better than a tissue of falsehood. Some of us who have a higher opinion of Locke may think that Professor Dewey has not always presented the English philosopher's views correctly, though we are sure he has not done him any intentional injustice. He shows, too, a strong desire to connect the views of Leibniz with his own, and, in trying to do this, sometimes gives an interpretation that seems a little strained. But, if due allowance is made for the author's philosophical standpoint, the reader will obtain from this book a pretty good idea of most of Leibniz's doctrines in their relation to those of Locke on the one hand, and of the later German thinkers on the other. This series of expositions will, we think, be very useful in giving to purely English readers a more intimate acquaintance with the products of German thought.

First French Course. By C. A. CHARDENAL. Boston, Allyn & Bacon. 16°.

AFTER a brief introduction on the phonetics of French, the author proceeds at once to give a systematic series of exercises on the elements and syntax of the language, keeping throughout in view the practical end to teach the pupil thoroughly the use of the French language. The French-English and English-French exercises are well selected, and the lessons so arranged that the most general and most fundamental laws of the French language are given first, after which details are taught. In an appendix a tabulated review of forms and rules is given, and the book concludes with a brief series of extracts, to which a vocabulary is added.

Teachers' Manual Series. Nos. 7, 8, 9, 10. New York and Chicago, E. L. Kellogg & Co. 15 cents each.

THE last four numbers of this series, which have recently been issued, contain material that will prove very suggestive to teachers. No. 7 is a reprint of Bishop Huntington's memorable address on 'Unconscious Teaching,' that was delivered many years ago, and at that time excited great interest. He justly emphasizes the fact that the teacher's character and behavior influence in a great degree the development of the pupil, and that the most careful attention should be paid to this fact. No. 8, written by James L. Hughes, is entitled 'How to keep Order;' and in this the author endeavors to show that keeping order is a necessary means of training the character of the pupil, as order teaches that conscious deviation from the right, and that conscious violation of any rule, is a wrong, no matter how important or unimportant the rule be. The latter half of the book is occupied by a discussion of mistakes of the teacher which promote disorder, and thus the best instruction as to how to keep order is given. In No. 9, by Rev. R. H. Quick, 'How to train the Memory,' the author gives the results of his experience, which are, that attention, arrangement, and association are the proper means of training the memory. No. 10 is a description of 'Froebel's Kindergarten Gifts,' by H. Hoffmann. These gifts are well known, and the author sets forth very clearly the best methods of using them for training the child's senses and power of observation.

Francis Bacon. By JOHN NICHOL. Part I. Bacon's Life. Philadelphia, Lippincott. 16°. $1.25.

THE present sketch of Bacon's life belongs to the series of Philosophical Classics, edited by William Knight. The author has endeavored to record impartially the events which led so many writers to condemn the character of Bacon. He accepts neither the views held by Spedding, who is bent on believing the best, nor those of Abbott, who does not find any thing to commend in Bacon's career. His views agree with those propounded by Gardiner. The author rightly emphasizes the necessity of carefully considering the circumstances of the age in which Bacon lived, in forming an opinion of his actions. He dwells upon the fact that during his life he took the unpopular side of several questions, and thus proves that he was not so mean as to sacrifice every thing to the promotion of his own interest. The author's treatment of the trial of Essex is of special interest, and we think he has well succeeded in explaining how Bacon came to take a prominent part in those events, and that his actions were in accordance with views expressed in his letters to Essex. On the other hand, the author does not try to excuse his great faults and weaknesses. In a clear introduction, Bacon's age and surroundings are described, and next his life until the death of Elizabeth is treated. His relation to James, his gradual rise and sudden downfall, form the following chapters of the book, which concludes with a sketch of his last years. The second volume will contain a *résumé* of his philosophy.

How to teach Manners in the School-room. By Mrs. JULIA M. DEWEY. (The Reading Circle Library, No. 7.) New York and Chicago, E. L. Kellogg & Co. 16°.

WE fully agree with the authoress of the present little volume, that the teacher ought to be careful to teach the pupils good manners, but we disagree in every other respect with her views. It seems that her prime object in teaching good manners is to make children contemplate in all their actions, "What will people say if they see me doing this or that?" — a principle that can hardly be considered as improving the moral standard of the pupils who are subjected to it. It is true, as the authoress says in the introduction, that true courtesy implies strict honor, self-possession, forbearance, and refined feeling; but these qualities will hardly be developed by such teaching as forms the greater part of Mrs. Dewey's suggestions. We cannot agree with principles similar to the following, which has been taken at random from the book (p. 55): "Why should our behavior on the street be good? Because many people see us there, and notice if it is not good."

