SCIENCE:

A WEEKLY NEWSPAPER OF ALL THE ARTS AND SCIENCES.

PUBLISHED BY

N. D. C. HODGES,

47 LAFAYETTE PLACE, NEW YORK.

SUBSCRIPTIONS.—United States and Canada.....$3.50 a year.
Great Britain and Europe..... 4.50 a year.

Communications will be welcomed from any quarter. Abstracts of scientific papers are solicited, and twenty copies of the issue containing such will be mailed the author on request in advance. Rejected manuscripts will be returned to the authors only when the requisite amount of postage accompanies the manuscript. Whatever is intended for insertion must be authenticated by the name and address of the writer; not necessarily for publication, but as a guaranty of good faith. We do not hold ourselves responsible for any view or opinions expressed in the communications of our correspondents,

Attention is called to the "Wants" column. All are invited to use it in soliciting information or seeking new positions. The name and address of applicants should be given in full, so that answers will go direct to them. The "Exchange" column is likewise open.

VOL. XVI. NEW YORK, DECEMBER 19, 1890. No. 411.

CONTENTS:

UNIVERSITY AND SCHOOL EXTENSION.

THE design of the University and School Extension recently started in this city is to supplement the university and the school systems by means of outlines for courses of study, class instruction, courses of lectures, correspondence, examinations, etc. The executive committee of the faculty consists of President Timothy Dwight, president of Yale University; Francis L. Patton, president of Princeton University; Seth Low, president of Columbia College; N. A. Calkins, superintendent of school extension; W. T. Harris, United States commissioner of education; Seth T. Stewart, general secretary. The officers of the board of directors are, president, James W. Alexander (Princeton); vice-presidents, Chauncey M. Depew (Yale), Charles S. Fairchild (Harvard), W. Bayard Cutting (Columbia); treasurer, George Foster Peabody (16 and 18 Broad Street, New York City); secretary, Matthew J. Elgas (121 West 87th Street, New York City).

The purpose is to develop a taste for further education and broader culture among those who, from necessity, have been debarred from some of the advantages of college or academic training, and to provide the skilful guidance of college professors and other experts in the study of the various subjects common to school and to university education The courses of instruction will be marked out by carefully prepared syllabuses, with directions as to what is most essential to the subject.

Individual students can be graded in lines of study and investigation; and plans are provided for securing the interest, sympathy, and mutual help that come through class instruction and lectures. Teachers and others associated in small or large classes may be guided in their studies, or they may enjoy the presence and advice of an approved class instructor in their chosen subject. In this way societies organized for the study of any language or department of history or science can be provided with reliable guidance and competent instruction. The classes will be formed for day or evening, at hours and places to suit the convenience of the class. Individuals or classes may also have the benefit of instruction by correspondence.

Syllabuses have been prepared by the professors named in connection with the following subjects, and others are now in the process of publication: German (four years), Professor H. H. Boyesen, Columbia; French (four years); Latin (four years), Professor Tracy Peck, Yale; Greek (three years), Professor T. D. Seymour, Yale; English literature of the seventeenth, eighteenth, and nineteenth centuries, Professor F. J. Child, Harvard; Shakspeare and Chaucer, George Lyman Kittredge, Harvard; American history to 1789, American history from 1789, European history from 1600 to 1750, European history from 1750, Professor S. M. Macvane, Harvard; law (two years), Professor Theodore Dwight, Columbia; physical geography (first and second years), Professor William Libbey, jun., Princeton; geology, Professor N. S. Shaler, Harvard; physics, Professor C. F. Brackett, Princeton; chemistry (two years), Professor William G. Mixter, Yale; astronomy, Professor C. A. Young, Princeton; elements of zoölogy, Alpheus Hyatt; political science, Professor John W. Burgess, Columbia; descriptive psychology and physiological psychology, Professor George T. Ladd, Yale; philosophy of education. N. A. Calkins; plane and solid geometry, plane trigonometry, and spherical trigonometry, Professor A. W. Phillips, Yale.

The registration fee of one dollar entitles each registered student to one syllabus, one book-list with prices, the privilege of purchasing the books through the general secretary at list or wholesale prices, and an examination-paper in any one of the subjects in which an examination is held. It also entitles members to receive information as to the formation of classes, and to register for correspondence classes and for examination; but the correspondence fee of ten dollars, or the examination fee of two dollars, will be required before said correspondence or examination begins. Additional syllabuses may be had at twenty cents each, or six for a dollar.

