SCIENCE

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CONTENTS:

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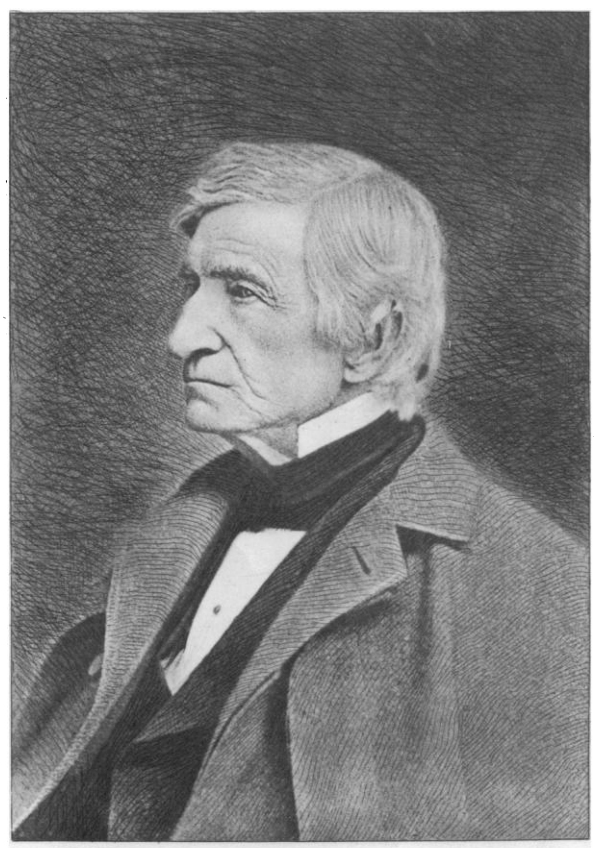
LIFE AND LETTERS OF WILLIAM BARTON ROGERS.

THE present generation of men and women have shown in an extraordinary degree their interest in the personality of historical characters.

Current literature teems with examples of this interest in biographical sketches without number, and the public seems to enjoy the most trifling details of the lives of persons of distinction, to secure which both the pen and the camera are driven to the last limit.

That this taste has abnormally developed and is in a large measure harmful few will deny, but there will always exist a wholesome curiosity as to the personal qualities of men whose performances have commanded our admiration. It is not alone in political history that biography is so important. To the student of science a knowledge of the temper, spirit, moods or idiosyncrasies of eminent scientific men has always been highly valued, not only on account of its intrinsic interest, but also because such knowledge often assists in a proper interpretation and appraisement of their work. But when distinguished success is to be attributed to personal qualities even more than to talent; when to scientific accomplishments of a high order is joined a personality so charming and so noble as to silence opposition and command approval, anything that reveals, even a small



William B. Rogers

degree, the motives, inspirations or promptings of such human activity is doubly welcome.

The 'Life and Letters' of Professor W. B. Rogers, edited by his wife with the assistance of Professor W. T. Sedgwick, has recently made its appearance.* The memoir is published in two beautifully printed volumes of about 400 pages each. In the short preface to the first the editors explain that they have been prepared in the hope that they 'may be of some service to the cause of science and education.' Their work has been done with rare wisdom and good taste. It has consisted mainly in providing a continuous yet unobtrusive background of biography, upon which is displayed an extensive and wonderfully interesting series of letters, in which the whole story of the life of Professor Rogers is revealed.

It may be well in the beginning to briefly summarize in their chronological order the principal events of that life. Professor Rogers was born in Philadelphia in 1804. His father was Dr. Patrick Kerr Rogers, who was himself born in Ireland in 1776, the son of Robert Rogers, of Edergole. Mr. P. K. Rogers fled from Ireland on account of articles which he had contributed to the Dublin newspapers in criticism of the action of the government in the matter of the Irish Rebellion of 1798. Coming to Philadelphia he entered the University of Pennsylvania as a tutor, and in 1802 he received the degree of Doctor of Medicine from that institution. A year before graduation from the medical school he married Hannah Blythe, who had come from Glasgow to make her home in America. She died in 1820, leaving four sons, James B., William B., Henry D. and Robert E. Rogers, all of whom became eminent in science and in public life, being frequently spoken of in Europe and in this country as 'the brothers Rogers.'