A Quiz Manual of the Theory and Practice of Teaching. By ALBERT P. SOUTHWICK. New York and Chicago, E. L. Kellogg & Co. 16°.

IN a long series of questions the author places before the teacher many important problems regarding the method of teaching. The first part of the book contains questions, while the second contains answers to these questions. The subject is divided into numerous divisions, according to the subject of teaching; and a study of the work will prove a valuable incentive to improving the methods applied in teaching, as it suggests many ideas to the teacher, a great number of which he will accept, and use for the benefit of his pupils. In a general introduction the author treats of the general theory of education. This is followed by notes on the theory of teaching reading, arithmetic, natural history, language and grammar, composition, rhetoric, etymology, literature, and so on through the whole range of subjects taught in our schools. As an appendix, some notes on manual training are given.

NOTES AND NEWS.

THE editor and publisher of the *International Ethnographical Archive* have issued, on the occasion of the Seventh International Congress of Americanists, a supplement to their journal, entitled 'Contributions to the Ethnology of America.' This interesting pamphlet contains extracts from the journal, and one of the beautiful plates that are to accompany Stoll's account of the ethnology of Guatemala. The pamphlet contains one American and four German contributions. The journal continues to be one of the most magnificent scientific periodicals, and it bids fair to become one of the principal sources of information for the study of ethnology, more particularly for that of human inventions.

— At a meeting of the council of the Anthropological Society of Washington it was voted to continue the publication of the quarterly journal, *The American Anthropologist.* This journal publishes in full the most important papers read at the meetings of the society.

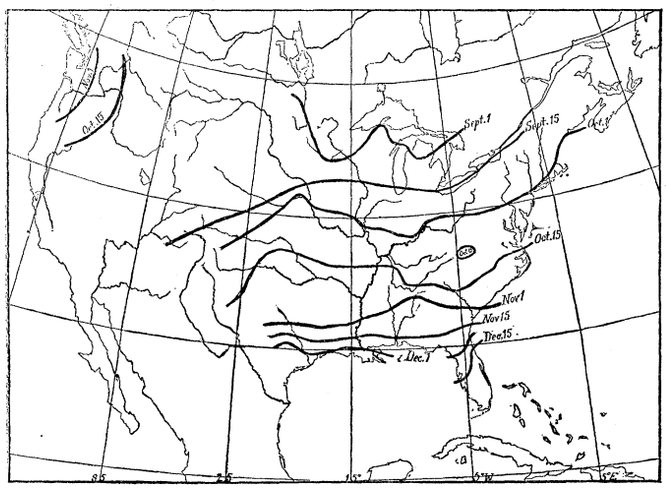
— In the publication in *Science* a few weeks ago (xii. No. 295) of the classification of soils, which formed a part of the annual report of Major Powell, director of the United States Geological Survey, one class was inadvertently omitted, — that of the playa soils; i.e., those formed by the wash of rains and the evaporation of intermittent bodies of water that have no overflow.

— The trustees of the Hoagland Laboratory, Brooklyn, announce the completion of the laboratory, and its equipment for work. Special facilities are offered to those who desire to prosecute original research. For this purpose private laboratories have been provided, and arrangements are now being made for the purchase of a library which shall contain all the literature necessary for reference in the departments of bacteriology, physiology, and pathology.

Owing to the absence in the South of Dr. George M. Sternberg, the director, in the further prosecution of his investigations into the cause of yellow-fever under orders from the President of the United States, the course of lectures on bacteriology, already announced, will be postponed until his return. The trustees further announce that the services of George T. Kemp, Ph.D., Johns Hopkins University, have been obtained as associate in bacteriology and physiology, and that with his assistance, and under the direction of Dr. Sternberg, practical instruction in bacteriology will be given during the winter and spring.

— Capt. C. E. Dutton has been placed in charge of the hydrographic work of the investigation of the problem of reclaiming the arid lands of the West. He will divide the territory into districts, but work will be done in only a few of them under the present appropriation. Those selected in which to begin are the basins of the South Platte, Arkansas, Colorado, Gila, and Humboldt Rivers. The parties will be sent into the field immediately.

