

Digitized

From the Boston Sunday Herald
June 4th 1882

57

THE LATE PROF. ROGERS.

Generous Tribute to the Great Geologist and Scientist.

Mr. Denman Ross, a member of the government of the Massachusetts Institute of Technology, a day or two since, requested Mr. John L. Hayes of Cambridge to furnish some reminiscences, for the records of the institute, of the late Prof. Rogers, who died so suddenly while delivering an address before the members of the organization on Tuesday last. Mr. Hayes responded promptly and feelingly, and the letter containing his tribute to the distinguished professor was received by Mr. Ross yesterday, and it will be entered upon the records of the institute at the next meeting of the board of government, early next autumn. The letter is as follows:

CAMBRIDGE, June 1, 1882.

My Dear Sir: You were pleased to express a desire that I should furnish you, in a written form, a personal reminiscence, stated to you in conversation, of the late lamented W. B. Rogers, so long the president of the Institute of Technology, with which you are connected. I comply with your request, because I feel that no tribute, however slight, should be withheld from one who was so bright an ornament of American science, and in his department of education so great a benefactor to our community. His latest work, as an educator, may lead us to overlook his splendid service to science in explaining the most complicated phenomena in American geology, as well as the grandest feature in the confirmation of the eastern polar of our continent by the elucidation of the physical structure of the Appalachian chain. My reminiscences refer solely to the latter work.

In April, 1842, I enjoyed the privilege of attending, as one of the youngest members, the meeting of the Association of American Geologists and Naturalists, held in the city of Boston, at the rooms of the Boston Society of Natural History. This association was remarkable from the circumstance that nearly all its members were practical geologists, actually engaged in conducting the geological surveys then in process in the different states. The discussions were of the gravest character and of profound interest, as all were seekers for instruction from each other, for guidance in conducting the surveys and completing the reports. The meeting in Boston, as compared with three others which I attended elsewhere, was a particularly brilliant one. Its president was Dr. Norton of Philadelphia, so distinguished for his researches in anthropology. Its appointed author was the venerable Prof. Silliman, the father of American geology. Not less distinguished among the associate members present were the admirable state geologist, Prof. Hitchcock; the almost inspired observer of natural phenomena, our own Dr. Charles T. Jackson; ~~the~~ Emmons of New Jersey, the exporter of the Taconic system; the brilliant French astronomer, Nicolet; the mineralogist, Beck; the palaeontologist, Hall; the microscopist, Bailey; the zoologist, Gould; the philologist, as well as naturalist, Halde- man; the eminent merchant and promoter of New England industries, as well as patron of science, Nathan Appleton, to whose munificence is due the publication of the proceedings of the association; and the brothers William B. and Henry D. Rogers, the former the elder, then the state geologist of Virginia, and the latter of Pennsylvania, and each a representative, as professor of the principal university in the respective states. To complete this brilliant circle, Sir Charles Lyell, the recognized head of English geology, was present, an interested listener and active participant in the debates. Notwithstanding the able address of Prof. Silliman, the elaborate paper of Prof. Hitchcock, and the frequent and interesting remarks of Mr. Lyell, the marked feature of this meeting, which continued for a week, was the reading of a joint paper by the brothers Rogers upon the physical structure of the Appalachian chain, as exemplifying the laws which have regulated the elevation of great mountain chains generally. The expression, "reading a paper," conveys a most inadequate idea of what was a remarkable oratorical effort. The brothers, William B. and Henry D. Rogers, who must always be associated together, as there was an absolute unity of effort in the great work of their lives, their geological observations and deductions, had been for several years ~~studying~~ studying, respectively, different sections of the same great geological field, the Appalachian chain, the one in Virginia and the other in Pennsylvania. With the natural desire of the representatives of the South to make a favorable impression on the occasion of their first appearance in New England, they selected the meeting in Boston for giving the grand results of their labors in the peculiar field of American geology which it had fallen to them first to explore.

A grander geological theme could hardly be imagined. It related to the physical structure of a mountain chain 1300 miles in total length, extending from Vermont to Alabama, and 100 miles in its greatest breadth, consisting of beds of silurian, devonian and carboniferous formations (adopting terms applied to similar formations in England), arranged in elevated parallel and narrow ridges, sometimes 100 miles in length, but with strata so folded, ~~and~~ contorted ~~and~~ fractured, that science had sought in vain to find a key to their original structure. Yet the genius of the brothers Rogers had like the Egyptologist with the papyrus roll, unfolded the inverted and contorted strata, spread and smoothed them out, as it were, in an open book, and showed them to the eye of science, as originally horizontal deposits, continuous with the rocks of the great western coal fields. But I can hardly even glance at the scientific conclusions of this paper, as my simple object is to describe the manner of its delivery and the impression it made upon its hearers.

