of the Council; Profs. Brush, John Trowbridge, and Pickering, J. Hammond Trumbull, Esq., and President Walker.

Representatives were also present from the American Academy of Arts and Sciences, Society of Arts, American Association for the Advancement of Science, Boston Society of Natural History, Appalachian Mountain Club, University of Virginia, Yale College, Harvard University, Boston University, and also members of the corporation,

Faculty, students, and alumni of the Institute, and others. There were also present:—

Pres. Eliot of Harvard.	Hon. A. H. Rice.
Prof. Peirce.	“ S. C. Cobb.
Dr. Oliver Wendell Holmes.	“ F. W. Lincoln.
Prof. Ware.	“ M. P. Wilder.
Thos. G. Appleton.	“ C. L. Flint.
Rev. Rufus Ellis, D. D.	“ John D. Philbrick.
Mayor Green.	“ John W. Dickinson.
Gen. Rockwell.	John M. Forbes.
Edward Atkinson.	M. D. Ross.
Charles H. Dalton, Esq.	Prof. J. D. Runkle.
Henry B. Rogers.	T. T. Bouvé.
Hon. Otis Norcross.	And others.

For the services the arrangements were of the simplest character. On and around the platform were wreaths and festoons of laurel and ivy, nor was their solid green broken by the brighter hue of a single blossom. In the midst of these lay the plain casket containing the remains. Over the body the Rev. George E. Ellis, D. D., read Scripture selections, offered prayer, and made a brief address; and the Rev. S. K. Lothrop, D. D., and Col. Theodore Lyman offered tributes of respect and admiration.

Dr. Ellis, in the midst of the most profound silence, read this telegram:—

UNIVERSITY OF VIRGINIA, June 1, 1882.

*To the President of the Massachusetts Institute of Technology:*

The Faculty of the University of Virginia desire to unite with the Institute of Technology in the expression of sorrow for a common loss in the death of Prof. Rogers. The two institutions owe an equal debt to the unrivalled teacher, the original investigator, the eloquent expositor, the generous and wise friend who has been torn from us. Desiring to join with you in the last sad tribute of respect for him, they have requested three of their honored graduates, Profs. Toy and Lanza of Boston, and Francis R. Rives of New York, to represent them at the burial service, and they beg you to receive them in that capacity.

JAMES F. HARRISON,  
*Chairman of the Faculty.*

The following is taken from the beautiful address of Dr. Ellis:—

To many of us, in his quite different fields and reachings after truth in nature and life, he seems to be twin in spirit with that poet-philosopher who has so recently vanished from us in the body. How like they were in serenity of spirit, in the restfulness, the gentleness, the winning loveliness, the simplicity, the guilelessness of their character,—in the fineness of their organization, in bearing

and feature, as if wrought of the choice Sèvres clay rather than of the pottery mould of our varied humanity! With what an amplitude and compass of faculties and acquirements did our wise teacher preside over academies of philosophers and initiate successive classes of loving young pupils of science, and interpret the last disclosures and processes of advancing art and knowledge to the social circle of a winter evening! He was the high priest of this temple, where truth is taught and learned and the welfare of man is sought as a form of service to God. He ministered at its altar of nature, unrobed indeed, yet anointed with a full consecration. Here he served with love for all truth, with insight and skill in its marvellous secrets, engaging the deferential respect, the personal love, the devoted regard of its pupils. The unfinished sentence which was on his lips when the mortal arrow pierced his frame will hang around these walls while they stand. It is most fitting that we should here take our leave of his body in its repose.

At the conclusion of the services, the body, attended by the family and immediate friends, was borne to its final resting-place in Mount Auburn Cemetery, the following gentlemen acting as pall-bearers: Mr. Henry B. Rogers, Mr. John M. Forbes, Prof. O. C. Marsh, Dr. Hooper, Prof. E. C. Pickering, Prof. Wm. P. Atkinson, Prof. John D. Runkle, Mr. Thomas T. Bouvé.

Of the many resolutions passed by the various bodies of which Prof. Rogers was a member, we give only those received from the University of Virginia.