Societies guaranteeing minimum charge for course of lessons or lectures will be accommodated as to time, place, and choice of instructor or lecturer. Ladies and gentlemen desiring to become patrons of a special subject of learning may organize auxiliary societies under a prescribed constitution, involving an annual membership fee of ten dollars per share. Any one desiring to promote the work among any class of people may assist in organizing them under constitutions involving membership fees of five dollars per share, or of one dollar per share, covering registration fee, the latter requiring extra charge for work done. A few general courses of lectures will be announced in New York City this year; but other courses will be given if a sufficient number register for the same in any chosen subject. The registration fee of one dollar will hold good until the member in any place shall have had an opportunity to attend class instruction or lectures in some one subject, or to receive correspondence instruction or lectures in a desired subject. Thereafter the fee will be an annual fee.

The registration fee should be sent to the general secretary, or in New York City to Matthew J. Elgas, secretary, 121 West 87th Street. Persons interested in the formation of classes, or lecture courses, or auxiliary societies, will be provided with the necessary forms and information on applying, with stamp enclosed, to Seth T. Stewart, general secretary, P. O. Box 192, Brooklyn, N.Y.

LETTERS TO THE EDITOR.

Dr. Hann's Studies on Cyclones and Anticyclones.

UNDER this heading appeared in *Science*, May 30 of this year, a notice, by Professor W. M. Davis of Harvard College, of a memoir by Dr. Hann of Vienna on "The High-Pressure Area of November, 1889, in Central Europe," etc., which has been recently

published. This notice itself requires a notice here, inasmuch as it aims a blow, not only at all recent advancement in cyclonology, but even at its very foundation in Espy's condensation theory. This notice has been long delayed from a desire to first see, and to reply to, Dr. Hann's memoir, which could not be found either in Washington or Boston. In this memoir, as the reader has been advised, Dr. Hann takes a new position with regard to the origin of cyclones; namely, that they depend upon the same forces, arising from the difference of temperature between the equatorial and polar regions, upon which the general circulation does, and that they are therefore simply subordinate parts of this circulation, and independent of any local causes. Professor Davis seems to have fallen in at first sight, as it were, with this new hypothesis, and says, "Having frequently advocated the sufficiency of the convectional theory of cyclones, I now make haste to place Dr. Hann's observations before the readers of *Science*, that they may see how clearly a revision of opinion is called for."

The great facility with which Professor Davis, apparently, can at once change his views on an intricate and perplexing scientific subject, which has puzzled profound thinkers, and his haste to forsake his former teaching and to rush into print to acknowledge his past errors, and, with the usual zeal of a new convert, to proclaim the newly adopted faith, seems very remarkable; so much so, that a suspicion arises that a little supposed high authority in high position has had more to do in the matter than a profound study of physical and mechanical principles. Dr. Hann's memoir was read before the Vienna Academy on April 17, was printed and received in this country by Professor Davis, and his notice of it appeared in *Science* of May 30: so it is seen how sudden the transition must have been.

So far, we merely have Dr. Hann's annunciation of the new hypothesis, without any attempt to form a theory from it by showing in what way the forces which give rise to the general circulation, and which act in two directions only, — toward the poles above, and the reverse in the lower part of the atmosphere, — can be brought to bear so as to give rise to the subordinate cyclonic disturbances, and to follow them up in their progressive motions so as to keep up the gyrations. A mere hypothesis, if it is a reasonable one, may be very useful as a basis of work or research of any kind, but in itself it proves nothing. If a plausible theory can be built up from the new hypothesis: if it can be shown how, from the general motions of the atmosphere, or the forces upon which they depend, a couple of forces can arise, necessary to give rise to a cyclonic motion, and then how this couple of forces follows after the cyclone to keep it in motion, as the boy with his trundling stick follows after his hoop, and gives it well-directed blows, always in the proper direction; why this couple of forces always tends to give a gyration in one way only in the northern hemisphere, and the contrary in the southern hemisphere; why the air in the cyclone always ascends and never descends; and so on, — very well. We will wait for this to be done. All this has been done in the condensation theory of cyclones, with results so satisfactory as to scarcely leave a doubt as to the truth of the whole theory; and we have a right to claim that as much should be done upon the new hypothesis, before it can be accepted.