The brothers, by their happy and amiable faculty of thinking and working in concert, more than duplicated their individual power. In making their joint exposition—for the "paper" as delivered was purely an oral statement—William B. Rogers took upon himself the more modest, but really more difficult part of describing the phenomena, leaving to his brother the part of explaining the theory of the phenomena. Nothing could be more pleasing than the working together of these two minds toward the same end. Both were in the heyday of manhood, with the enthusiasm of youth and the fervor of their section still unabated. Their ambition, it is true, was hardly concealed, but it was an ambition which produces noble efforts. Those who know the elegance of diction and manner which characterized the later addresses of the elder Rogers, can partially conceive of the effect he produced by the fluent and graceful oral statement of the complicated phenomena of this hitherto mysterious mountain chain—a statement in which there was not one moment of hesitancy, ~~and~~ a word which was not the most fitting. But they cannot conceive of the delight which was given to the admiring hearers by the restoration of these disturbed formations to their primitive symmetry, and by the revelation of the laws of structure which determined the conformation of the vast and singular mountain range.

This paper, or what purports to be the same, is published in the transactions of the association. I have frequently read it since. To me it is now comparatively tame in expression. It lacks the inspiration of the scene and the men, the illustrative diagrams, the emphasis of voice and finger pointing out the distinguishing phenomena, and the fervor of spontaneous utterance. The impression I have of this exposition as delivered, is that, next to the Phi Beta Kappa oration of Wendell Phillips at Harvard, it was the most lucid and elegant effort of oral statement to which I ever listened. It may be true that eloquence is but a secondary quality in the philosopher; but, in respect to the matter of this memoir and the general researches and deductions of the brothers Rogers, here named, in their peculiar field of exploration, it may be safely asserted, that they have made the most original and brilliant generalizations recorded in the annals of American geology, and have thrown light upon the structure of mountain chains, generally, which entitle them to a place by the side of the great expositor of this subject, Etienne Beaufort of France. I add to this honor, which is shared by another, that which is due to William B. Rogers alone for his labors in your Institute of Technology, which he created, and his position as head of the National Academy of Science, and may we not say that he completes the triad of the illustrious men of New England, poet, philosopher and man of science, whose death has made this year memorable? Yours truly,
JOHN L. HAYES

wrapped
Egyptologist

and eroded

confirmation

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nor

Morton
anthropology
of Massachusetts
expositor

orator

(Then Mr.)

End here



11. Richmond & Louisville RR. Co. granted benefit of taxes paid by Va., Ky. & Ohio RR.—Acts, p. 363.
12. Forbids floating logs down Blackwater and Nottoway rivers except in rafts.—Acts, p. 366.
13. Liberal Publishing Co. of Norfolk, incorporated.—Acts, p. 366.
14. Requiring the timber-men of Buchanan county to brand their logs floated or rafted on Louisa river.—Acts, p. 378.
15. Name of Norfolk & Portsmouth Terminal Railway, Wharf & Warehouse Co. changed to Consolidated Southern Ry. Co.—Acts, p. 380.
16. Allowing Richmond & Danville RR. Co. to discharge its indebtedness to the State in State bonds.—Acts, p. 400.
17. Allowing any railroad or other companies to take stock in the Roanoke Machine Works.—Acts, p. 440.
18. Virginia Land & Improvement Co. incorporated to hold, improve and convey lands, mine, manufacture, etc.—Acts, p. 444.
19. Authorizing the Washington, Cincinnati & St. Louis RR. Co. to adopt a standard gauge.—Acts, p. 451.
20. Botetourt Manufacturing Co. incorporated to manufacture iron, cotton, &c., with its general office at Buchanan.—Acts, p. 451.
21. Manchester Ry. & Land Improvement Co. incorporated to operate in and near Manchester, Va.—Acts, p. 453.
22. Amending act permitting consolidation of Alexandria & Fredericksburg and Alexandria & Washington RR. companies.—Acts, p. 456.
23. Consolidated Abattoir Co. of Alexandria, Washington & Georgetown incorporated.—Acts, p. 456.
24. Farmville & Staunton River RR. Co. charter amended authorizing Farmville to subscribe to its stock.—Acts, p. 462.
25. Upper Appomattox Co. allowed to increase its capital stock for purpose of erecting mills, etc.—Acts, p. 463.
26. Richmond Coal Mining & Manufacturing Co. incorporated to mine, manufacture, etc., in Goochland, Chesterfield and Henrico counties.—Acts, p. 464.
27. Atlantic & Danville Narrow Gauge RR. Co. incorporated to construct a railway from James river in Surry county via or near Waverly in Sussex, Belfield in Greensville, Brunswick C. H., and Boydton to Danville.—Acts, p. 467.
28. Surry County RR. & Lumber Co. incorporated, with power to construct a traffic railway from Sloop point on James river to Muscle forks of Blackwater in Surry county.—Acts, p. 470.
29. Alexandria Mining, Manufacturing & Warehouse Co. incorporated for mining, manufacturing, and other purposes.—Acts, p. 474.
30. Richmond & Alleghany RR. Co. authorized to increase its capital stock to construct branches or extensions, to consolidate its indebtedness, and to consolidate with any railway, wholly or partly in W. Va., that will form a connecting line of railways with it or by means of intervening railways, and to consolidate with any railway which shall be authorized to construct a railway from the R. & A. RR. to the W. Va. line, the consolidated company to have a principal office in Richmond.—Acts, p. 488.
31. Richmond & Danville RR. Co. authorized to increase its capital stock, provided it will first release its exemption from taxation for state purposes.—Acts, p. 490.
32. Life Investment & Guarantee Society incorporated for life insurance purposes.—Acts, p. 490.
33. Confirming settlement of Page county with Shenandoah Valley RR. Co. of subscription.—Acts, p. 492.
34. Authorizing Upper Appomattox Co. to widen and deepen its canal to 40' wide and 5' deep from Clementown mills to Petersburg.—Acts, p. 492.
35. The tax on the real and personal property of railroad and canal companies (not exempted by charter from taxation) fixed at 40 cts. on each \$100 of valuation and one per cent on income ascertained by deducting cost of operation, repairs and interest on indebtedness from gross receipts. Such companies are to make an annual report of what property they own on the 1st day of Feb. of each year.—Acts, p. 507.
36. Alexandria Ferry Co. incorporated to establish and operate a steam ferry from Alexandria across the Potomac to a point in Md. or D. C.—Acts, p. 540.
37. Washington-Virginia Mining & Manufacturing Co. incorporated to mine for gold, and other metals, etc., on and near Rapid Anne river and other streams in Virginia, for improving water-power for milling, etc., with authority to dam, canalize, etc., the waters of Rapid Anne and other rivers, and to have the exclusive right to mine the beds, banks, and highlands of such streams made available by such operations.—Acts, p. 541.

