

result by back-ploughing every alternate furrow, making it a dam. Surely the practice, recommended by some, of subdividing the rainfall by furrows running up and down a slope, must be more wasteful in the final result than an occasional rushing break of the water retained by the process above described.

Cyclones and tornadoes are amply discussed in the light of the latest investigations. A diagram of equatorial and polar currents would aid such readers as are not familiar with the general theory of winds; and there seems to be in this book an over-valuation of winds in the production of the great ocean-currents. In regard to tornadoes, observation would teach that the author's advice to construct houses of brick or stone in tornado regions is not wise. A massive stone building is torn to pieces as easily as one of wood, and with far more danger to the occupant. In fact, the stone foundations of a house are sometimes swept clean off, level with the ground. In the path of the tornado there is but one security, — an outside underground refuge with most direct access from the living-rooms of the house, such as by a trap-door and stairs, if the ordinary cellar stairway is not near the south-west corner. The roar of the storm may readily be mistaken for that of cars. The funnel of the cloud may follow at some interval the accompanying general storm, when one least expects devastation. There may not be a moment to lose in going to an out-of-doors tornado-refuge, which some have recommended. And there should be not only ingress from the cellar, but some mode of egress from the cave in case the cellar entrance is blocked by *débris*, and especially in case the wrecked house takes fire. Certainly, in exposed regions, fifteen dollars spent in rightly providing a refuge is worth the peace of mind it brings, though the terrible disaster never comes.

The concluding chapter on soils is of interest to every intelligent reader as well as to cultivators of the ground. Happily, it must have come into many rural homes in its first form as a magazine article. Of course, the great expense of this volume is its engravings, such a full-page picture as that of the Yellowstone Falls probably costing two hundred dollars. But, many of the woodcuts having already paid something like their cost in the magazine, it is to be regretted that a cheaper edition on less costly paper is not issued along with this luxurious one; lighter, too, for the very heavy paper in a book of this size is a considerable weight to hold, in this instance three and a half pounds. Large type and very thick paper are suitable in books of a pictorial sort for brief entertainment rather than continuous reading.

"*Evolution of Sound*" *Evolved*. By M. J. THOMPSON. Cincinnati, Standard Publishing Co. 8°.

THERE once lived in this town (by "this town" we mean New York) a certain Dr. Hall, who was much given to violent attacks on all that had been considered as reasonable by ordinary mortals in the results of the investigations of scientific men. It may be that some of our readers will remember the doctor's attack on the wave-theory of sound, and his vehement appeals to scientific men to answer his arguments against the validity of the conception we now have of the way in which sound is propagated. It cannot be said that opportunity for discussion was lacking, for the warlike doctor even went so far as to establish a journal — *The Scientific Arena* — for the very purpose of furnishing a suitable medium for open discussion of the merits of his arguments. But all this was to little purpose till the author of "'Evolution of Sound' evolved," at that time professor of science in Garfield University, Wichita, Kan., published a number of letters, pointing out how the doctor had wandered a little from the paths of wisdom. These have been collected in book form; and, even if they did not serve the purpose of opening the eyes or ears of Dr. Hall, it may happen that there will be others who will find in them answers to attractive sophistry or to their own doubts.

Appended to these letters is reprinted Professor Thompson's graduation thesis at Ann Arbor, on the measurement of chemical affinity.

Mountaineering in Colorado: the Peaks about Estes Peak. By FREDERICK H. CHAPIN. Boston, Appalachian Mountain Club. 12°.

THE Appalachian Mountain Club is made up of those men and women, boys and girls, who, for the most part living not far from

Boston, delight in taking walks. The most of their excursions are, per force of circumstances, taken through the most attractive regions to be found near their homes. But every year one or more parties start for a tramp through the White Mountains, a winter tramp in that region being a yearly feature of the club's doings. All this leads to an increase in the intelligent interest in the hills and mountains visited, and is very pleasant as a recreation for those able to take part.

The volume now before us shows that one member has had the temerity to venture thousands of miles from the usual haunts of his colleagues. We have in it a record of his wanderings through unfrequented valleys, and even those hitherto unvisited by white men, of his clamberings over peaks, and of the views he saw. Fortunately our author was an admirable photographer, and fortunately again his negatives fell into the hands of good engravers, as we are enabled, by the excellent and numerous pictures with which the volume is embellished, to gain some idea of what was spread before his eyes.