Espy had a cast of mind which was not satisfied with vague general assertions, such as that cyclones are caused by the meeting of counter-currents of the air, and that they are continued, and all the powerful mechanical effects are produced, without the expenditure of any energy. And so, in seeking a source of energy, the happy thought occurred to him that this is to be found in the latent heat given out in the condensation of aqueous vapor in the interior of a cyclone, where there is always more or less rainfall. As the air, charged with vapor, is drawn in from all sides below and ascends, the vapor is condensed, and the latent heat given out keeps the ascending air warmer and lighter than the surrounding air. This accounts very satisfactorily for the ascent of air in the interior; and the energy by which the ascent of air and the whole vertical circulation is maintained is laid up in store in the lower part of the atmosphere, through which the cyclone passes, and is not found in the upper poleward-moving currents, as Dr. Hann says, from which there is no imaginable way in which it can be brought down and applied to the cyclone in the lower part of the atmosphere.

The air, being drawn in from all sides below, is pressed toward the right in the northern hemisphere, as is well known, by the deflecting force of the earth's rotation; and so there is a couple of forces, all around, acting in one direction on the one side, and the contrary on the other, which originates and maintains the gyratory movement; but the energy spent is all in the latent heat set free, and the deflecting force simply modifies the directions of motion. This accounts also, not only for the gyratory motion, but also for its being always in the same way in the same hemisphere. This very beautiful and satisfactory theory, so briefly sketched here, Professor Davis would have us give up for the merely vague general hypothesis that all depends upon the general circulation, without its having been shown how any of the motions of the cyclone, as accounted for above, can be accounted for upon this new hypothesis.

But of this theory Professor Davis says, it "is merely a local application of a theory that is universally accepted to account for the general circulation of the atmosphere between equator and poles; but the tests now furnished by high-level observations seem to show that the local application of the theory is incorrect." In the general circulation of the atmosphere the air rises in the equatorial regions where it is warmer and lighter, and sinks down in the polar regions where it is colder and heavier. But, according to Davis, the local application of this principle in the case of cyclones is not correct, but must be reversed; and the air in a cyclone rises in the interior where it is colder and heavier, and sinks down where it is warmer and lighter, and this is shown by the tests of high-level observations referred to. It is proposed, now, to examine some of these tests.

One of these high-level tests is found in the temperature observations made at numerous low and high stations among the Alps on Oct. 1, 1889. These gave a temperature of about 4° C., on the average, lower than that of a three-years' normal, for all the stations ranging in altitude from a few hundred metres up to 3,100 metres. The argument in this case seems to be this: these temperatures are 4° below the three-years' normal; therefore the condensation theory is not a correct theory. In drawing this conclusion, no consideration whatever seems to have been given to the question of what the real requirements of the condensation theory are, and at least two false assumptions have to be made. In the first place, it is assumed that surface temperatures in a cyclone must be above those of the three-years' normal, whereas the conditions of a cyclone have nothing to do with a three-years' normal or any other normal. It is simply required that the temperature of the air in general, over an area of several hundred miles in diameter in the interior of a cyclone, shall be higher than that of the air generally around and outside of this area at the time of the occurrence of a cyclone, so that the heavier air around the cyclone shall force the interior air up, and cause an ascending current. And it is not necessary that even this condition be fulfilled at the earth's surface and at all altitudes, but simply through a certain range of altitude; and this may be, and generally is, up in the cloud regions far above the earth's surface. Say the air below, for a mile or two up, had a lower temperature than the surroundings, but that the necessary cyclone conditions existed above this: thus a vertical circulation and a whirl in the air would take place above, which would diminish the pressure below in the interior, and increase it around about, so that in this way the air below, although having a lower temperature than the surroundings, would be brought into the vertical circulation and cyclonic gyration both by the change in the pressure conditions and by the action of the air above upon it through friction. Of course, in such a case the motions of this lower air would be at the expense of the energy above, and so the whole cyclonic system of motion would not be of a violent character. This seems to have been the character of the cyclone under consideration. There was only a very moderate barometric depression over a large area, the minimum pressure being 752 millimetres, the winds were gentle, and there was some rain and snow. If, therefore, the observed temperatures had even been 4° lower than the surrounding temperatures at the same level at a distance of several hundred

miles in all directions, instead of 4° below the three-years' normal, no conclusive argument could be drawn from it. But it is well known that the temperature departures from the normals are often very great and of long continuance. The observed temperatures, therefore, on Oct. 1, may have been 4° C. below the normal, and yet 5° or more above the surrounding temperatures at a great distance; and unless these surrounding temperatures are observed all around at distances of several hundred miles, and at almost all altitudes, or at least up three or four miles, so that there can be a comparison of the interior and exterior temperatures all around at the same levels, no argument can be deduced against the condensation theory of cyclones. In fact, it is readily seen from this that the theory can neither be proved nor disproved in this way, nor by a comparison of the interior temperatures with normals.