Dr. P. K. Rogers removed with his family to Baltimore in 1812, and in 1819 he was elected to the chair of natural philosophy, which at that time covered a very broad field, in William and Mary College, Virginia. William was a student here in 1819–20, and there is printed in the memoir an interesting fac simile of a report of the standing of the two sons, James and William, in which, in addition to the statement that they had been 'orderly, diligent and attentive to their studies,' there is an interesting forecast of their career in the declaration that 'in mathematics and chemistry they have made the most flattering improvement.' There is good evidence, some of which is found in the fragments, which have been preserved, of a correspondence with Thomas Jefferson, that Dr. Patrick Rogers was an accomplished mathematician and general scholar and that the tastes and talents of the 'brothers Rogers' were largely inherited. When James, at the early age of 19 years, was studying medicine in Baltimore he wrote to William, aged 17 years, a letter full of criticism of the 'singular views' advanced by one of his professors on the subject of chemical attraction or affinity and the true cause of chemical union. He begs William to give him his own opinion of the matter in an early reply, and concludes with a burst of filial loyalty in the declaration that, although the aforesaid professor is the best lecturer in the institution, the lectures of their father on the same subject as far surpass his work 'in point of correctness, science and elegance as the meridian sun does the evening star in brilliancy.' In a youthful oration given by William on a public occasion in 1822 he foreshadowed, at the age of 18, the eloquence of speech for which he was in later years famous.

* Published by Houghton, Mifflin & Co., Boston, to whom we are indebted for the plate of the portrait accompanying this article.

In 1825 both William and Henry removed to Baltimore to seek their fortunes, but the physical weakness by which they were greatly handicapped and against which they fought during all of their lives interferred with their success from the start. The two brothers finally obtained employment as teachers, but there was frequent necessity for pecuniary aid from the father, who was ever ready to draw upon his slender salary the payments of which were made with much irregularity and often much delay, for the benefit of his sons, of whom he was extremely fond and justly proud.

William began to show his rare qualities as a lecturer on Science, and in 1827 he was appointed to a lectureship in the Maryland Institute. His father died in 1828 and in the same year he was elected as his successor in the chair of natural philosophy at William and Mary, at the early age of 24 years. Here he remained for seven years, growing in knowledge and reputation, and in 1835 he was elected professor of natural philosophy in the University of Virginia, and shortly afterward he was appointed State Geologist. His connection with this institution continued for eighteen years, and its history forms one of the most interesting features of the memoir. During this period the University passed through some of its most notable trials in connection with the relations of its governing authority, the faculty, to the student body. In all of these events, as well as others of more lasting importance to the institution, Professor Rogers was a prominent figure. That he impressed himself in a notable way upon the then young and developing University was always recognized by its officers and friends. That his connection with it, and especially his long life in the South, covering as it did his youth and the most impressionable years of his manhood, did much to influence his educational ideas as well as his personality, is equally true. Indeed, there was always in his manner something of that courtliness and chivalry which we are wont to associate with the cultivated Southern gentleman and when transplanted to New England it became one of his principal charms. During his life in Virginia his fame as a lecturer and scientific investigator grew continually. He was invited to lecture in various cities, and just previous to his leaving the South Professor Henry solicited his assistance in a course to be given 'for the benefit of Congress' at the Smithsonian Institution.

In 1849 he married Miss Emma Savage, of Boston, going with her to Europe, where some pleasant months were spent and valuable acquaintances formed or renewed, and returning to the University of Virginia in October of the same year. In 1853 he resigned his professorship and removed to Boston, where his wife had lived and where her family and friends were, and also where his brother Henry had already met with such generous support and assistance in his scientific work. Here, for a period of nearly ten years, he worked, wrote and lectured, all the time keeping in mind the organization and development of a school of technology or applied science, the plans for which had been in his mind since at least as early as 1846. On April 10, 1861, the Act incorporating the Massachusetts Institute of Technology received the approval of Governor Andrew, just as the Nation was plunging into what proved to be a mighty struggle for its existence. A year later he was formally elected President of the Institute, which as yet had no material existence. Indeed the war for the preservation of the Union delayed the consummation of his desires until October, 1865, at which time instruction in the new school was actually begun.