The book is well written, contains a good deal of information such as is told in the narratives of travellers, and is a real contribution to our knowledge of one of the few out-of-the-way and yet wild corners of our country.

The Graphic System of Object Drawing. By HOBART B. JACOBS AND AUGUSTA L. BROWER. New York, A. Lovell & Co. 75 cents.

THE aim of the authors of this admirable series of drawing-books is to give the pupil a clear idea of form, to help him to express that idea on paper, and to give him command of his pencil, so that he can draw the objects about him. The plan of the work is so simple that any teacher can use it; and a manual for the teacher's use, which accompanies the set of drawing-books, makes the system plain even to those entirely unskilled in the art. The course is intended to cover four years of practice, and is adapted for use in both public and private schools. The part of the series intended for the primary course deals only with single objects in outline; the part for the intermediate course is devoted to drawing from groups of objects; in the part prepared for the grammar department, studies in tones and values are given; and for the high school, thorough instruction in drawing from life is found. Manuals for the four departments, or four-years' courses, are provided.

While the methods for work given in this series are based on the systems current in many of the best schools of art, and on the practice of the most successful art teachers, no attempt is made to attain the critical accuracy to be expected in more advanced textbooks. The authors claim for it simply an original and highly efficient arrangement of lessons; and no one who carefully examines the system will deny that it is one which will naturally call forth the interest and develop the powers of the pupil.

AMONG THE PUBLISHERS.

A HISTORY of American literature, by Karl Knortz of this city, will be published shortly in Berlin by Hans Lüsteneröder.

— John P. Morton & Co., Louisville, Ky., have in preparation a work on "Kentucky Jurisprudence," by Lewis N. Dembitz of the Louisville bar.

— The American Writing Machine Company, Hartford, Conn., has issued a pamphlet showing a selection of writing-papers suitable for use on the Caligraph.

— "Odds and Ends from a Literary Junk Shop" is the title of a priced catalogue of new and second-hand books just issued by A. S. Clark, 34 Park Row, this city. It contains many points of interest to book-buyers.

— Thoroughly earnest work is being done in behalf of tariff reform by the New York *Weekly Post*, which holds that the time to discuss this economic question is now rather than in the heat of a presidential campaign. Every issue of the paper contains articles bearing upon some phase of the subject, together with questions by doubting readers, with answers by the editor, all tending to facilitate and simplify the discussion. The *Post* is compiling a di-

rectory of active tariff-reform organizations in the United States, and has already published one instalment of the list.

— Travellers on the Nile will be glad to learn that the second volume of Baedeker's "Guide-Book to Egypt" is at last about to appear. It will be devoted, says *The Publishers' Weekly*, to a description of upper Egypt, and has been compiled by the well-known Egyptologist, Professor Eisenlohr.

— Charles L. Webster & Co. publish this week Mark Twain's new book, "A Connecticut Yankee at King Arthur's Court," which satirizes the shams, the laws, and customs of to-day under pretence of dealing with the England of the sixth century. It is fully illustrated by Daniel Beard.

— The Bancroft-Whitney Company, San Francisco, Cal., have just issued the first two volumes of Lawson's "Rights, Remedies, and Practice." The work, which is to be complete in seven volumes, issued at the rate of one a month, does not deal in theories, but is written for the every-day use of the profession.

— Houghton, Mifflin, & Co. announce "The Bible and Modern Discoveries," by Rev. Henry A. Harper, connected with the Palestine Exploration Fund. He has written other books of much interest on Palestine, but the peculiar feature of this book is that it connects the remarkable discoveries made in the Holy Land with the Bible narrative.

— B. F. Stevens, according to the London *Athenæum*, has just produced the first volume of his magnificent collection of facsimiles of documents in European archives relating to the United States. The second volume will be ready this month, and two more will be in the hands of the subscribers early next year. The total number of copies printed is limited to two hundred.