Death of William B. Rogers.

It was not in our thoughts when we at our home parted with our venerable and much beloved friend, Professor William Barton Rogers, on a bright afternoon of the first week of the May that has just passed, that we should see him here no more forever; that in a few days he would finish his grand and enduring earthly labors and pass in spirit to the higher and wider life of "the world to come." But so it was to be. Soon after his return to Boston from Virginia Prof. Rogers attended, on Tuesday, May 30th, 1882, the exercises of the graduating class of the Massachusetts Institute of Technology,—an institution which he originated and over which he presided until a few months ago,—and it was while taking part in these exercises that he suddenly expired, as described in the following extract from the *New York Times*:

"Prof. Rogers occupied a place on the platform during the progress of the exercises, and at the close of the long performance was introduced by the present president, Gen. Francis A. Walker, to address the assemblage. Gen. Walker, in introducing him, referred in an affectionate tone to his long service in connection with the school and spoke of him as the father of the institution, and in conclusion playfully characterized him as an enthusiast in his work. When the venerable man rose to respond it was noticed by some of those about him that his face wore a wearied look, and that he appeared weak, but no serious indisposition was suspected. He began by acknowledging President Walker's complimentary allusions to himself, remarked that he was an enthusiast in behalf of the institution, but was glad that he had been one when he saw how it had grown and what good work it had done and was doing. Then, proceeding to review in an earnest tone what had been accomplished, he suddenly paused, put his handkerchief to his face, and bent low over the desk, as if consulting some notes. Those near him, knowing that he had no notes, concluded at once that he must be ill, and there was a movement to assist him, when he straightened up, apparently to resume his remarks. Almost immediately, however, he threw his arms upward, and before anyone could help him he fell backward upon the platform, his head striking the floor. He was taken into a room in the rear of the stage, and every means resorted to to restore him, but it was evident that no human agency could avail. He remained unconscious from the moment of his fall, and except from the faint beating of his heart he appeared to be lifeless. Death came in about twenty minutes after the attack. The assemblage maintained an almost breathless silence during all the time following the attack and after the death, when one of the Professors announced that there would be no further public exercises, the large audience silently and quickly dispersed.

The cause of Professor Rogers' death is supposed to have been apoplexy. He had had one or two slight attacks, one as long ago as 1868, occurring at a Faculty meeting."

In our March number was presented a sketch of the life and services of Prof. Rogers, and in our May issue a statement was made concerning his recent visit to Virginia and his proposal to publish a new edition of his map of Virginia. We have had much to say about this famous scientist and his labors in the past, and we shall have much to say of him and them in the future, for he impressed himself upon Virginia in such a way that time cannot efface the remembrance of him or his labors. We shall always miss him and mourn his loss while we remain.—A full account of the services at his funeral properly occupies the next page.

