

he was soon to engage. Returning to England, he was in a few years employed to assist in laying out and building the Liverpool and Manchester Railway, on which Stephenson's locomotive engine attained its memorable success. After a while he quarrelled with Stephenson, and parted from him; but he speedily found employment elsewhere, and for many years was occupied on various railroads in Great Britain and Ireland, and afterwards in Germany, Spain, and Brazil. He also built the suspension-bridge over the Dnieper River at Kief, — a structure half a mile long, the construction of which occupied seven years.

Such were the works performed by Vignoles; and they entitle him, as his biographer justly says, to a high position among the pioneers of modern engineering. The man had also some excellent personal qualities, such as honesty, energy, and conscientiousness in work; he had considerable literary skill, as the extracts from his diary and letters show; and he was considered a pleasant companion in society. On the other hand, as his biographer admits, his temper was not the best; and besides his quarrel with his grandfather, which is left unexplained, he had others with Stephenson and Brunel, which are passed over lightly in this book, but which were evidently not to his credit. He was also unskilful financially, and at one time lost eighty thousand pounds through his own imprudence, with the result that he had to begin all anew. In spite of his faults, however, he was a useful man; and the record of his life is an interesting story, particularly for members of the engineering profession and for all persons interested in railway history.

#### AMONG THE PUBLISHERS.

THE Catholic Publication Society Company will publish immediately "An Explanation of the Constitution of the United States of America," prepared for the use of Catholic schools and academies, by Francis T. Furey.

— Professor Max Müller's new book on "Natural Religion," being the Gifford lectures which he delivered at Glasgow last year, will be issued here in a few days by Longmans, Green, & Co.

— Lee & Shepard will publish shortly "Pens and Types, or Hints and Helps to Those who Write, Print, Speak, Teach, or Read," a volume full of new and original matter, by Benjamin Drew.

— The Forest and Stream Publishing Company have published a book on "Log Cabins and How to Build and Furnish Them," by William S. Wicks, illustrated with many plans and other illustrations.

— Messrs. Ginn & Co. have issued a catalogue and announcements for 1889. Although this catalogue is complete, yet, as it is primarily designed for high-school and college instructors, it gives but very little space to their common-school publications.

— The delegates of the Clarendon Press will shortly issue Mr. Oliver Aplin's "Birds of Oxfordshire;" the second volume (treating of electro-dynamics) of Messrs. Watson and Burbury's "Mathematical Theory of Electricity and Magnetism;" and a new edition of the fourth volume (on the dynamics of material systems) of Professor Bartholomew Price's "Treatise on Infinitesimal Calculus."

— Messrs. Trübner & Co. will publish, probably in October, "An Account of the Aborigines of Tasmania, their Manners, Customs, Wars, Hunting, Food, Morals, Language, Origin, and General Characteristics," by Henry Ling Roth, assisted by E. Marion Butler. The work will contain a chapter on the osteology, by Dr. J. G. Garson, and a preface will be contributed by Dr. E. B. Tylor. Numerous autotype plates, from original drawings made by Edith May Roth, will illustrate the text. The edition will be strictly limited to subscribers.

— Funk & Wagnalls have in preparation an "Encyclopædia of Missions." The encyclopædia proposes to give the history, geography, ethnology, biography, and statistics of missions, from the apostolic times to the present. There will be full maps, diagrams, and a copious index. The best authorities on missions in this country and in England have been consulted, and the materials are

being furnished from all parts of the mission-field, by those best qualified to give the most accurate and complete information.

— Rand, McNally, & Co. have just issued the "Globe Series of School Maps," an entirely new series, newly engraved on a large scale, and corrected by the latest official and private data. The series comprises seven maps, — the United States, North America, South America, Europe, Asia, Africa, and the world on Mercator's projection. All excepting the map of the world (which is 58 by 41 inches) are 66 by 44 inches, — a size which permits of their use in the largest schoolrooms, where the details can be seen by the entire class.