— The J. G. Cupples Publishing Co. have in press a work by Nathaniel Pitt Langford, of St. Paul, entitled "Vigilante Days and Ways; or, The Pioneers of the Rockies, being Sidelights on the Makers and Making of Montana, Idaho, Oregon, Washington, and

Wyoming." It will be published in two volumes, and will be illustrated.

— The first number of *College and School*, a monthly magazine for teachers, students, and parents, has made its appearance; Utica, N.Y., being the place of publication. It is bright and attractive in appearance, presents a good table of contents, and we trust will be a success, although its field of work is pretty well covered already.

— A book entitled "Thought and Thrift," written by Joshua Hill, a farmer in Kentucky, is announced as in the press of Raisbeck & Co., No. 19 West 6th Street, Cincinnati. It will be a discussion of political and economic questions from the point of view of a practical agriculturist, which it is said will be of great value and interest to the agricultural classes as well as to those interested in the subject from the economic and political side.

— In *The Writer* (Boston) for December, following a personal sketch of Mrs. George Archibald, are articles entitled "Duplicating Manuscripts," "The Opening Sentence," "The Husbands of Literary Women," "'Don'ts' for Young Writers," "Needless Words," "A Reader's Appeal to Writers," and "Blocking Out Poetry." A new department is entitled "The Use and Misuse of Words." In it every-day questions of language are discussed briefly. The department "Helpful Hints and Suggestions" this month is devoted mainly to plans for preserving clippings, and many novel ideas are suggested.

— *The Chautauquan* for January contains the following articles: "The Railroads and the State," by Franklin H. Giddings; "A Miniature Glacier," by Professor N. S. Shaler; "Too Much Theorizing," by John Habberton; "A Striking Feature of the Age," by Professor A. S. Hardy; "Great Britain's Ministry," by J. Ranken-Towse; "James Anthony Froude," by Professor W. M. Baskerville; "Sam Houston's Marriage," by Coleman E. Bishop; "The Negroes of Trinidad," by Victor Smith; "Some Ohio Gypsies," by James K. Reeve; and "What England has done for India," by Bishop John F. Hurst.

Correspondence solicited with parties seeking publishers for scientific books.

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HOUGHTON, MIFFLIN & CO., BOSTON,

— The fourth volume of Baron Haussman's memoirs, which is shortly to be published in Paris, will describe in detail the inner life of the Second Empire. Among many other matters, according to *The Publishers' Weekly*, the narrative promises to throw a new light on the discussions with Prince Bismarck, at Biarritz and elsewhere, as to the conclusion of an alliance between France and Prussia, and the formation of a German Empire at the expense of Austria. There will also be some unrevealed particulars in connection with the negotiations for peace after the war of 1870, affording much information about the part which Napoleon III. took in them.

— D. Appleton & Co. announce as ready this month "Exercises in Wood-Working: A Text-Book for Manual Training Classes in Schools and Colleges," by Ivin Sickles, M.S., M.D. This book consists of two parts. The first, a treatise on wood, includes the growth, structure, properties, and kinds, cause of decay, destructive insects, and means of preserving wood. The second part contains a description of tools, methods in drawing used to illustrate the exercises, and methods of sharpening tools. These are followed by thirty-nine progressive exercises, arranged as follows: 1. Practice with the ordinary wood-working tools; 2. Construction of simple joints; 3. Construction of complex objects; 4. Elements of house-carpentry; 5. Directions for finishing work. The exercises are illustrated by full-page plates, and are accompanied by numerous applications. Directions for each exercise are printed on the page opposite its diagrams, and particular attention has been paid to marking or laying out the work preparatory to cutting.