— The *Monthly Weather Review* for July contains an interesting map showing the average date of first killing frost in the United States. A reduction of the map has been reproduced here. The chart has been prepared solely from observations made at voluntary observers' stations. The data from the regular signal-service stations were not incorporated, because it is believed that observations as to the occurrence of frost are made in the country with greater opportunities for accuracy as to earliest date and extent of damage



than in large cities, where signal-service stations are generally located. In the preparation of the chart, diligent effort has been made to secure reliable information as to killing frosts only, especially those frosts which were injurious to vegetables and other crops. It is probable that in some cases the first frost reported may have been 'light' instead of 'killing.' It was found that killing frost occurred throughout the year along the northern boundary of the United States north of Dakota and Minnesota. In California killing frosts are very unusual in the extreme east and north-east portions: throughout the western portion of the State, light frosts in winter, appearing about the middle of December and continuing not later than February, are not unusual, but rarely injure even delicate plants. The observations from which deductions have been made vary in length of records from two to forty-nine years, thirty-six stations having records of fifteen years or more. The total number of stations involved in the work is four hundred and thirty-two. It appears from the tabulated statement that the average error of the earliest date will be about eighteen days. This necessitates the continuation of the observations over a very long period in order to reach a probable error not exceeding a few days, and it may therefore be assumed that a final construction will show the lines to run somewhat differently from those represented here. The collation and discussion of these observations are of great importance to the farmer.

— The Western Society of Naturalists will hold its first annual meeting in the buildings of the Illinois State University at Champaign, Ill., Wednesday and Thursday, Oct. 24 and 25, 1888. The president of the society, Dr. Stephen A Forbes, will deliver the presidential address on Wednesday evening. Discussions on the methods of teaching natural history will form one of the principal features of the programme of the meeting. Prof. J. S. Kingsley of Bloomington, Ind., is secretary of the society.

— In the 'Report of the Kentucky Geological Survey for 1888,' Dr. A. H. Loughbridge gives a full account of the geological and economic features of the Jackson Purchase Region. After a description of the topography and geology, the author discusses minerals and water-supply very fully, and gives detailed statements of the agricultural resources. This part of the book is of special value; and the author's descriptions of the physiognomy of the uplands and lowlands, and their respective vegetation, is of great practical and scientific interest. In a short chapter some of the most interesting antiquities of this region are described. The second part of the volume contains descriptions of the countries forming the Jackson Purchase. The results of a deep boring at Paducah are very important, as they prove the existence of a great fault in the paleozoic strata of that region. The volume is accompanied by three good maps, showing the geology and elevations, the agricultural features, and deposition of gravel-beds. The topographic maps of Kentucky made by the Geological Survey under the direction of J. R. Hoeing are among the best made by any of the State surveys.

— D. Charnay, during his recent journeys in Central America, explored a certain group of ruins which he claims to have discovered, and which he named 'Lorillard City.' According to a communication of Dr. G. Brühl, these ruins were discovered in 1881 by Professor Rockstroh, who requested Maudslay to make a survey. According to Rockstroh, their proper name is 'Menché tenamit,' the city of Menché, the latter word being the name of a chief.

— The long series of systematical meteorological observations made in Bavaria have yielded many important results. Recently C. Lang has examined the records of the variations of underground water in their relation to precipitation, and to fires caused by lightning in the 'German Meteorological Annual for 1887.' He finds that the height of the water found under ground varies according to the amount of precipitation. This influence is somewhat obscured by the fact that the increase corresponding to a certain increase of precipitation is greater in the spring and autumn than it is in summer. It is generally assumed that the danger of damage done by lightning has steadily increased, but Lang shows that this view is not correct. When he plotted the number of recorded fires caused by lightning, together with that of the variation of underground water, he found that the maximum of one curve exactly coincided with the minimum of the other. This fact is easily explained. Damp ground is a good conductor, and facilitates the gradual discharge of electricity, while dry soil favors sudden, violent discharges. Therefore during periods of increasing underground water danger of accidents caused by lightning decreases.