— The annual report of the Ohio Agricultural Experiment Station will hereafter be issued in the form of a monthly bulletin, the issues of each calendar year constituting a volume. These bulletins will be consecutively paged, and the December number will contain an index to the entire series of the year, thus putting them in convenient shape for preservation for reference. By this change the results of the station's work for each season will be placed before the farmers of the State nearly or quite a year earlier than was possible when the annual report was issued in a single volume at the close of the year. The bulletins will be sent to any resident of Ohio free of charge, on application to the Experiment Station, Columbus, O.

— Messrs. Ginn & Co. announce for publication Sept. 1 the "Common School Song-Reader: A Music-Reader for Schools of Mixed Grades," by W. S. Tilden, teacher of music in the State Normal School, Framingham, Mass. This book is designed to adapt and apply the principles of the national system of musical instruction to those schools where the special conditions and grading are such that the full and regularly graded series cannot be so conveniently and effectively used. While containing an interesting repertory of school-songs, new and old, which fits it for use where systematic instruction in music is not attempted, it is especially intended for those schools in which the principles of elementary instruction and singing by note are to be taken up according to the most approved methods. Very full instructions for teachers are given at each step. Besides the work in the reading course, a collection of easy pleasing songs in one, two, and three parts (with bass clef), will be found.

— Robert Grant, the author of "The Confessions of a Frivolous Girl," has written the third article in *Scribner's* Fishing Series for the August issue, entitled "Tarpon Fishing in Florida." Mr. Grant, during the past winter, made a special trip to St. James City, Fla., to gather material for this article, and had the good fortune during the second day's fishing to capture an enormous tarpon, six feet long, and weighing 132 pounds. His description of his three-hours' fight with this tremendous fish is one of the most graphic pieces of sportman's literature of recent years. The article is fully illustrated from photographs made at the time, which have been carefully redrawn by Burns, Woodward, and others. President Henry Morton, in his article on "Electricity in Lighting," will describe the actual processes of manufacturing dynamos and incandescent lights as carried on in some of the largest factories in this country. The illustrations add very much to these descriptions, as they are made from instantaneous photographs taken while the men and women are at work.

— Messrs. Ginn & Co. announce for publication in the College Series of Greek authors, "Euripides, Iphigenia among the Taurians," edited by Professor Isaac Flagg. Professor Flagg's "Iphigenia" is not based upon any other commentary, but is an independent work, adapted to the needs of American colleges, and designed to facilitate the sympathetic study of this most charming and justly celebrated drama of Euripides. Since the play is well suited to be taken up as a first tragedy in a course of Greek reading, both the introduction and the notes have been written with especial regard to the enlightenment of beginners in the dramatic literature. At the same time, the finer insight and higher cravings of the advanced reader are constantly remembered. The introduction sets forth the celebrity of the play, with quotation in full of the most memorable classical passages that bear upon it; sketches the legend in its literary and popular development; ex-

plains the *rationale* of the plot with reference to the Aristotelian method of analysis; discusses the artistic structure of the tragedy as to prologue, narratives, *dénouement*, etc.; and gives a complete exposition of the metres and technique. In the notes, the grammatical material is presented with sufficient fulness, but mostly in a condensed form, with references to Goodwin and to Hadley & Allen; while the higher and more edifying matters of exegesis receive explicit treatment.

— A sketch of the colleges of Wisconsin by William F. Allen and David E. Spencer, recently published by the United States Bureau of Education, does not aim to give more than a very general outline of the career of each. In the sketch of the State University, only such matters are dwelt upon as have had a direct bearing upon the fortunes of the institution, and those which concern its relations to the educational movements that have taken place during its history, to the school system of the State, and to the practical progress of the people. While the graduates of the university are filling positions in many cases of greatest trust and usefulness, it is yet too early to estimate the precise drift and measure of the influence of the school upon the educational, political, and social life of the community. The older graduates are but now in the prime of life, in the midst of the years of greatest activity and influence. The university has not a sufficiently distant past to make its inner life of special interest as matter of history; nor does it fall within the scope of this sketch to trace, in any special manner, the influence of the graduates of the institution beyond its walls. There is considerable variety in the character of the chapters devoted to the five private colleges, since the sketches for the greater part are adapted from articles previously published; but the leading features in the character of each college, and the scope and tendency of its work, are indicated. Many other colleges have from time to time, especially in the first twenty-five or thirty years of our history, been established in Wisconsin. Of two of these which still exist, brief notices are given at the end of the work.