In 1868 Professor Rogers began to show the effects of the years of devoted activity which had resulted so fortunately as far as

the school was concerned, his always rather delicate health giving way to such an extent as to make a prolonged period of rest imperative. Accordingly he resigned his presidency of the Institute in 1870, and lightened his labors as much as was possible. In 1876 he presided over the meeting of the American Association for the Advancement of Science in Buffalo, a meeting which was distinguished by the attendance of many foreign savants who were drawn to this country by the Centennial Exposition, held that year in Philadelphia. He had been specially chosen by his fellows to preside on that occasion, because of their desire to put forward the best available representation of American science.

In 1878, on the resignation of Professor Runkle, who had succeeded him as President of the Institute of Technology, he was induced to accept that office again, with the understanding that his holding should be but temporary. In 1879 he was elected by the National Academy of Sciences to succeed Professor Henry as its President, the highest honor which can be conferred upon a man of science in this country. In 1881 he again resigned his presidency of the Institute of Technology, General Francis A. Walker having been selected by him and appointed on his recommendation as his successor. A year later, at noon of May 30, 1882, came his tragic death. In the midst of an address to the graduating class of the Institute, in which his hearers were delighted with an apparent revival of the spirit and eloquence with which he was accustomed to enrich every occasion for dignified address, he fell upon the platform of Huntington Hall, surrounded by the material realization of his dreams of nearly forty years earlier and by those who by the closest associations had learned to love him as few are loved in these days.

Fit into this skeleton sketch the interesting letters which happily have been preserved, mostly being correspondence with his brothers or family friends, and the story of his long and useful life will be fairly well told, although to form an adequate idea of his accomplishments in science and education one must consult the appendices to the two volumes where will be found a list of his scientific publications and one or two of his more important educational papers. I may venture, however, to give the reader of this notice a little taste of what the volumes have in store for him, and at the same time illustrate the remarkable biographical value of the published letters by quoting from a few of them.

Mention has been made of his power as a lecturer on scientific subjects and of his ability to stir with eloquence even when comparatively dry and interesting material was under discussion. One of his early pupils at the University of Virginia says of him that he was endowed with "not alone an imagination which ever clothed truth with beauty and made the dullest fact radiant with a significance illimitable and imperishable, but also every personal gift which can enhance the power of the orator. Tall in stature, with a figure of the type known to us through the pictures of Henry Clay; with a face that, destitute of all assumption or arrogance, was singularly commanding; with a voice whose compass and quality were capable of producing at once the largest and the finest effects of speech, William Barton Rogers was, in the height of his powers, without a peer among the scientific men of his age in addressing an intelligent and cultivated audience." This remarkable *faculty for teaching* was appreciated by all who came in contact with him. Theodore Parker wrote to him in 1859, when just on the point of starting for London: * * * * * * "I return Mr. Owen's remarkable pamphlet. What an instructive thing it is!

"I should have been surprised that it could all have come from one man if I had not known yourself and your brother, who in such matters taught me the *nil admirari*. * * * Allow me to thank you for the instruction I have received from you, and for the many friendly and noble words you have spoken to me. My acquaintance with you began with your brother, and I feel gratitude to you both. For you both turn your deep, wide science into humanity. I have found you both always on the side of mankind and feel strengthened and encouraged by your example." Wherever and whenever good speaking was understood and appreciated Professor Rogers was in demand. When in England, in 1849, he attended the annual meeting of the British Association for the Advancement of Science, and in the presentation of a scientific paper his extraordinary power of exposition was at once recognized. He was put down for a speech at the great dinner which celebrated the close of the session, and in a letter written on the morning of the day on which it occurred he wrote: "I suppose I shall be compelled to show my Yankee 'gift of the gab.'" He met with a flattering reception at the hands of such men as Darwin, Faraday, Murchison, Sedgwick, Brewster, Mallet and Adams. He writes to his brother: "You may imagine how my heart beat to hear your name so honored and to have our labors so warmly eulogized."

The younger Mallett, who was present on the occasion, afterwards said of it: "Although I was but a boy at the time, attending the meeting with my father, I recollect most distinctly the marked impression made on the large assembly by Professor Rogers's speech and the enthusiasm it kindled. It came late in the evening, after much, perhaps most, of the matters appropriate to the occasion had been utilized by others, yet it was clearly *the* success of the banquet. Americans were less known in England than they have since become, and the slight foreign flavor which accompanied a speech, excellent in itself, and fluently delivered in the mother tongue, added to the piquancy and effect." The orator, like the poet, is hardly a manufactured product, but all who have occasion to lecture on scientific subjects will be greatly interested in and benefited by the many hints as to his own ideas of how difficult subjects may be clearly set forth, which will be found in Professor Rogers's earlier letters to his brothers.