— In *The American Magazine* for October, Dr. William F. Hutchinson furnishes another of his charming South American papers, describing in this issue the Orinoco River; Helen Strong Thompson contributes an illustrated paper on the 'Sacred Quarry in the Great Red Pipestone Country;' and Florence A. Davidson has an illustrated paper on 'Pioneer District Schools.' In addition to the literary features, are a series of papers on practical questions of the day: a few of the many legitimate ways in which 'the surplus' can be utilized are shown by M. W. Hazen; Mr. Hazen makes a plea for a national training-school; Mr. M. M. Estee has a paper showing the effect of free trade on Pacific coast industries; Mrs. J. Ellen Foster, chairman of the Women's National Republican Committee, argues that "prohibition is not a national issue;" and Mr. Enoch Ensley of Tennessee gives 'A Southerner's National View of Protection.'——Roberts Brothers have just ready in their Famous Women Series 'Elizabeth Barrett Browning,' by John H. Ingram, which is the first biography published of this author. ——Professor Bryce's book on the United States, which he hopes to have ready in November, the London correspondent of the New York *Times* thinks, "will probably rank high among the most im-

portant studies of the American Republic by foreign hands. It examines very carefully our whole governmental structure, Federal and State, and the social economy and political foundations on which the edifice rests."——*The Kindergarten*, Chicago, is fulfilling its claims to give to mothers of young children methods of amusement combined with instruction. 'Nursery Occupations' and 'Typical Lessons,' in the October issue, give practical hints that alone would pay the price of subscription.——*The English Illustrated Magazine*, published by Macmillan & Co., is to be enlarged to seventy pages, the price remaining the same (15 cents).——Edward Meeks, Philadelphia, has in preparation a second edition of Roper's 'Handbook of Modern Steam Fire-Engines.'——'Gardner's School Buildings' (E. L. Kellogg & Co., 25 Clinton Place, New York) will be out this week; also (by same publishers) No. 11 of Teacher's Manual Series, entitled 'The Argument for Manual Training,' by Dr. Nicholas Murray Butler.——In the *Overland Monthly* for October is a paper on fog and fog-signals on the coast, by Mr. F. L. Clarke, who developed some facts of importance to seafarers on 'areas of inaudibility' of signals.——The *New York World* has in preparation 'The World Almanac for 1889.'

LETTERS TO THE EDITOR.

Kiessling's Twilight Phenomena.[1]

SIMULTANEOUSLY with the publication of the 'Royal Society's Report upon the Krakatoa Disaster and its Results,' comes the most important German contribution to that section of the subject treating of the abnormal glows, — a subject which occupies two-thirds of the 'Royal Society Report,' of nearly five hundred pages. The bulk of the contained matter is nearly equal in the two books; but it is drawn from such diverse sources, and the views propounded in the theoretical parts are so different, that only a small proportion of the whole appears in duplicate. The beautiful colored plates in each curiously support the main theory of the book, their fidelity to nature indicating the probability that the diffractive effects advocated by Professor Kiessling and the reflection upheld by the 'Royal Society Report,' each have a share in the final result.

The historical introduction deals with the study of twilight phenomena: Von Bezold's admirable summary (the work is dedicated to the distinguished director of the Berlin Royal Meteorological Institute) is given in detail. The work is then divided into two parts, four sections treating mainly of observations, and two of experiment and conclusions.

Section I. gives a detailed list of glows in forty-four years, noting any coincidences with earthquakes and eruptions. The three opening dates are 989, 1117, and 1554. There are at least seven earthquake coincidences, the associated glows being strictly local. The 'Royal Society Report's' list is of the one hundred and fifty-five chief volcanic eruptions since 1500, and glows (thirty-one in all), in parallel columns. Thirty of the latter coincide with eruption years, which number is increased nearly one-half by Kiessling's tables. Most worthy of notice is the remarkable completeness of detail concerning the European glows after the eruption of Graham's Island, near Sicily, which was also submarine.

Section II. largely occupies the ground of the 'Royal Society Report,' Part IV. Sect. II., both being lists of special appearances since Aug. 26, 1888, approaching nine hundred each in number. The former, however, continue on to the close in 1886, while the latter are chiefly confined to 1883. The immense amount of valuable records obtained from the ships' logs of the two countries is very striking. It will be a great pity if similar work is not performed in connection with the merchant marine of North America. The North American land-returns have been copiously drawn upon, especially by Professor Kiessling, thanks to the *Monthly Weather Review;* but here, again, there must be a rich store of private records awaiting collation.