— With the June number commences the second volume of *Insect Life*. The last number was somewhat delayed by the preparation of the extensive indexes, which, however, will greatly increase the value of Volume I. Largely through the kindness of the authorities of the Government Printing-Office, the numbers during the past year appeared more regularly and promptly than anticipated, and it is hoped to continue this regularity through the coming volume. As stated in the salutatory to the first volume, however, the force of the Division of Entomology is so actively engaged during the larger part of the year with field-work and experimentation, that some lack of promptness in publication cannot but ensue. The publication of the bulletin met with even more favor than was hoped at the start, and almost no adverse comments have reached the editor's eye. The only criticism noticed was published in the review column of the *Atlantic Monthly*, in which slight exception was taken to the idea of the publication of a magazine by the government, which, by its free distribution, would compete on unfairly advantageous terms with private enterprises.

— A monograph on "Education in Georgia" has been prepared by C. E. Jones of Augusta, Ga., a son of the historian of that State, and late graduate student of Johns Hopkins University. This work was undertaken under the supervision of Dr. Herbert B. Adams, editor of the present series of Contributions to American Educational History, published by the United States Bureau of Education. Mr. Jones discusses the history of education in the State of Georgia. The paper opens with a sketch of the educational advantages afforded by the few schools which existed during the colonial epoch. The formation and conduct of academies after the revolutionary war are next considered. The author then addresses himself to a review of the elementary education afforded in the rural schools, the teachers of which were supported by the tuition derived from the attending scholars. Carefully, and with an exhaustive analysis of the laws and constitutional provisions bearing upon the subject, are the rise, development, and decadence of the "poor school system," noted. Prior to the late civil war, steps had

been taken to establish a system of common schools accessible to all white children between the ages of six and eighteen. They were, however, interrupted by the war, and it was not until some five or six years after the cessation of hostilities that the present system of public schools was inaugurated. Having discussed these preliminary topics, Mr. Jones turns his attention to the history and present status of higher education in Georgia, as represented in the university of the State and its branches, in various denominational colleges, and in special institutions designed to facilitate studies in law, medicine, theology, science, and art. All charitable and literary institutions ministering to intellectual, social, and moral improvement receive due consideration.

— The August *St. Nicholas* contains a full and interesting article by Dr. Jastrow, concerning the late Miss Laura Bridgman, with a portrait, — an exceedingly good likeness; Dr. Charles S. Robinson offers to mathematicians some curious speculations as to the present value of "An Egyptian Girl's Gold Necklace," if its value is regarded as having increased at compound interest for over three thousand years; and "Among the Florida Keys" is continued.

— In the August *Magazine of American History*, Dr. Everett's "Earliest American People" touches upon a theme dear to every antiquarian reader. "England's Struggle with the American Colonies," by Dr. William M. Taylor, is one of the prominent features of the number. The author traces the events in England, the needless misunderstandings and the crude mistakes which led to the war of the Revolution, and bestowed upon the Colonies their independence, and he does it so that fresh life is infused into the narrative; and one of the best condensed accounts of this part of our history extant is the result. Hon. J. O. Dykman concludes his series of papers of "The Last Twelve Days of Major André" in this number. J. P. Dunn, jun., contributes "The Founding of Post Vincennes," and Mr. William S. Pelletreau writes of "The Philipse Patent in the Highlands," furnishing portraits of Col. and Mrs. Roger Morris, and an interesting map. Mrs. Lamb's opening article is a vigorous pen-picture of the "Career of a Beneficent Enterprise," — now one hundred and four years old, — "The General Society of Mechanics and Tradesmen," and this paper is profusely illustrated. A portion of the address of President Merrill E. Gates of Rutgers College, to the class of 1889, appears in these pages, entitled "Life and its Activities — the bearing of the Past on the Present and Future;" and there is a "Tribute to Mrs. Rutherford B. Hayes," from the editor. The frontispiece of the number is a portrait of Alexander Hamilton. "The Wit and Wisdom of Keokuk, Chief of the Sacs and Foxes," is one of the short articles; and an unpublished Washington letter is given to the reader in Original Documents.