— Messrs. Funk & Wagnalls (New York) announce a new biographical series, "American Reformers," edited by Carlos Martyn, D.D., — a man of whom Wendell Phillips said, "If I were looking for a biographer, I would lay hands on Mr. Martyn. His arrangement is unique and effective. His grasp is both wide and strong. His historical scent is keen as that of an Indian on a trail." There are to be twelve volumes in the series, to be published one each two months, beginning in January, to be issued in uniform size and style (12mo, of about 300 pages each, in cloth) at \$1.25 per volume. Here are the subjects and the writers: "Wendell Phillips, the Agitator," by Carlos Martyn, D.D.; "Horace Greeley, the Editor," by Francis Nicoll Zabriskie, D.D.; "Horace Mann, the Educator," by Hon. Frank B. Sanborn; "William E. Dodge, the Christian Merchant," by Carlos Martyn, D.D.; "Abraham Lincoln, the Emancipator," by Professor C. W. French; "Frederick Douglass, the Colored Orator," by Frederic May Holland; "John G. Whittier, the Poet of Freedom," by Sloane Kennedy; "William Lloyd Garrison, the Abolitionist," by Hon. George W. Williams, LL.D.; "John B. Gough, the Apostle of Cold Water," by Carlos Martyn; "Charles Sumner, the Scholar in Politics;" and "Henry Ward Beecher, the Pulpit Orator."

— We have received the first and second numbers of "Haverford College Studies," published by the college faculty. They are all either historical or mathematico-astronomical. No. 1 opens with an article on "The Library of the Convent of the Holy Sepulchre at Jerusalem," by J. Rendel Harris, giving an account of the formation of the library by the union of three smaller ones, with notes on some of its treasures. Then follow a series of "Micro-metrical Measurements of Double Stars," and other observations made at the college observatory. They are quite elaborate and extensive, filling nearly sixty pages of the pamphlet. There is another astronomical paper, "On the Period of Rotation of the Sun," by Henry Crew, who gives as the result of his observations the period of 26.23 days. Frank Morley has a paper, "On the Geometry of a Nodal Circular Cubic," which has been published before in the *American Journal of Mathematics*; and the number closes with an elaborate essay by Francis B. Gummere, "On the Symbolic Use of the Colors Black and White in Germanic Tradition." This last paper is perhaps the most interesting in the collection, and contains much curious lore. Pamphlet No. 2 consists mainly of an essay on "The Rest of the Words of Baruch," by J. R. Harris, with several pages of the Greek original; and this is followed by facsimiles of "Two Esarhaddon Texts," by R. W. Rogers, from the originals in the British Museum. On the whole,

these studies are more elaborate than most publications of American colleges, and represent a great deal of work.

— Henry C. Frink (234 Broadway, New York) announces a calendar for 1890 ("Perles de la Littérature Française"), with one quotation each from 365 different French authors; also a calendar for 1890 ("Perlen der Deutschen Litteratur"), with one quotation for every day in the year, selected from eminent German authors. The above calendars are engraved and hand-painted. The quotations are selected by A. N. Van Daell, professor of modern languages in the Massachusetts Institute of Technology.

— Mr. Clarence M. Weed, M.Sc., has published, in a recent bulletin of the Illinois State Laboratory of Natural History, an article entitled "A Partial Bibliography of the Phalangiinae of North America." In it he states that he has included most of the references to this group in our American literature, and mentions the genus of several species of *Phalangium* of which he has seen no specimens, but which probably do not belong to that genus as now restricted. He has also published in the same bulletin an article entitled "A Descriptive Catalogue of the Phalangiinae of Illinois." The great majority of the American species of those familiar creatures commonly known as "harvest-men," or "daddy-long-legs," belong to the subfamily *Phalangiinae* of the family *Phalangidae* of the sub-order *Opilonea* and order *Arthrogastra*. Though abundant and widely distributed, these arachnids have as yet received comparatively little attention in this country. The laboratory collections on which this article is based have largely been made within the last two years.

— The following is the title of a book just published by the C. R. Barns Publishing Company, St. Louis, Mo.: "New Light from Old Eclipses; or, Chronology corrected and the Four Gospels harmonized by the Rectification of Errors in the Received Astronomical Tables," by William M. Page, with an introduction by Rev. James H. Brookes, D.D. The book is illustrated by several striking engravings of eclipses, and the author's arguments are supported by astronomical calculations; which calculations are verified by making with them all the eclipses known to the ancients, in time and quantity as described by those who witnessed them. It has also a new arrangement of the four New Testament narratives in one combined narrative, giving all the occurrences of our Lord's life in chronological order.