At a meeting of the Faculty of the University of Virginia, held on the 1st inst., the following preamble and resolutions were adopted:—

The Faculty of the University of Virginia have received with deep emotion the tidings of the sudden death of Prof. William B. Rogers. Several of them were for many years his colleagues in this institution, five were his affectionate pupils, and all were his admirers and friends. He came to the University of Virginia when both it and he were young. During the seventeen eventful years which followed and measured his connection with the institution, is no disparagement to his able and faithful colleagues to say that he was peculiarly its ornament and glory. It was here that he developed that gift of ease and eloquent expression which astonished and delighted every audience he ever addressed, and that rarer gift of luminous exposition which shot through a dark and difficult subject like a ray of light. It was here that he began and finished those remarkable researches which first revealed and then deciphered the great geological enigma

of our Alleghany Mountains; a work which established his fame as a scientist at home and abroad. It was here that he helped to mould the characters of thousands of promising youth, many of whom are filling to-day positions of honor and trust, and all of whom cherish the memory of his instructions as a delightful possession, and will feel that in his demise they have suffered a personal loss.

Prof. Rogers left the University of Virginia in 1853 to take up his residence in Boston. Such a man could not long remain unknown or unfelt in any community of which he might be a member. Besides engaging privately in valuable scientific researches, he became deeply interested in the establishment of an institution for technical training in the various departments of practical science. To the wonder of his old friends, and to the discomfiture of a very common doubt as to the practical ability of scholars and teachers, he displayed in this new enterprise rare capacity for organization and management. Triumphant over apathy and opposition alike, and arousing an interest in his plans, which demonstrated its genuineness by large subscriptions of money, he had the happiness of seeing put into successful operation the Massachusetts Institute of Technology; an institution which, it is safe to say, is in its own sphere, all things considered, without a superior, if it has an equal, in the world. It was in the great hall of this institution, surrounded by the monuments of his genius, and by a multitude of revering and affectionate hearts, and engaged in his beloved employ of speaking to his boys, that the great teacher and professor was stricken down. With all its keenness of sorrow, it was a fitting end to a glorious career.

The Faculty, in behalf of themselves and the alumni of the University, desire to unite with the host of his friends in other parts of our country in bewailing his death and paying a humble tribute to his memory. Therefore,

*Resolved*, That the Faculty of the University of Virginia tender their profound and respectful condolence to the family of Prof. Rogers in this great and sudden affliction. That they offer to the Faculty of the Massachusetts Institute of Technology their sincere sympathy in the common loss of an honored former colleague and steady and generous friend. That the secretary of the Faculty is instructed to forward a copy of this paper to Mrs. William B. Rogers, to Dr. Robert E. Rogers, and to President F. A. Walker.

JAMES F. HARRISON, M. D.,  
*Chairman of the Faculty.*  
F. W. PAGE, *Secretary.*

### Clippings.

THE death of Ex-President Rogers in the midst of the Commencement exercises, and on the platform of the institution to which he had given the ripest years of his life, is a most impressive as well as shocking event. It is comparable to the glorious deaths "in harness" of John Quincy Adams in the hall of Congress and Chatham on

the floor of the House of Lords. This venerable and noble figure (with its peculiarly strong Americanism of type in the aquiline cut of the countenance and its fine and graceful slenderness, carried with a more perfect ease than Emerson's, but with all the dignity of modesty that endeared that other typical American to our popular audiences) will be long missed at gatherings among us where the most distinguished are assembled. President Rogers's gifts, acquisitions, and virtues were many and varied, and all upon the highest plane in their respective kinds. It will require a public commemoration and a carefully prepared eulogy by some worthy hand to set them forth at all adequately. Perhaps the most conspicuous of his excellences as generally known among us was his marvellous extemporaneous power of lucid statement. In explaining the most abstruse matters, with chalk and rubber in hand, he never hesitated for a moment in choosing his words and framing his sentences; and all was so clear, graphic, and connected in its order that it might at once have been printed in a book. He was the ideal professor.

As a representative of the *pure scientific spirit*, President Rogers stands out more strongly than any other man in the community,—perhaps more strongly than any other man in the United States. Those who know what an intellectual turning-point in modern civilization this spirit illustrates are as profoundly moved by the example and work of a man like Professor Rogers as by the memory of Emerson or of Darwin. If we will, we may all become his legatees by the acceptance of this same principle.