— The subject of a monograph, just published by the United States Bureau of Education, is the history of education in North Carolina. In this monograph Mr. Charles Lee Smith, who was trained in historical methods at the Johns Hopkins University, gives the results of a thorough and careful study of the educational history of his native State. For North Carolina this is pioneer work. The writer has traced the genesis and development of education in North Carolina from the first settlement of that State to the present time. For this purpose he is the first to exploit the colonial records, the publication of which was begun last year, and the early laws of the State. He has also utilized early newspaper files, and all the published biographical and historical works relating to his State to be found in the public libraries of Raleigh, Washington, and Baltimore, besides certain private collections and personal correspondence. The government is perhaps to be censured that schools were not earlier provided. It is an error, however, to suppose, as has been stated by some writers, that there were no good schools in the State previous to the Revolution, for it is shown that there were many creditable institutions, several having a wide reputation. The higher education has been principally treated in this sketch, although the history of primary and secondary instruction has not been neglected. The influence of certain classes of immigration and of institutions outside the State, especially of Princeton, which previous to the establishment of the

University of North Carolina was largely patronized by the young men of that State, is clearly shown. The sketch which is given of the University of North Carolina is the first full account of that institution which has ever been written. The writer thinks no institution of this country has a more honorable record; and it is claimed, that, in proportion to the number of its alumni, it stands second to none in the number of the distinguished public men it has given to the State and nation.

— Judge Benjamin F. Burnham has published through Messrs. Macdonald & Co. of Boston a little pamphlet bearing the title "Elsmere Elsewhere." What meaning there is in this title we are unable to see; but the book has considerable interest as marking the rapid change now in progress in this country in men's views of Christianity. The author's standpoint is essentially that of Mrs. Humphry Ward and other liberal English thinkers, and will probably seem pretty radical to many people in this country. He reviews the leading points of the Christian creed, and shows what changes are taking place or have already taken place in the interpretation of them; and all these changes he holds to be wise and beneficial. The style of the work is generally clear, and always concise, so that it presents a large amount of matter in a small compass. The appendix contains extracts from Mrs. Ward, Professor Huxley, and others, and also some curious notes about "demoniacal possession" and other "occult" phenomena.

— Of his purpose in building the Eiffel Tower, Mr. Eiffel says in the July number of the *New Review* (Longmans, Green, & Co.), "The beginning was difficult, and criticism as passionate as it was premature was addressed to me. I faced the storm as best I could, thanks to the constant support of M. Lockroy, then minister of commerce and industry; and I strove by the steady progress of the work to conciliate, if not the opinion of artists, at least that of engineers and scientific men. I desired to show, in spite of my personal insignificance, that France continued to hold a foremost place in the art of iron construction, in which from the earliest days her engineers have been more particularly distinguished, and by means of which they have covered Europe with the creations of their talent. Doubtless you are not ignorant that almost all the great engineering works of this nature, in Austria, Russia, Italy, Spain, and Portugal, are due to French engineers; and the traveller discovers with pride, as he passes through foreign countries, the traces of their activity and their science. The tower, 1,000 feet high, is, before every thing, a striking manifestation of our national genius in one of its most modern developments; and this is one of the principal reasons for its existence. If I may judge by the interest which it inspires, abroad as well as at home, I have reason to believe that my efforts have not been unavailing, and that we may make known to the world that France continues to lead the world, that she is the first of the nations to realize an enterprise

often attempted or dreamed of: for man has always sought to build high towers to manifest his power, but he soon recognized that the laws of gravity hampered him seriously, and that his means were very limited. It is owing to the progress of science, of the engineer's art, and of the iron industry, that we are enabled to surpass in this line the generations which have gone before us by the construction of this tower, which will be one of the characteristic feats of modern industry."