— Mr. Townsend Mac Coun of this city has published "An Historical Geography of the United States," written by himself. It is a small quarto volume, containing more than forty maps illustrating the history of the country from its discovery to the present time. It opens with facsimiles of some of the maps made by European geographers during the sixteenth century and earlier, which show very clearly how difficult it was for them to get a correct idea of the form and size of this continent. Then follow maps illustrating the colonization of the United States and the early wars and national rivalries, and, last of all, a series in which the growth of the national domain from the close of the Revolution to the present time is clearly and strikingly shown. The maps are well engraved, and unencumbered with detail. A descriptive and historical text follows the maps, and adds to the usefulness of the book for study and for reference.

— It is now just two years since the *Academy* announced that Lord Carnarvon had found — among the papers which passed into his possession on the death of his mother-in-law, the late dowager countess of Chesterfield, widow of the sixth earl — a second series of "Chesterfield Letters," and that he proposed to edit them for publication. These letters, which number 236, are in an excellent state of preservation. They were addressed by the famous Lord Chesterfield, the fourth earl, to Philip Stanhope, his godson and successor in title, and may be regarded as a revised version of the celebrated letters to his natural son, who died after he had disappointed his expectations. The subjects are to a great extent the same: the language is often all but identical. But much of the cynicism of the earlier series has evaporated; the morality is on a higher level; the writer appeals to loftier principles than we are wont to associate with his name. The correspondence extends over nine years, beginning in 1761, when Philip Stanhope was in the sixth year of his age.

—Brown, Thurston, & Co., Portland, Me., announce the completion of the six volumes of the "York (Me.) Deeds." This work, which has been in progress for the past six years, is one of the most important historical and antiquarian publications relating to the early history of New England that has ever been published, being of particular value and interest to the people of Maine, New Hampshire, and Massachusetts, as in it is found a large portion of the unknown and unwritten history of those States. The work was done under the direction and patronage of the Maine Historical Society and the State of Maine.

—Of *The Ladies' Home Journal* it is said that it has the largest actual paid circulation of any magazine in the world; it had on its books at last count 422,356 paid annual subscribers, with a subsequent daily increase; it prints and sells each month 500,000 copies; it has two editions a year of one million copies each; it goes monthly into 35,000 post-offices throughout the United States and Canadian provinces; it has regular paid subscribers in 46 of the 60 countries of the civilized world; it has a subscriber in almost every English-speaking nation of the globe; it requires 8 large cylinder presses, running an entire month, to print a single edition; it has over 5,000 employees, agents, and subscription canvassers in its employ; it has a working staff of 80 writers and 14 editors, besides artists and engravers.

—In *Lippincott's Monthly Magazine* for January a feature of especial interest is the publication of the first part of some unpublished manuscript of Nathaniel Hawthorne's, — a weird tale entitled "The Elixir of Life." This is a version of the theme of "The Bloody Footstep," also treated by Hawthorne, in "Dr. Grimshawe's Secret," "Septimius Felton," "The Dolliver Romance," etc. Mr. Julian Hawthorne, who edits the manuscript, by drawing attention to the similarities and discrepancies between this and other versions, presents a study of the great romancer's methods of work, and, by paraphrasing such portions of the manuscript as are repeated in the published stories above named, imparts to the whole the character of a complete tale. "Nathaniel Parker Willis" is the theme of R. H. Stoddard's study of American authors. This paper is one of a series of critical articles which Mr. Stoddard has contributed to *Lippincott's*. In an article entitled "Newspaper Fiction," William Westall, the popular English novelist, tells of the growth of the syndicate idea in England. "The Theatrical Renaissance of Shakspeare" is contributed by Edward Fuller, the dramatic editor of the *Boston Post*, who reviews the extraordinary revival of Shakspeare's plays at our theatres during the season of 1888 and 1889. The article is full of suggestions concerning the setting of the plays, and also of criticisms upon modern actors. In "Under the Mistletoe," Henry Collins tells about the origin of the custom of kissing under the mistletoe; and Miss Anne H. Wharton, in "Our Winter Festivities," gives the origin of many of our Christmas and New Year customs.