A Slate Bank belonging to Geo. W. Rosenberger, near his home, Smith Creek, in this county (Shenandoah), and one, about three-fourths of a mile northeast of this place, on Smith Creek, belonging to D. F. Kagey, were leased last week to J. C. Lang, Washington, D. C., and work looking to their development will begin in several weeks. Cols. Fitzgerald and Nixon, Washington, who are directly interested in the lease, and who with Mr. Lang examined them, say they are very valuable.—*Shenandoah Valley*, New Market, Va.

Zinc Ore.—The Wythe Lead and Zinc Mine Company, through their agent, Jno. C. Raper, Esq., recently sold to parties in New Jersey 3,000 tons of zinc ore, the whole amounting to \$23,800, and this heavy bulk is now being shipped by Max Meadows.—*Wytheville Enterprise*.

Funeral Services of Prof. Wm. B. Rogers.

We find in the *Boston Journal* of Saturday morning, June 3rd, 1882, the following account of the funeral services of Prof. Wm. B. Rogers, that occurred Friday, June 2d, under the heading "Funeral Services of the Widely Known Educator—A Large Social and Scientific Representation:"

The obsequies of the late Prof. Wm. B. Rogers, occurred in Huntington Hall, Institute of Technology, yesterday afternoon; they were attended by a large number of the friends of the departed, who thus joined in the mourning of his relatives. The organizations that sent representatives were: The National Academy of Sciences, the Society of Arts, the American Association for the Advancement of Science, the Boston Society of Natural History, the Appalachian Mountain Club, the University of Virginia, Yale College, Harvard University, Boston University and the Institute of Technology, whose corporators, professors, instructors and students were in attendance. Among the individuals present were George William Bond, Mrs. Kate Gannett Wells, Hon. George C. Richardson, Oliver Wendell Holmes, W. W. Greenough, Charles W. Eliot, E. P. Whipple, Hon. E. R. Hoar, Charles C. Perkins, Hon. Thomas C. Amory, Stephen G. Deblois, Rev. Rufus Ellis, D. D., Miss Abby W. May, Prof. Pierce, of Harvard University, Prof. Alexander Agassiz, Mrs. Julia Ward Howe, Miss Elizabeth C. Putnam, Thomas Gaffield, Thomas Appleton, Hon. A. H. Rice, Hon. Frederick W. Lincoln, Mayor Green, Hon. Marshall P. Wilder, Hon. Samuel C. Cobb and Hon. John D. Philbrick.

For the services the arrangements were of the simplest character. On and around the platform were wreaths and festoons of laurel and smilax, nor was their solid green broken by the brighter hue of a single blossom. In the midst of these emblems of immortality as well as honor lay the plain walnut casket containing the remains. Over the body the Rev. George E. Ellis, D. D., read Scripture selections, offered prayer, made a brief address, and the Rev. S. K. Lothrop, D. D., and Col. Theodore Lyman offered tributes of respect and admiration. After Dr. Ellis had pronounced the benediction and the last look at the venerable face had been taken, the casket and its contents were removed to Mount Auburn, where they were interred. The pall-bearers were Prof. Henry B. Rogers, J. Russell Forbes, Dr. Hooper, Prof. Bowne, of Boston University, and Professors Atkinson, Runkle, Pickering and Marsh of the Institute of Technology.

THE ADDRESSES.

Rev. 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:

Sir: 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. W. B. Rogers. The two institutions owe an equal debt to the unrivaled 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, Professors C. D. Toy and G. Lanza of Boston and Mr. 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 reply to the above we find in the *Charlottesville Jeffersonian*:

BOSTON, MASS., JUNE 2, 1882.

To the Chairman of the Faculty:

Sir:—The Faculty of the Institute of Technology cordially and gratefully respond to the greeting of the University of Virginia. May our common sorrow strengthen our mutual regard, and may all lovers of truth be drawn closer together by the noble example of our departed brother, teacher and friend.

Respectfully yours,

FRANCIS A. WALKER,
President, Institute of Technology.