It is well known that surface temperatures, on the average, in cyclones, are generally below the normal temperatures, especially in the summer season. This is due, as Dr. Hann explained several years ago, to the products of condensation falling from high and cold altitudes. In Dr. Hann's memoir it is stated that on the day and evening preceding Oct. 1 rain fell in the valleys, and snow on the mountains. Now, it must be noted here that all the observations in the Alps on Oct. 1, from which the interior temperature of the cyclone, up to an altitude of 3,100 metres, has been estimated, were surface temperatures, and consequently they were considerably lower than they otherwise would have been, from the effect of the recently fallen snow. They cannot, therefore, be assumed to be the same as open-air temperatures, even at a little distance on the same levels, and, much less, can they represent the general average of the great mass of air in the interior of the cyclone, of perhaps five or six hundred miles in diameter and up to a considerable altitude. Since this has been explained by Dr. Hann to be a mere surface effect, why now attempt to deduce an argument from it against the condensation theory?

Another false assumption in the preceding argument is, that cyclones occur in a normal state of the atmosphere; for, unless they do, it is not logical to compare the observed temperatures in a cyclone, in the average of many observations, with the normal, and, if found to be less, to infer that the temperatures in cyclones are less than in the surroundings generally. The normal state of the atmosphere is one of stability, whereas cyclones occur in an unstable state of the atmosphere, when the vertical temperature gradient is abnormally large, and so when the parts of the atmosphere on a level with the upper part of the cyclone has a lower temperature than usual in reference to the temperature of the lower part; or, in other words, the average temperatures of the air at considerable altitudes, taken when the air is in an unstable state, and so when the conditions are favorable for cyclones, must be less than the general average of all times. The observed temperatures, therefore, in a cyclone at high-level stations, may be lower on the average of many observations, and yet higher than the average surrounding temperatures at the times of the cyclones, for these are below the normal on the average at these times. The observed negative temperature departures from the normal on Oct. 1, 1889, at the high stations in the Alps, may have been due to the fact that the air at the high levels at the time, both in and around the cyclone, had a temperature considerably below the normal on account of the abnormal and unstable state of the atmosphere at the time: and so on this account the observed temperatures may have been lower than the normal, and yet above the temperature of the surroundings; and so the necessary conditions of a cyclone would still have been fulfilled. The negative temperature departures on Oct. 1 were mostly at the higher stations.

Another of the high-level tests is the observed high temperature at elevated stations at the times of long-continued high barometric pressures, and especially that of the high-pressure area of November, 1889, over the Alps, which continued fourteen days. It is well known that in such cases there is a body of abnormally heated air at some distance above the earth's surface, of a foehn-like character, arising from the downward current which must necessarily exist in the high-pressure area. When the high pressure occurs over a mountainous region, such as that of the Alps, with high-level stations of observation, such abnormally high temperatures are frequently observed. Because these temperatures are frequently above the normal temperature of the month, or season of the year, and also sometimes found to be higher than the temperatures observed in cyclones at corresponding seasons, it is attempted to base an argument upon this against the condensation theory of cyclones. But what connection there is between the observed premise and the conclusion the writer is entirely unable to see. Whatever may have been the peculiar circumstances under which the long-continued high pressure existed, even if the temperature within had been raised 20° above the normal, he cannot see how this would interfere with the existence of the necessary conditions of a cyclone by the condensation theory, say in America, at the same time; and especially, it could have nothing to do with their existence at other times; and these long-continued high-pressure areas are not of frequent occurrence. These conditions, as is well known, are simply that the vertical temperature gradient at the time of the cyclone shall be greater than usual, so as to induce the unstable state in which the temperature of the air in the ascending current in the interior of the cyclone shall be kept, by the latent heat given out in the condensation of the aqueous vapor, a little above that of the surroundings, and so its specific gravity a little less. There is no reason why such conditions could not exist in America, or even anywhere at a considerable distance, during the time even of the existence of this peculiar state of pressure and temperature conditions over the Alps. It has never been claimed that the conditions of a cyclone exist in these high-pressure areas, and it is well known that the tendency is for cyclones to pass around such areas. Will Professor Davis be so good as to throw some light upon this dark part of the argument, so that there may be a clear understanding of it, and a thorough discussion of it at some other time?