In a letter to his brothers, James and Robert, written from Virginia in 1841, he writes as follows: "Do not attempt to crowd too much into a single lecture, and avoid the common error of experimenting for the eye and not for the understanding. Every experiment ought to be accompanied by a full and clear explanation, and this cannot be too explicit and elementary. Cultivate a deliberate and distinct enunciation without sacrificing earnestness and animation of manner. Above all, do not attempt to be over choice in your phraseology, but use the language suggested at the moment. * * * * In my view, the very first thing to be sought is a feeling of ease and confidence, and this, when the subject is thoroughly understood, you cannot fail to secure at the outset by giving play to some enthusiasm, and, as Rutledge advised, 'speaking right on,' even though at times your phrase may be obscure, inelegant or even incorrect."

The whole of his extensive correspondence with his brothers is filled with evidences of the intense affection and brotherly love which existed among them. They understood and appreciated one another. In 1822 James, aged 20 years, wrote to William, two years his junior: "I have, I think, perceived in Henry (aged 14 years) that constitution of mind which is admirably fitted for success in this world and which, if properly cultivated, would mani-

fest genius of no ordinary cast." Some years later William wrote: "* * * But by and by, my dear Henry, we shall, I trust, be able, shoulder to shoulder, to win a position in which we may enjoy ourselves in science and society, free from all anxiety and in a spirit of entire independence." Again on a Christmas day several years later: "My heart longs more than I can express for the coming time when we may all spend together, as in childhood, these festival days, and when we shall always be so near as not to feel the sense of separation."

Both Henry and William struggled against many difficulties, the former in Pennsylvania and the latter in Virginia, to secure the legislation necessary to the execution of a geological survey, and their experiences, as recounted in their correspondence, may serve to encourage those who are struggling towards similar results in more modern days. In 1841 Henry sent to William the complete verbatim report of the speech of one Senator at Harrisburg, one who in private conference had promised his support, which was as follows: "Mr. Speaker, I shall vote against this appropriation, on the ground of its unfairness to other sciences of like nature to this geology. The bill, sir, makes no provision for phrenology, physiognomy, animal magnetism and the highly important science of *water-smelling;* it is partial and I shall vote against it." Both William and Henry had rare gifts of argumentative power and it was exceedingly uncommon for either to fail in carrying with them men whose support was needed. It was his eloquent earnestness and unselfish enthusiasm that brought to Professor Rogers the greatest success of his life, the establishment of the Massachusetts Institute of Technology.

The first plan for the organization of this institution he drew up early in the year 1846, several years before he left the University of Virginia. In a letter to his brother Henry he says: "Ever since I have known something of the knowledge-seeking spirit and the intellectual capabilities of the community in and around Boston, I have felt persuaded that, of all places in the world, it was the one most certain to derive the highest benefits from a polytechnic institution." When in 1860 he thought the time had come for an active prosecution of his scheme he was tireless in his labors, preparing and submitting plans and reports for the Legislature, delivering public addresses on the importance of technical and scientific training, enlisting support from men of wealth and influence, becoming, in fact, himself the embodiment of the whole enterprise. It is unnecessary to say that the story of the last twenty years of his life is, in a large measure, the history of the first twenty years of the Institute.

The frequent references in his correspondence to the intellectual and scientific activity of the time are extremely interesting. To one accustomed to the quieter and more deliberative methods of the South in all matters of a literary or scholarly sort the intensity of life in Boston was something of a revelation. Henry Rogers was the first to taste of this and he wrote to his brother William as follows:

"For a man of any brains whatever, Boston has no peace or quiet; all is restless excitement and unproductive change of thought and of pursuit. The overworking of the brain here without the fruits of intellectual labor is appalling to a mind of contemplative tendencies. Often do I envy you and Robert your calmer studious atmosphere."

The active dissipation of mental energy thus portrayed may not be entirely absent from the intellectual life of the 'Huf' even to-day, but Professor Rogers was not frightened by its existence forty years ago and he speedily adapted himself

to his changed environment. Although he shortly became a prominent figure in social as well as scholarly circles he still retained his fondness for real, hard scientific work, and during his busiest life in Boston made many scientific investigations of great interest and importance.