Dr. Ellis continued with Scripture selections, beginning with, "It is appointed unto all men once to die," and ending, "For we know that if our earthly house of this tabernacle be dissolved we have a building of God, a house not made with hands, eternal in the heavens." He added this address:

For a scene and an occasion like this, if silence and thought must find expression in words, there are no words which less dis-

turb the solemnity and calm to which we would yield ourselves than those words of Holy Scripture. Those sentences, inbreathed with submission and trust, with revealings from sources beyond our solar light, give a Divine interpretation to the life of man, and alone of all oracles cheer and illumine his destiny. The dust of the ground, animated by the breath Divine, comes together and makes a living man after the similitude of his Maker. Death takes apart what life united. And then the dust returns to the earth as it was, and the spirit returns to God who gave it. What is left to us here is dust, to be peacefully and reverently committed to the kindly bosom of the earth. Of that rich and beautiful endowment of genius, talents, virtues and graces, the contribution from that upper sphere, only the deserted earthen vessel of the treasure lies before us. The mystery of that union between body and spirit is profound and sacred. It does not, it never will, disclose itself to the science or the philosophy of living men. The cunning devices and implements within this hall of advanced science, and all their marvelous inquisitions and processes, are baffled when they touch that mystery. Reverently and devoutly did that gifted and beloved man, sage, scientist, teacher, friend, whom we are mourning, bow before that mystery with a serene and a lifted spirit. It is solved to him. It still overshadows us.

The more gratefully therefore do we yield ourselves to the deep impression of the life and character, the loftiness and fullness of the service, the purity, the attractions, the charm and winning graces of the eminent man so honored, so beloved. 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 winning loveliness, the simplicity, the guilelessness of their character—the fineness of their organization, in bearing and feature, as if wrought of the choice Sevres clay rather than of the pottery mold of our varied humanity. With what an amplitude and compass of faculties and acquisitions 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 marvelous 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.

Rev. S. K. Lothrop, D. D., said: We are gathered here, my friends, at this hour under the shadow of a great sorrow, but comforted by rich and pleasant memories and by the light of immortal hope. We are gathered here to render these last kind offices of humanity to the mortal remains of one whom we have known and loved and honored. Within the past year death has made a mighty sweep among the great ones of earth, among those who had a name and a fame in their own lands, in their own countries and throughout the world. And among all those that have been taken from the living, to our loss and regret, I know of none more entitled to our admiration, to our reverence, to our affectionate and unqualified respect than he whose mortal remains we have before us in the sweet and calm sleep of death. It is not for me to speak of him, to gauge and measure his mind, to unfold his extensive acquisitions in the whole wide range of natural science or in those particular applications of its principles to which he paid special attention; this will be done by one more competent to do it than I am. But I may be permitted to say that as I go back to the first course of lectures I ever heard from Mr. Rogers, many years ago, and on every occasion on which I have heard him speak, it seems to me that he had a fullness and accuracy of knowledge, a distinctness and apprehension of thought and ideas, and an eloquence and exactness of utterance that enabled him to make every scientific topic and every topic on which he spoke clearer and more intelligible than any other man I ever heard speak. But there was a higher glory for our departed friend, great as the glory of the acquisition of scientific usefulness was—that was the glory of his character. He was a rare man. There was a large and beautiful humanity in him—refined, cultivated, developed, subdued, impregnated with all the holiest influences of religious faith and love. When I go back twenty-five or thirty years, to the early meetings of the Thursday Club, and recall some of the discussions that used to come up at that time, the image of Mr. Rogers rises before me as that of one who was sweet and gentle in temper and in manner, firm but kind, wonderfully free from every art, with no indications

of envy or jealousy or rivalry; anxious only for the truth, earnest only in his manly but modest utterance. He was wonderfully exempt, it always seemed to me, from any thought of pride or arrogance, which sometimes, perhaps too often, manifest themselves in men of distinguished ability in any of the departments of science. He was always modest, unassuming and kind, full of love and tenderness, of consideration and respect for those who held other opinions. And it was these qualities which, in all the walks of life, won him the respect he deserved. In the lecture-room, in the class-room, on the platform, in the social gathering, anywhere and everywhere throughout life, and all its organizations, it was these qualities that made our friend beloved and honored, and gave him power in all that he attempted. Always and everywhere his presence and greeting was a felt benediction.

"None knew him but to love him,
None named him but to praise."

And these qualities gave such elevation to his character, such usefulness to his life, that they produced that preparation that made his death as grand and sublime as his life and character had been beautiful—a fitting close to a career so noble, so pure and so blessed. My friends, the casket is broken, but the treasure is added to that store of wisdom, of goodness, of ability, of truth, which is ever being increased. It abides in all our memories; it abides at this hour in the hearts of his people as an incentive, and it will abide through coming generations as an incentive to higher endeavors. The scene and the occasion writes its lessons on all our hearts and consciences—"Ye know not the hour when the Son of Man cometh," "Be ye always ready." Let us study these sentences until our hearts are impregnated with their influence and their spirit, so that we may leave behind us that memory of the just which is blessed.