Since by the new hypothesis the energy of cyclones is in the upper poleward-moving current of high latitudes, where the pressure gradients between the equator and the pole are steep, Professor Davis seems to realize the difficulty in applying this energy to the cyclones which originate below the tropics near the equator. He therefore thinks that a little of Espy's "steam-power" may be necessary at first until they get a start. During this time the energy is in the latent heat of the aqueous vapor, by which, set free in condensation, the ascending air is kept warmer and lighter than the surrounding air, and the gyration depends upon the deflecting tendency of the earth's rotation. But being once under way, this is changed, and the ascending air in the cyclone is colder and heavier than the surrounding air. At first it is compared with a train of cars, driven by its own store of energy; but after a time the engine becomes simply a dummy, and the train is driven by an external motor. But this is not strictly a happy comparison; for, instead of the engine becoming a dummy, it becomes a reversed engine. Before the change the ascending air was lighter than the surrounding air, and so the tendency was for it to rise, and for the cyclone to be continued; but after the change, when the ascending air was heavier, the tendency was just the reverse. Nevertheless the cyclone machine, after the reversal of the engine, seems to run on, all the same, and even with increased energy. Davis says the external motor is the general circulation of the winds. But why not say electricity? This would be just as satisfactory. It must be remembered here that the question is not with regard to the progressive motion of the cyclone, for there is no difficulty here, but with regard to the force which causes the heavier air to rise, and which maintains the gyratory motion. The mere assertion that these arise from the general circulation cannot be accepted in a scientific argument. Let it be proved, from true physical and mechanical principles, that there is a force arising from the general circulation which acts on all sides of the cyclone so as to force the heavier air up, and also acts as a couple in keeping up the gyration, or at least make it appear that this is probable; for unfortunately there are many things in science which cannot be absolutely proved, but only be made to appear reasonable and probable.

From what has been stated, it seems, that, of two rival theories, the one is applicable to the cyclone in the first part of its course, and the other in the latter part. But how is it with regard to tornadoes? Does the powerful ascent of air in these arise

from the unstable state in which the air in ascending becomes lighter than the surrounding air as it rises, or is it heavier in this case also, and has to be pushed up, as in the case of cyclones, by some external centripetal force on all sides at the base, originating in the steep gradients of the upper part of the atmosphere in high latitudes? for it must be remembered that by the new theory cyclones originate here. If the former, as is admitted in the case of tropical cyclones, then it is evident that the unstable state of the air can take place; and, if so, why can it not exist in the case of cyclones, in America at least, notwithstanding that the temperature of the air over the Alps, under some peculiar circumstances, sometimes becomes greater than the normal temperature, and than the mere surface temperatures on the Alps in a cyclone immediately after a recent fall of snow? As Professor Davis is the first one in America to adopt the new theory, if it can be so called, he must be regarded as its exponent here, and so feel bound to answer all pertinent questions and to give all necessary explanations; for it is to be presumed, that, during the two or three weeks of the transition period, he thoroughly studied it in all its bearings and applications. WM. FERREL.

Martinsburg, W.Va., Dec. 12.

BOOK-REVIEWS.

Electricity in Daily Life. New York, Scribner. 8°. $3.

FROM whatever point of view this book may be regarded, the effect cannot fail to be satisfactory. The expert electrician will find in it a succinct yet comprehensive survey of the whole field of electrical progress, from the earliest experiments down to the latest applications, with invaluable data made readily available by a copious index; the student will find it a guide to the particular branch of the science he may be specially interested in; and the general reader will find in it all that he may desire in the way of general information upon a subject comparatively new, fascinating in itself, and the results of which he is forced into contact with at almost every turn.

The volume is the joint production of Cyrus F. Brackett, Franklin L. Pope, Joseph Wetzler, Professor Morton, Charles L. Buckingham, Herbert L. Webb, W. S. Hughes, John Millis, A. E. Kennelly, and M. Allen Starr, M.D., each an authority on the special branch of which he treats. The publishers have done their part handsomely, the illustrations and typography being excellent, and the general make-up and finish of the volume setting off to the best advantage the work of its several writers. Even in the embellishment of the cover the artists have drawn their inspiration from the text, the ornamentation being worked up from fragments of telegraphic messages as recorded by the Morse instrument and the siphon recorder, and as prepared on a perforated ribbon for transmission by the Wheatstone instrument, together with artistic groupings of incandescent lamps and cables in outline and section.