The hundreds of men, young and old, on whom his influence bore think of him gratefully and affectionately. All testimony is alike as to the power of his personality. He was the creator of the Institute of Technology, the inspirer of its teachers and pupils. His direct influence through contact has been very great; but fortunately the value of men to their fellows is not limited by personal acquaintance. This limitation, however, is the fate of almost every instructor. The work of teaching swallows up energy so completely that most who follow it are limited to personal influence. As one of these hard-working men, President Rogers had no time to become the public apostle of his immortal idea; but whenever he did appear as the representative of his beloved school, his voice used to ring with the utterance of it like the voice of a prophet, and his face to glow with a light which no one who saw it could ever forget. He stood for loyalty to absolute truth. He gave himself to this thought with an

intensity and consecration which made it like a religion. To hear him speak of his great idea was to realize something of the divine right of science. When the philosophical development of American thought shall have reached the stage of retrospect, he will be canonized as one of the pioneers of the scientific method. At present probably less than ten per cent of the intellectual leaders of the United States have reached the moral turning-point which Professor Rogers long ago passed; nor is it easy for those who have never experienced this new philosophic birth to realize the vigor and freedom which it confers. Most men go through life trammelled by ideas acquired by heredity or accepted without examination. Diseases of the intellect are as common and as hindering as diseases of the body; nor shall we ever come into our rightful inheritance until we have sloughed the metaphysical skin with which most of us are born.

Prof. William B. Rogers was the man to whom above all others New England will owe whatever pre-eminence she may hereafter attain in the useful arts, who strove all his life to set them and those proficient in them in their proper place as the peers of the humanities and of their students, of the professions and of those trained to them, and who succeeded in his aim, and placed the institution which he founded in the same rank with the colleges, its graduates on an equality with their students. To have done this is to have performed a service so great, so widespread in its results, so corrective of many abuses, social and personal, that he who effected it could hardly receive too much honor from his countrymen of every class and condition.

Prof. Rogers added to his extraordinary scientific attainments a personality which, by its integrity, earnestness, simplicity, and warm-heartedness, attracted and developed all that is best and noblest in all with whom he was brought in contact. The dignity which he had was the result of a pure and noble character, sunny and all-embracing in its affections; and no one ever went to him in perplexity, or in quest of knowledge, without receiving a cordial and kindly greeting. His scholarship and attainments commanded respect, but his frank, winning, and genial manner compelled affection, — and that is the higher tribute. As a zealous promoter of scientific education among the industrial classes, he had no superior; his writings have enriched the pages of all the leading scientific periodicals in Europe and America.

Contrary to the statements made in the daily papers, the cause of Prof. Rogers's death, as revealed by a post-

mortem examination, was heart disease, and it is certain that death took place instantaneously and with no suffering whatever.

The portrait and a condensed sketch of the life of Prof. Rogers is contained in No. 4 of Vol. I. of THE TECH, on sale at A. Williams's book-store.

An exceedingly interesting account of the first public appearance of Prof. Rogers in New England, is given in the Boston *Sunday Herald* for June 4.

Harvard College conferred the degree of LL. D. upon Prof. Rogers in 1866.

### Board of Editors, 1882 '83.

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C. M. WILDER, '85, *General Advertising Agent.*

The very gratifying success of THE TECH during the past year has been, in a great measure, due to the ability, the energy, and the untiring exertions of its editor in chief, Mr. Walker: he has always identified himself with, and has worked for, the best interests of the school, and has been considered by every one as "the right man in the right place." Now that he has been obliged to leave us, he may feel sure that he is attended by the best wishes of the entire school, and that he will long be remembered. Mr. Walker was in all of his labors very ably seconded by Mr. Chase; and in appointing this gentleman as Mr. Walker's successor, the Directors feel confident that with his experience and the competent associate editors already named, the success of THE TECH for the coming year, from a literary standpoint, is assured. The financial outlook of THE TECH is also very bright, owing partly to the experience of some of those who have this matter in charge, and partly to the fact that certain expenses were incidental to starting the paper.

Although little of a positive nature has as yet been done, yet it will doubtless be of interest to our subscribers to mention a few of the principal changes proposed in their interests: A committee has been appointed to obtain estimates of the cost of twenty pages of the same size as heretofore; the system of delivery is to be improved; our exchange list will include all of the leading periodicals, and they will be so arranged as to be readily accessible to all; prizes will be offered for the best contributions and for the best cartoons. If possible, more convenient and more easily accessible quarters will be obtained for THE TECH.

The government of the Institute have been very much pleased with THE TECH, and have signified a desire to help us by contributing articles on the benefactors of the

Institute; their offer has been gratefully accepted, and the first number of Vol. II. will probably contain the portrait and history of Mr. Walker, who founded the Walker Professorship of Mathematics, and otherwise aided Alma Mater. These articles, besides being highly interesting, will form valuable memoirs.