His personal acquaintance with eminent men of science on both sides of the Atlantic was extensive and his occasional references to them in his letters add greatly to their value. It was in the earlier years of his connection with the University of Virginia that Professor Sylvester came from England to succeed Bonnycastle as professor of mathematics. Professor Rogers had for some time after the death of the latter carried on the work of the department and he was naturally much interested in the arrival of his relief. He wrote: "For several days we have been anxiously looking for the arrival of Professor Sylvester; we learn he lost all his baggage in Boston; this may have detained him"—which goes to show that some of the personal peculiarities of the distinguished mathematician were not confined in their exhibition to later periods of his life. Again, a few weeks later: "The faculty, students and others attached to the University are all greatly pleased with Mr. Sylvester. He was terribly embarrassed at his first lecture, indeed quite overwhelmed, but has been doing better since. He has a good deal of hesitation, is not fluent, but is very enthusiastic and commands the attention and interest of his class." His brother, Robert E. Rogers, who had for some time filled the chair of chemistry in the University of Virginia, was appointed in 1852 to the professorship of chemistry in the University of Pennsylvania, made vacant by the death of his brother James. He was succeeded in Virginia by Professor J. Lawrence Smith, of Kentucky, already a chemist of distinction. He brought with him two young men as assistants, George J. Brush and Ogden N. Rood, both of whom were to achieve distinction in later years. Of the first Professor Rogers wrote in 1852: "Young Brush is a zealous mineralogist of the Yale School, and seems to be familiar with all parts of chemical analysis. He talks a great deal and very admirably of young Silliman and Dana, and I find that he supposes New Haven to be the great center of American science." In 1853, after having resigned his professorship in the University of Virginia, he wrote concerning the well-known professor of physics in that institution: "My successor is young Mr. Smith, the mathematical tutor, and a favorite pupil of mine."

In 1857 Henry D. Rogers was appointed to a professorship in the University of Glasgow, Scotland, and the correspondence of the brothers became more interesting on account of the wider range of personal acquaintance and association which naturally resulted. In 1859 William wrote to Henry: "I read William Thomson's speech with great interest, and should be glad to see him operate with his ingenious instruments. It is rare to see such profound mathematical knowledge united to such skill in its application to physical questions, and such ingenuity in mechanical contrivance." It would be difficult to find a better description of Lord Kelvin than this. Henry had lectured at the Royal Institution, and on March 11, 1856, William wrote: "Tell me in your next what sort of an audience you had at the Royal Institution. What is Faraday about just now? and Wheatstone? Tyndall seems to be taking a leading part at the Royal Institution. He has fine talents and I hope he is a good fellow; but where is there another Faraday?"

An interesting letter dated August 1, 1860, from James Russell Lowell, who was then editor of the *Atlantic Monthly*, reveals the fact that Professor Rogers had sent him

a list of remarkable blunders in an article on meteorology which that magazine had published. The criticism is accepted in a most good-natured fashion, and Mr. Lowell explains how he proposes to make acknowledgment of the mistakes in the *Monthly*. It is to be done by a humorous editorial, in which the blame for accepting the unfortunate article is to be thrown upon the 'Æsthetic Editor,' who ran the establishment all alone, during the absence of the 'man of science;' and all this, Mr. Lowell says, because "no right-minded magazine can allow itself to be corrected *ab extra*." One might almost conclude that modern journalism had learned some of its lessons from this venerable and always proper and respectable periodical.

A note from Charles Sumner, written at Washington in 1863, reveals something of the anxiety by which men's minds were filled in those days. It concludes: "I wish I could talk with your brother for half a day. Remember me to him most kindly. I know he keeps his loyalty. But what does he say of England—our England—and her shortcomings?"

Indeed there is nothing in these volumes more impressive or more worthy of the distinguished man whose life they unfold than the continued utterances of patriotism and loyalty in which his letters during the war period abound. In giving full weight to this statement it must be remembered that the greater part of Professor Rogers's life was spent in the South; that he grew to maturity amid Southern influences and that he numbered among his personal friends many who were afterwards prominent in the attempt to overthrow the government.