— The *Quarterly Journal of Economics* for July opens with a paper by Edward Cummings on "The English Trades-Unions," the special object of which is to show the present character and tendency of these associations. The writer points out that the policy of strikes is much less favored by the unions than it was a few years ago, and more care and intelligence shown in ordering strikes. On the other hand, the unions are assuming more and more the character of benefit societies, much to the gratification of the best friends of workingmen, and much to the dissatisfaction of the socialists, who charge the members of the unions with "apostasy to the cause of labor." Mr. Cummings also calls attention to the fact that the English unions really comprise but a small portion even of the skilled workmen of the country, but thinks these are "the flower of their respective trades." To students of the labor problem this article will be useful; and the same may be said of another in this number of the journal, that on "The International Protection of Workmen." It is a summary by A. C. Miller of a work by Dr. Georg Adler of Freiburg, with some account of the discussion the work has raised. Dr. Adler is anxious for legislation restricting the hours of labor, prohibiting the employment of children, and otherwise protecting workmen and their families against some of the evils they now suffer; but he thinks this cannot be enacted by any one nation independently, since the effect would be to raise the price of labor, and thus impede the nation in its competition with foreigners: hence he wants an international agreement on the subject, and believes that the end in view can be attained in no other way. Still another article on the labor question is "A New View of the Theory of Wages," by Stuart Wood, being a continuation of one published by him in the journal last October. We noticed the former article briefly at the time, and this one merely develops somewhat further the theory there laid down. The remaining article in this number is by Professor Dunbar, on "The Direct Tax of 1861." It gives a full and clear account of the levying and collection of the tax, so far as it was collected, and advises against refunding it to the States. The writer thinks it will be refunded, however, and he is probably right; for Congress appears to be searching for every available means of spending the money in the national treasury. Besides these longer articles, the journal has some interesting "Notes and Memoranda," including an account of the rise and fall of the French Copper Syndicate, which forms a curious chapter in industrial history.

#### INDUSTRIAL NOTES.

##### Natural Memory Method.

WE take the following extract from an editorial in the *Journal of Education*, Boston: "We have taken no part in the Loiset-Fellows-Pick memory controversy, because we have not thought the advantage to be had from all systems of mnemonics sufficient to make it of interest to the world. Systems of the past have often required more effort to remember senseless things than would be required to remember the desired things. Any system based upon sounds, upon having letters stand for special figures, is impracticable for every-day affairs or educational uses. So long as mnemonics meant any thing of this kind, we merely examined them as curiosities; but within the past year John A. Shedd of New York City has discovered a purely original system, which is high above any unnatural system. It is simple (it may be understood in fifteen minutes), natural (all its principles may be learned in an hour by the dullest student), suggestive (two hours' practice makes it easy to use it every day, and almost literally every hour of life), comprehensive (it adapts itself to various subjects and branches of knowledge). There is not a moment's drudgery in learning it, not a feather-weight's burden in remembering it, and no perplexity in applying

it. It is educational and helpful, entirely apart from the memory phase of the subject."

##### Electrical Accumulators.

Judge Coxe, in the United States Circuit Court for the southern district of New York, rendered a decision on July 22, re-affirming his former judgment in favor of The Electrical Accumulator Company, in its suit against The Julien Electric Company to establish the validity of the Faure secondary battery patent, and denying The Julien Company's motion for a rehearing.

The Julien Company, in its argument, claimed, among other things, that it could manufacture batteries by the "dry-powder" process as good as or better than it was possible to manufacture under the Faure process by the use of a "paste;" and in this connection Judge Coxe very aptly says, "If it be true that Faure's batteries are inferior to or no better than others, the question naturally suggests itself, 'Why are not defendants content to use other batteries?' A rehearing is denied."

According to the views of The Electrical Accumulator Company, this gives the complete control of the manufacture and use of secondary batteries to that company, which owns the Faure-Sellon-Volckmar patents.