Col. Theodore Lyman said: The life we here contemplate embraced in its term almost the entire growth of all knowledge of the organic world. When that life began, the names of the great workmen who laid the enduring foundations of this knowledge might have been told on the fingers; to-day they are a large army, organized and disciplined. Easy now is the path of the student, his early steps steadied by strong hands and cheered by encouraging tones. It was not so when he first opened his mind to the study of nature. A few men in his native Philadelphia were groping in the twilight of early discovery or were striving to set in fit order ascertained facts; masters and laboratories and instructors, all were wanting. Plainly, then, the man who could take up such a pursuit must have been a man of originality and power. And such he was. He reached an eager hand to draw aside the curtain that hid from him the secrets of nature, not with the short-lived curiosity of the child, but with the temperate patience of the philosopher who asks and who will have an answer. The great world might seek its pleasures or its gains, but his heart was among the mountains, with their rocks, that would talk to him if silent to all beside. Lonely he was at first, a professor in a rural college; and yet not lonely, for his very instruments in his little laboratory were his companions and friends. As time wore on, and he approached middle life, what joy to him to see an ever increasing band of workers in his chosen path! With what pride did he marshal and organize them, until the day came when they could be united in that great association of which he was the chief founder. His was the reward of the faithful servant, for he put out his talent to the usurers, and his riches increased a thousand fold. But there was a cause for this ability and this power of labor, to account for this cheering success, and that was enthusiasm—a real enthusiasm that glowed and sparkled and poured on every one its quiet but constant current. This it was that increased his power, while it lessened his toil; this it was that persuaded his hearers more than logic or education. His whole character grew from it like a tree from a goodly soil. His mind was a wondrous factory, constantly taking in crude observations and ever giving out the fine tissues of knowledge. Of this great learner and great teacher, enthusiastic in all things, honest and gentle in all things, we preserve a pleasant memory and a shining example.

ACTION OF THE ALUMNI OF THE INSTITUTE.—At a meeting of the Alumni Association of the Massachusetts Institute of Technology, held just prior to the funeral, the following was adopted by a rising vote as the unanimous sentiment of those present:

At the close of the exercises on graduation day it pleased a kind Providence to end the labors of our beloved President Rogers. The alumni of the Institute and many other students who so highly value his guidance and instruction, while feeling acutely the suddenness of the blow which has removed him from among them, still realize the peculiar fitness of the close in the midst of work and surroundings created and cherished by him, and even in the exercise of his accustomed eloquence which had so often communicated his own enthusiasm to his listeners.

Unsurpassed in the faculty of presenting a subject with clearness, he made it brilliant by such words and manner as won not alone the attention and respect of the listener, but commanded admiration and affection.

While we mourn his loss as that of a dear friend, and with sincere sympathy for those near to him, we do not forget that no nobler example could have been given the alumni and those who are to follow at the Institute than his life of high moral purpose and simplicity.

The Early Iron-works of the Virginias.

Iron Manufacturer's Guide, J. P. Lesley, 1866.

(Continued from page 62.)

35. *Isabella cold-blast charcoal furnace*, owned by Nicholas W. Yager, of Luray, Page county, Va., 1 mile north of Luray, on Hawksbill creek, a half mile above Speedwell forge No. 1; was built in 1760 and abandoned in 1841, now in ruins.

36. *Catharine cold-blast charcoal furnace*, owned and managed by John McKiernan, Alma, Page county, Va.; situated 3 miles west of Newport, 14 miles from Luray, 15 by pike from New Market, and 18 by bridle path and 25 by road from Harrisonburg; was built in 1846; 8 ft. across the bosh by 32 high, and made in 22 weeks of 1856, 526 tons of metal out of brown hematite ore from banks $\frac{1}{4}$ of a mile west of north from the furnace.

37. *Shenandoah cold-blast charcoal furnace, No. 1*, leased and formerly owned by D. & H. Forrer, and managed by H. Propes, Shenandoah Iron-works, Page county, Va.; stands 9 miles southwest of Newport, 20 south of Luray, and 23 east of Harrisonburg; was built in 1836; 9 ft. across the bosh by 33 high, and made in 22 weeks of 1856, 632 $\frac{1}{2}$ tons of forge metal out of brown hematite ore from banks in Rockingham county within a quarter of a mile of the furnace.—(That is of the next named.)

38. *Shenandoah steam hot-blast charcoal furnace, No. 2*, leased and owned like No. 1, stands on Naked creek 5 miles above Furnace No. 1, and 20 miles below Port Republic; was built in 1857; about 9 ft. across the bosh by 36 high, to make 50 tons per week.

39. *Margaret Jane steam and water hot-blast charcoal furnace*, owned and managed by John Miller, Port Republic, Rockingham county, Va.; is situated in Brown's Gap, 3 miles east of Mount Vernon forge, and 3 miles southeast of Port Republic; was built in 1849; 8 ft. across the bosh by 31 high, and made in 26 weeks of each of 3 years before 1857 about 750 tons of forge metal out of brown hematite pipe ore from a bank near the furnace, mixed with ores from 3 and 5 miles north at the foot of the mountain.