### The Athletic Meeting.

THE out-door spring meeting of the Athletic Club was held at Beacon Park, Saturday, May 27. The day was delightful, and a fair-sized audience was present to witness the games, which, though not in the least extraordinary, were a considerable improvement over those of last year, the records being better, and a larger number of competitors entering for the events. The games began shortly after two o'clock: Haines, '84, winning the first event, running high jump, at 5 feet 2 $\frac{3}{4}$  inches; Kimball, '85, second, 5 feet 1 $\frac{3}{4}$  inches.

Throwing the base ball, as announced, was won by Harriman, '83, 323 feet; Dorchester, S. M. A., on his third trial, threw the ball 335 feet, but in so doing stepped about two inches over the line. Harriman claimed a foul, which was allowed by one of the judges, but greatly to the dissatisfaction of the spectators. A light wind favored the throwers.

Putting the shot was won by Harriman, 31 feet 9 inches; F. H. Cutter, '84, second.

The running broad jump had seven competitors, and was won by Kimball, '85, at 16 feet 8 inches.

The mile run was easily won by Copeland in 5 minutes 36 seconds.

The trial heats of the hundred-yard dash were won as follows: The first, Du Pont, 11 $\frac{1}{4}$  seconds; the second, Haines, 11 $\frac{3}{4}$  seconds; the third, Kimball, 11 seconds. The final heat between the winners of the trial heats was won by Du Pont in 10 $\frac{1}{4}$  seconds.

The pole vault was won by Sturgis, 8 feet 8 inches. Mr. Sturgis's record in the winter games being 9 feet 4 inches.

The quarter-mile run was one of the most exciting events; won by Haines in 57 seconds.

The bicycle race, one mile, was won by Stahl in 3 minutes 42 seconds, the track being in poor condition.

Tennis was continued during the progress of the other games, Messrs. Bennett and Sturgis winning over Codman and Purinton; Messrs. Copeland and Williams winning over Hines and Hunt. In the concluding sets, Bennett and Sturgis won and received the cups.

The prizes in all events were engraved cups; second prizes being given in events having five or more entries. A gold medal for general excellence was also offered those entering to compete in each of the games, — running high jump, putting the shot, running broad jump, hundred-yards dash, and quarter-mile run, — the winner of the greatest number of points to receive the medal, which was awarded to Haines, '84.

The meeting was financially a failure, the gate receipts being small; and as a consequence, the club, although

not in debt, has a treasury as good as empty. Last year, from the same cause, a debt of about thirty dollars was carried over for the new treasurer to work off. It may be questioned if this meeting, occurring as it must very late in the term and just after examinations, can be made a success. The experiment of the last two years have not been satisfactory, and the succeeding board of management should consider well before attempting another spring meeting at this time.

At the winter meetings the club had an enthusiastic attendance, and made money; and every meeting should be so conducted as to help fill its treasury.

It is to be hoped that next year the officers and executive committee will be chosen with great care, so that men of real executive ability and not merely class popularity will hold the reins of government of the club. The success or failure of the club is simply and solely a question of management, and if the upper classes put men of ability on the committee the club will be an assured success.

### About the Institute.

Two unpaid subscriptions to the TECH.

The city has bought the lot in Church Square.

The new building will be commenced this summer.

President Walker will continue his lectures on political economy to '83 in the fall.

Three took entrance examinations in Chicago.

Prof. Ordway and wife (Miss Walton, '81) sailed for Europe June 3.

The School of Mechanic Arts presented diplomas to two men this spring.

The Lowell School of Design graduated fifteen, and all of them had good places before they left; Prof. Kastner thinks their exhibition this spring was the best that they have ever had.

The larger part of the students are engaged upon practical work this summer, and there are good places remaining

It is very pleasant to notice the steady growth in the popularity of the Institute and its teachings, as attested by the increased number of students. The class entering last year was the largest which had ever entered. At the examinations this spring there were one hundred and eleven applicants, eighty-nine of whom were admitted, an increase of thirty over last year; at least as many more will enter in the fall.

The Alumni Association welcomed the class of '82 into its membership at their annual dinner, which took place at Young's Hotel, Friday, May 26. Among the prominent features of the handsomely decorated table were steam engines and other mechanical devices moulded of different colored ice creams. After-dinner speeches were made by President Walker, Mr. Tolman (president Alumni Association), Prof. Runkle, Mr. Miller, '79, Mr. Ross, and Mr. Philbrick.