In the opening chapter Mr. C. F. Brackett, professor of physics in Princeton College, briefly surveys the whole field of electrical science, tracing its history, explaining its technicalities, and making clear the principles involved in the use of conductors and insulators, and in the construction and operation of galvanometers, electro-magnets, dynamos and motors, transformers, and storage-batteries. In the second chapter Mr. Pope, past president of the American Institute of Electrical Engineers, treats of the electric motor and its applications, giving some account of every thing of importance in that department, beginning with Faraday's first motor, touching on the experiments of Ampère and Arago, Professors Henry and Jacobi, Dr. Page, and others, and going into greater detail on the evolution of the dynamos and motors of to-day. Joseph Wetzler of the *Electrical Engineer* makes an interesting chapter on the electric railway, explaining the three methods of applying the current to the railway motor,—the overhead-wire system, the underground-conduit system, and the storage-battery system; besides which he recounts the many advantages claimed for electrical over other roads, shows the comparative cost of construction, gives some electric-railway statistics for the United States, and points out the possibilities of the future in that direction. Electricity in lighting is ably treated by President Morton of the Stevens Institute, who touches all the salient points of that application of electrical energy, from Sir Humphry Davy's first electric light in 1808, down to the present time, when, as he states on p. 123, the daily output of incandescent electric lamps in this country alone is fifteen thousand, or at the rate of four million and a half lamps a year.

In the succeeding chapters the electric telegraph is treated of by Charles L. Buckingham of the Western Union Telegraph Company; the making and laying of submarine and other cables, by Herbert Laws Webb of the Metropolitan Telephone Company; electricity in naval and land warfare, by Lieut. Hughes of the navy, and Lieut. Millis of the army, respectively; electricity in the household, by Electrician Kennelly of Edison's laboratory; and electricity in relation to the human body, by M. Allen Starr, M.D., professor of nervous diseases in the College of Physicians and Surgeons of New York.

AMONG THE PUBLISHERS.

THE Christmas number of the American edition of the *Illustrated London News* contains three well-executed colored plates which have become a feature of a few of the largest weekly illustrated papers at the holiday season.

—Messrs. E. & F. N. Spon announce the following new books: "Electric Bell Construction: a Treatise on the Construction of Electric Bells, Indicators, and Similar Apparatus," by F. C. Allsop; "The Steam-Engine considered as a Thermo-dynamic Engine" (second edition, revised and enlarged), by J. H. Cotterill; "Smokeless Powder and its Influence on Gun Construction," by J. A. Longridge; "Modern Cotton Spinning Machinery, its Principles and Construction," by J. Nasmith; and *The Journal of the Iron and Steel Institute*, No. 1, 1890.

—One of the most remarkable lists of famous contributors ever brought together in a single number of a magazine will be presented in the January issue of *The Ladies' Home Journal* of Philadelphia. The authors in that number will include Henry M. Stanley, Dr. Oliver Wendell Holmes, Ex-President Hayes, Hon. John Wanamaker, Joseph Jefferson, Hon. Hannibal Hamlin, Madame Albani, James Whitcomb Riley, Gen. Lew Wallace, George W. Childs, Dr. T. De Witt Talmage, Mrs. A. D. T. Whitney, Robert J. Burdette, Edward Bellamy, Will Carleton, Charles A. Dana, Sarah Orne Jewett, George W. Cable, Julian Hawthorne, Mrs. Lyman Abbott, Mrs. Margaret Bottome, and nearly twenty others.

—Messrs. Ginn & Co. announce to be published in February "Mechanism and Personality," by Francis A. Shoup, D.D., professor of analytical physics, University of the South. This book is an outline of philosophy in the light of the latest scientific research. It deals candidly and simply with the burning questions of the day, the object being to help the general reader and students of philosophy find their way to something like definite standing ground among the uncertainties of science and metaphysics. It begins with physiological psychology, treats of the development of the several modes of personality, passes on into metaphysics, and ends in ethics, following, in a general way, the thought of Lotze. It is strictly in line with the remark of Professor Huxley, that the reconciliation of physics and metaphysics lies in the acknowledgment of faults upon both sides, in the confession by physics that all the phenomena of nature are, in their ultimate analysis, known to us only as facts of consciousness, in the admission by metaphysics that the facts of consciousness are practically interpretable only by the methods and the formulæ of physics.

—The late Professor Austin Phelps had just previous to his death completed preparations for a new volume somewhat similar in character to his "My Study" and "My Portfolio." It is entitled "My Note Book," and is to be issued immediately by the Scribners. It contains a number of the author's briefer essays, with some detached thoughts, somewhat of the nature of table-talk. Professor A. L. Perry of Williams College, the well-known author of works on political economy, has just completed a new work entitled "Principles of Political Economy," which will also be