40. *Oakland charcoal furnace*, situated a half mile east of Brock's Gap, in Rockingham county, Va., was built by Mr. Pennybacker, living near New Market, about 1837, and within the same year was abandoned and is now in ruins.

41. *An old furnace* in Rockingham county, Va., on Smith's creek, built, some say 70 years ago, was abandoned 40 or more years ago.

42. *Elizabeth furnace*. (This is only named, with a query, in this work. It was built by D. & H. Forrer, on the Chesapeake & Ohio Ry. 16 miles west of Staunton, Augusta county, Va., about 1863, and is now known as *Ferrol* or *Grace*.—ED.)

43. *Mossy Creek charcoal cold-blast furnace*, owned by Daniel Forrer, Mossy Creek, Augusta county, Va., is situated 11 miles from Harrisonburg, 14 miles northwest of Staunton, and 2 $\frac{1}{2}$ (should be 11) miles from Manassas Gap RR.; was built about 1760; is about 8 $\frac{1}{2}$ ft. across the bosh by 28 $\frac{1}{2}$ high; was burned down in 1841 and is now in a ruined condition; the ores lie in all directions around it.

44. *Mount Torry hot-blast charcoal furnace*, owned and managed by Lorenzo Shaw, Waynesboro, Augusta county, Va., stands on Back creek, 15 miles east of Greenville, about 18 northeast of Cotopaxi furnace, and 11 west of south from Waynesboro; was built in 1800, and rebuilt in 1853; is 11 ft. across the bosh by 35 high, and made in the half year of 1854 about 700 tons of cold-short metal out of brown hematite ore from a bank 2 miles northwest, but has made nothing since the spring of 1855.

45. *Canada (Kennedy.—ED.) charcoal furnace*, a very small stack, is situated in Augusta county, 3 miles north westward of Mount Torry furnace; built 40 years ago; blew a few days, and is in a mass of ruins. (This was on the "Kennedy" ore lands

offered for sale in this paper. It was not for want of an abundance of excellent Primordial ores that this furnace blew out;—the structure was a mere make-shift.—*Ed.*)

46. *Estelina cold-blast charcoal furnace*, owned and managed by Lorenzo Shaw, Waynesboro, Augusta county, Va., situated 21 miles west of Staunton, on the headwaters of the Little Calf-Pasture, 3 miles west of south from Pond Gap station, 1½ south of the Virginia Central RR., (now Chesapeake & Ohio Ry.—*Ed.*), and 2 miles east of Craigsville, (22 west of Staunton); was built about 1838; 6 ft. across the bosh by 32 high, and made in 1855 and '56 each year about 30 weeks, 20 tons of cold-short metal per week out of brown hematite ore from banks 2 miles southeast.

47. *Cotopaxi hot-blast charcoal furnace*, owned and managed by John and Isaac Newton, Greenville, Augusta county, Va.; situated on South river, 4 miles above Vesuvius furnace, and 16 southwest of Staunton; was built about 1836; is about 8 ft. across the bosh by 32 high, and made in about 32 weeks of 1854, previous to its abandonment on the 23rd of Dec., about 600 tons of metal from brown hematite ores from Morris' bank, 6 miles south, and Bare's bank, 3 miles northeast. It is now in ruins.

48. *Vesuvius cold-blast charcoal furnace*, owned and managed by Bradley & Donald, Steele's Tavern, Augusta county, Va.; stands on South river, 20 miles southwest of Staunton; was built in 1828; is 8 feet across the bosh by 40 high, and was abandoned on the 15th of Dec., 1854, making in 26 weeks of that year about 600 tons of metal out of "black-rock" hematite ores from several banks within 3 miles. The furnace is now dilapidated.

49. *Buena-Vista hot and cold blast charcoal furnace*, owned by Sam. F. Jordan and managed by Jno. J. Jordan, Buena-Vista, Rockbridge county, Va.; standing on South river, 1½ miles from North river, 8 miles from Buffalo forge, 15 miles below (southwest) Vesuvius furnace, and 6 miles east of Lexington; was built in 1847; 9 ft. across the bosh by 33 high, and made in an average of each of the 3 years 1854, '55 and '56, about 900 tons of metal out of brown hematite ore from Cash's and Hayes' old bank within 3 miles southeast.

50. *Glenwood cold-blast charcoal furnace*, owned by Francis T. Johnson and managed by E. Peck, Balcony Falls, Rockbridge county, Va.; stands in Arnold's valley, 1½ miles south of James river and 18 miles south of Lexington; was built in 1849; 9 ft. across the bosh by 38 high, and made in 28 weeks of 1856, 940 tons of metal out of brown hematite ore from Greenlee bank 1 mile off to the north.