Four excellent maps, for Aug. 26 to Sept. 30, for October, November, and December, 1883, contain localities, with dates, for the glows, by which their progress can be easily traced. With the same object in view, the records in the list, up to the close of November, are arranged in four parallel columns, according to longitude.

Professor Kiessling throughout treats the bright 'glory' round the sun, known as 'Bishop's ring,' as the most important phase of the glows. Section III. describes its appearance, spread, and changes, the explanation forming an important portion of the second part. His already published and generally accepted explanation of it by diffraction is there supported by a most interesting series of experiments. The equally unique appearance of the counter-bow, at the point opposite the sun directly after sunset, he thinks is to be regarded as of similar origin. This was noted in Europe almost simultaneously with the glows: on Nov. 27, 1883, and Dec. 15 and 20, at Sunderland, by Mr. T. W. Backhouse; Dec. 22, 1883 (not 1884 as misprinted in 'Warner's Prize Essays,' p. 40), by L. Richardson at Newcastle; on Dec. 29 to Jan. 3, by Herr Jesse, Steglitz; and on Jan. 12, 1884, by the writer. Measurements by the first and last prove identical with those of Bishop's ring. As most people chiefly regard the rising or setting sun, the anti-solar phases escape observation. Hence all observations of the counter-bow would specially repay collation.

In Section IV. Professor Kiessling, dealing with the outspread of the glows, shows that the originating cloud-haze must have consisted at first of distinct streams, the probable courses of some of which he indicates. The velocities of outflow he fixes at between sixty-seven and eighty-nine miles per hour, as against seventy to eighty-four, the extreme values deduced in the 'Royal Society Report.' Both conclude that the height, for Europe, was about twelve miles.

The artificial formation by diffraction in dust, condensed vapors, etc., forms the subject of Section V., which opens the second part, and his simple but effective experiments deserve wide repetition and development. Incidentally capital illustrations are given of cloud-formation. His previous publications upon this subject are considerably expanded, and fresh applications made. As already stated, they form the main basis of his contention for diffraction as the paramount cause of all the phases of the glows, admitting, however, reflection as a subsidiary agent. His method of treating the glow-colors concentric to the sun apart from the glow-colors parallel to the horizon, upon which, during the twilight, the former are superposed, greatly simplifies their elucidation. Probably his arguments as regards the former class will be regarded as the more convincing, especially as diffraction so obviously explains Bishop's ring. As to the horizontal layers, no doubt diffraction plays a considerable part, but as certainly Messrs. Russell and Archibald, in the 'Royal Society Report,' rightly uphold reflection as the main factor. In this they are supported by Professor Ricco. Of the various objections brought forward by the latter, two may be noted. Professor Kiessling accepts the interposition of clouds or mountain-peaks as the cause of the dark bars often dividing the first glow; but this could hardly apply if the main light is due to diffraction. Again: with the others he considers the second glow to be a reflection by the haze-layer of the first. Such a surface, then, would surely reflect direct sunlight as well.

To some of the objections, however, the present work indicates Professor Kiessling's probable reply; as, the possibility of the dust-haze so quickly assuming the homogeneity required by his theory, and the occasional appearance of day and twilight glows independently. We may also notice that he ascribes the haze-cloud chiefly to condensation products, while the 'Royal Society Report' favors mirror-like surfaces from microscopic pumiceous bubbles, — conditions in each case in harmony with the adopted theory. The discussion of tropical sunsets at Loango and in South America provides Professor Kiessling with several strong points, for in these instances he is able to show a remarkable agreement between observation and experiment. The excellent colored sketches by Dr. Pechnel-Loesche are here a material assistance.

The general arrangement of this valuable work is well adapted for reference. Only one misprint of any moment has been noted: on p. 55, § 44, "110°O" should apparently be "120°O," or the "Middle Dog" Lighthouse lies some distance inland in China. The printing is most exquisitely clear, which is no small boon, for the title is not the only word, which, to eyes accustomed chiefly to English words, are almost appallingly long.

J. EDMUND CLARK.

[1] Untersuchungen über Dämmerungserscheinungen, zur Erklärung der nach dem Krakatau-ausbruch beobachteten atmosphärischoptischen Störung, von J. Kiessling. Hamburg and Leipzig, Leopold Voss, 1888.