—A. E. Kennelly, Mr. Edison's chief electrician, who has so frequently been called as an expert in important litigations, will contribute to the January *Scribner's* the sixth article in the electric series, entitled "Electricity in the Household," which is a popular discussion of the numerous devices that can be conveniently applied to every modern home where comfort is aimed at. The article will be illustrated. In his very interesting and timely article on "Water Storage in the West," Walter Gillette Bates discusses in the same number some of the reasons which may make it advisable that in the near future the government should undertake the whole question of reclaiming the arid regions of the West by an immense system of artificial dams and lakes. Of the Eiffel Tower, W. C. Brownell says, "It was, however, not only not vulgar, but agreeable. Technically the Tour Eiffel was superb. It may have been intended merely to be astonishing, but in reality it was in the highest degree impressive." In his article on "The Beauty of Spanish Women," Henry T. Finck says, "If I were asked to state in one sentence wherein lies the chief advantage of Spanish women over those of other countries, and to what they chiefly owe their fame for beauty, I should say, that if a Spanish girl has round cheeks, and has medium-sized, delicately cut nose and mouth, she is almost certain to be a complete beauty; whereas, if an American or English girl has a good nose, mouth, and cheeks, the

chances are still against her having a beautiful complexion, and fine eyes, hair, and teeth, which Spanish girls are always endowed with as a matter of course. But over and above every thing else, it is the unique grace and the exquisite femininity, unalloyed by any trace of masculine assumption or caricature, that constitute the eternal charm of Spanish women."

LETTERS TO THE EDITOR.

*.*Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

The editor will be glad to publish any queries consonant with the character of the journal.

On request, twenty copies of the number containing his communication will be furnished free to any correspondent.

A Peculiar Case of Adhesion.

A VERY singular case of adhesive power has come under my notice lately, and the results of an investigation made with the view of establishing its nature are recorded in the following lines.

Mr. Louis Hamburger of Baltimore, sixteen years old, and of rather delicate build, noticed for the first time, about the middle of November last, that a cane would, as he expressed it, "stick" to his fingers, and that wiping off the cane and washing his hands would not prevent this occurrence. Laying his fingers on other light articles, such as lead-pencils, penholders, etc., he found that he could lift them up by simply placing his fingers upon them, the objects adhering firmly to the skin. Not being able to explain these phenomena, Mr. H. came to see me on Nov. 19, and surprised me by performing a few of the experiments which he had learned to execute, and which consisted in the raising of various objects by their adherence to his fingers. The heaviest of these articles did not weigh twenty grams.

At a loss to understand the nature of these phenomena, I began a series of experiments, which, in the course of a few weeks, brought to light a number of facts more interesting, and even more startling, than those which had been observed by Mr. H. himself up to the time he first called upon me. The experiments performed were made with the view of determining (1) the quality and nature of the adhering substances, i.e., their chemical composition and texture; (2) the quality or weight of adhering masses, and their relation to the hand's surface brought into play in a given experiment; (3) the exact points or surfaces of the fingers or other parts of the body which exhibit this adhesive power; (4) the length of time during which substances will adhere.

Before stating the results of the various experiments made, I will mention that it was soon found that the hands had to be carefully cleaned by washing with soap and water, and then with alcohol and ether, in order to attain the highest degree of adhesive power; and that the surface of the articles experimented upon had likewise to be well cleaned, and rubbed absolutely dry. Particles of dust or moisture greatly interfere in all experiments where the highest power is demanded.

In regard to the first point of inquiry, the nature of the material which would adhere, it was easily proven that chemical composition had nothing whatever to do with the adherence. Metals, stone, glass, rubber, wood, etc., — all probably adhere equally well, provided their surfaces possess the same degree of smoothness. As a general rule, it may be stated that the adhesive power increases with the degree of smoothness of surface. It is for this reason only that well-polished metals or glass show the highest degree of adhesion. The latter substance answers especially well, because it can be cleaned easily. In proportion as the surface becomes less even, the adhesive power diminishes; and porous substances, such as paper, cloth, etc., or articles covered with them, cannot be made to adhere at all.

The second question, regarding the determination of the extreme limit of the weight of matter adhering, was found more difficult to answer. A number of factors influence the results of experiments made in this direction. It was found that not only the shape of the adhering mass had to be considered, but also the position of the hand itself. Cylindrical forms seem to be preferable, while flat surfaces adhere but poorly; and a much larger weight may be attached to the fingers while the hand is held perpendicularly than