During the early 'fifties' there are frequent references in his letters to the storm which he distinctly saw was threatening the Republic. His faith in the indestructibility of the Union was lasting and strong. In 1856, writing of the difficulties in Kansas, he said: "I am, however, of those who think that our Union is too strongly framed in Constitutional right, and bolted together by mutual interest, to be severed by even such a shock as this." In 1858 he wrote to Henry: "I see with sorrow and indignation that Senator Mason contemplates some general provision for bringing new States into the Union by *pairs*, so as to maintain the present balance between the slave and free States! But this *cannot be done*." Early in 1861, again to Henry: "The fears of State Street and the prejudices of Beacon Street may have some effect, but the great mass of New England and, I think, of the free States in general, will refuse a compromise which claims national protection to slavery far beyond the extent of the present Constitution." And a few days later: "Should the Gulf States remain out of the Union I see little reason to expect a better fate for them than is seen in the degradation, destruction and fickleness of the South American Republics."

During the years in which the Civil War was waged Professor Rogers was especially active, through his brother Henry, in striving to enlighten the people of Great Britain as to the real situation in this country, and there can be no doubt that the excellent social relations which the two brothers enjoyed with people of rank and influence in London, Edinburgh and Glasgow contributed largely to this end. Immediately after the firing upon Fort Sumter William wrote to Henry at great length, saying, among other things: "It is of great importance that the position of the free States and National government in this contest should be truely known in England. Every word of sympathy, or even of toleration, for the South arising from Europe, and especially from England, is magnified by the excited people there and does great harm. * * * It grieves and mortifies me to see several of my old

friends and pupils among the most passionate leaders in this revolt."

Professor Rogers found many channels in which to suppress his feelings of loyalty and patriotism, and the newspapers of the time record the fact that only a week or two after the outbreak of hostilities when he was called upon to speak at the Thursday Club on some matter pertaining to science he "very gracefully declined to discuss the topic proposed, and then made a stirring appeal to the Club in favor of providing a regiment of our brave volunteers with knapsacks." This appeal was seconded by the Hon. Edward Everett, the President of the Club, and in a few minutes a thousand dollars were subscribed.

Innumerable examples showing this intense spirit might be quoted, not alone from letters to his brother in Glasgow, but from those to many prominent Englishmen whose friendship he enjoyed. During the darker days, in spite of his feeble health, he made patriotic addresses on Boston Common and on September 26, 1862, he referred to the Emancipation Proclamation of President Lincoln in the following thrilling words, a part of a letter to his brother Henry: "The great event since my last letter, the greatest event beyond comparison of the war, is the late proclamation of the President, declaring the slaves of all rebellious States after January next to be *forever free*. On the 22d of September this momentous voice was uttered. On that day—in a sublimer sense than ever before—*the sun crossed the line*."

Under date of July 5, 1863, he describes the celebration of the 'Fourth' in Boston. Dr. Holmes gave the oration in the 'great theatre to an audience packed to the dome,' and the enthusiasm was great, all hearts being absorbed in one feeling of patriotism.

As evidence, however, that his interest in the progress of science was by no means dormant during those potentous days, he adds: "What kept me in the city, however, was my interest in the exhibition of the electric light, which the Council, at the instance of George Hale, encouraged by me, decided to make one feature of the evening celebration, as a substitute for part of the usual fireworks." He describes in interesting detail how Ritchie accomplished a superb success by putting a battery of 250 cells on the top of the State House dome, from which a 'flood of light' was thrown upon over 100,000 pedestrians who thronged the streets.

But surely enough has been quoted and enough said to give some notion of the extreme interest of these volumes, not only to scientific men, but to all intelligent people who admire exalted character and lofty sentiment. America has produced no finer type of man than was exhibited in William Barton Rogers, who showed that it was not impossible for one who was primarily devoted to learning and original research in pure science to be at the same time a lovable companion, an eloquent lecturer and a man of affairs whose influence upon his contemporaries resulted in the creation of new institutions and the remodeling of old. It is even now too early to recognize in full measure the value of his life to the people, to whose best interests he showed a rare fidelity.

T. C. MENDENHALL.

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*THE MERTON RULES.**

THESE are the Code of Nomenclature "at present in force for regulating all work done in the study of Microlepidoptera at Merton," and "the object of these rules is to insure absolute obedience to the Law of Priority." In so far as this Code is pecu-

* Rules for regulating Nomenclature with a view to secure a strict application of the Law of Priority in Entomological work. Compiled by Lord Walsingham an [and] John Hartley Durrant. Longmans, Green & Co.: London, New York and Bombay. 2 Nov., 1896. 8vo, pp. 18.