Of the above furnaces, Mt. Torry, Kennedy, Cotopaxi, Vesuvius, Buena Vista and Glenwood are all now on or very near the line of the recently opened extension of the Shenandoah Valley RR., on the great through route from New York, Philadelphia and Baltimore to New Orleans and the Southwest. These and their unexhausted iron ore deposits are, by this extension, now put in communication with the best of coking coals. Of the other furnaces named here, Isabella, Catharine, Shenandoah and Margaret Jane, (now known as Mount Vernon), are also on the line of the Shenandoah Valley RR. to the northeast of the others; they too have an abundance of ores remaining and have ways by that road to coking coals and to markets.—*Editor of The Virginias.*

Hydraulic Limestone of Balcony Falls, Rockbridge County Co., Va.—This dark gray limestone has been examined by Mr. C. L. Allen, of Charleston, S. C., a student in the laboratory of this university. The analysis gave the following composition in 100 parts:—

Lime carbonate	44.55
Magnesia carbonate	34.83
Ferrous carbonate	1.62
Silica	17.21
Water	1.15
Alumina and Potash	traces
Organic matter (by difference)	0.64
	100.00

Of the silica only 0.47 per cent is amorphous, hence most of it is brought into combination in burning the limestone.

F. P. DUNNINGTON.

University of Virginia, June, 1882.

The Great Flat-Top Coal-Field.

BY THE EDITOR.

No more important agencies are now in operation for the material development of the Virginias than the construction of the New River branch of the Norfolk & Western and Shenandoah Valley railways and the opening up of the vast Blue stone-Great-Flat top coal-field and furnishing ways to markets and to iron and to other manufacturing centres for its coals of unsurpassed excellence for domestic, steam, metallurgical and other purposes, and especially for the making of pure, high-grade cokes. Informed a number of years since in reference to this coal-field and realizing, in anticipation, the beneficent results that will come to these states from its development,—the Editor has watched, with ever-increasing interest, the growth of information concerning it and the progress of railway and mining operations that will render its fuel-wealth available, visiting it several times for the purpose of personally noting the progress of its development, and giving to the readers of THE VIRGINIAS such reliable information concerning it as he could obtain. Having just returned from another visit, rendered quite satisfactory by the developments that have been made, that he may answer numerous enquiries that come to him for information concerning this highly promising and attractive field for investment and the employment of capital and skill, he considers this a favorable time for fully presenting the present condition of this region and its development in the pages of THE VIRGINIAS.

By way of introduction, and to record the history of progress it may be well to state that nearly ten years ago, in 1873, the writer of this article had a careful examination made by Capt. I. A. Welch, a most trusty explorer, of the region lying northwest of Bluestone river of New-Kanawha river,—forming the high divide between the Bluestone and the Chaterawha (Big Sandy) and Guyandot rivers, known as the "Great Flat-Top Mountain" and the "Dividing Ridge" country of Virginia and West Virginia, in reference to the coal deposits it was reported to contain. The results of that exploration satisfied him that there, wholly undeveloped, was one of the most valuable of the Virginian coal-fields, one remarkably easy of access and lying as it were in the immediate vicinity of or in intimate relations to the great stratified iron ore beds of these states. Efforts were made to direct attention to this field and a charter was obtained for a New River railway, but an unfavorable report that was made in reference to the coals of the region to the southwest of this, by one that had time to make but partial explorations, and the coming on of "the panic," made such efforts of no avail and the matter was laid aside. Others continued their efforts to construct the New River RR. with branches to this coal-field, but made but small progress and met with many discouragements.

In the spring of 1881, when it had been decided to extend the Shenandoah Valley RR. to a connection and virtual consolidation with the Norfolk & Western, and the question of a reliable fuel supply for those roads and for the development of the iron industry along them, for which the vast deposits of iron ores accessible to those roads offers great advantages, came up for consideration. This furnished the opportunity for again calling attention to this coal-field, and, in reply to an official enquiry by telegraph for information as to the best way for a branch of the Norfolk & Western to reach the best coal, the writer replied, April 14, 1881, by a report, accompanied by maps, in which he urged that the right coal-field to be sought was that of the Great Flat-Top region, by way of the New, East, and Bluestone rivers,—the line on which the New River branch of the Norfolk & Western is now being constructed. From data in hand, surveys made by the State of Virginia, distances and grades were given so, that most of the facts of a preliminary survey were presented.

Among the advantages of this way to the coal-field—to the eastern border of the Great Coal Basin of the Ohio—it was stated in that report that by going to the head of East river the sources of the Bluestone would be gained and by running down that river, by easy grades, "the coal beds would be reached near the level of their outcrops; and then their outcrops may be followed northward for mining the coal. The point of vantage is gained by crossing from the highest levels of the stream-valleys over to the Great Carboniferous Plateau,