events in many nations, and in many different departments of human activity; and in this respect it has eminent advantages over most other chronological works.

We should add that both the works here noticed are provided with elaborate indexes, which greatly enhance their usefulness.

Physical and Industrial Training of Criminals. By HAMILTON D. WEY. (Monographs of the Industrial Education Association, Vol. I. No. 3.) New York, Industr. Educ. Assoc.

AMONG the many innovations in penal science introduced at the New York State Reformatory, there is perhaps none with so great an interest to the scientist and the educator as the experiment of reaching the unresponsive intellects of refractory and stupid criminals through their muscles. This experiment, noticed in these columns some time ago, carried with it the proof of its success. It was due to the author of this pamphlet, Dr. H. D. Wey, physician to the reformatory at Elmira. In the present pamphlet Dr. Wey rehearses this experiment, and surrounds it with a valuable analysis of the criminal character, — the only sound basis of true and lasting reform. He here portrays the deviation of the psychophysical organism of the criminal from that of his more fortunate fellowmen, and deduces from it the sound conclusion that the only method of restoring the criminal to a worthy place in the community is to re-organize that fundamental re-action between an individual and his environment that makes crime tempting. For this purpose one must educate the criminal, and that not only in the usual sense of literary instruction, but with the additional meaning of re-forming the habits of his body and mind; and when, in especially dull and sluggish men, it was found that a direct appeal to the will and the intellect was unsatisfactory, the logical step was taken of treating the muscles, the physiological organs of the will: for modern physiology tells us that in muscular exercise we develop not only the muscle, but, more important, the nerve-cell that controls its action; we are building brain and power alike. Such a purely physical training brought the average marks of a dozen most unpromising men for purely intellectual studies from 46 per cent to 71 per cent. The effect is immediate, and, if the treatment is sufficiently prolonged, is lasting.

The second portion of the pamphlet is devoted to the industrial system at Elmira. Idleness is the source of a good share of the world's misery; and every moment of a prisoner's life ought to be systematically occupied. Moreover, the work should be made as interesting as possible, not assume the air of a task imposed as a process of torture. Add to this, that the industrial training must be such as to fit the liberated man to earn his livelihood, and at once (for it is immediately after liberation that the greatest danger exists), and it seems to follow as a necessary deduction that the reformatory workshop must approximate to the real hives of production in the surrounding world. In addition, the educational value of manual training is to be made a special point. This is what the reformatory at Elmira is attempting to do; and the success of the enterprise, after it is properly understood both by the men themselves and by the public, seems beyond question. This monograph, it is hoped, will be the means of extending the sound teachings and practices in vogue at the New York Reformatory.

Negro Myths from the Georgia Coast. By CHARLES C. JONES, Jun. Boston, Houghton, Mifflin, & Co. 12°.

THE title of this book is not quite correct, for the tales told in it are not myths, but fables. Some such stories had already been collected by other writers; but Mr. Jones has found in the swamp region of Georgia and the Carolinas a comparatively unknown field, in which he has gleaned much that is new. The stories are told in the *patois* of the negroes themselves; which seems to us a mistake, as they are not only harder to read, but less interesting, than they would be in correct English. Moreover, many of the linguistic peculiarities are mere mispronunciations, while others are contractions such as we all use in conversation, and only a few are real dialectical characteristics.

The characters in the fables are mostly animals, the rabbit being the favorite, while the wolf and the alligator are frequently introduced. The stories show not a little ingenuity and humor, and some of them are quite entertaining. One of the best is that about the monkey who didn't know what trouble was, and who went to the Devil to find out. The Devil gave him a closed bag, and told him to go out into the midst of a large field near by, and then open the bag, and he would find an answer to his inquiry. The monkey obeyed, and when he had reached the middle of the field opened the bag, when out jumped a bull-dog. The monkey started and ran, and the dog ran after him until they reached a wood, when the monkey succeeded in climbing a tree, but not without the loss of his tail. The dog staid by the tree and watched till he was hungry, and had to go off in search of food. Then the monkey came down and went home to his wife, telling her that he had had enough of trouble. The moral is obvious: never search for trouble, but wait till it comes to you.

Besides the fables, a few other stories are given, the most important being those relating to the negro belief in spirits, fetiches, and charms. These show, what was already known from other sources, that the Southern negroes are hardly less superstitious in some respects than their African ancestors, and that a great deal will have to be done to raise them to the level of civilization.

Lessons in Geometry, for the Use of Beginners. By G. A. HILL, A.M. Boston, Ginn. 12°.

THIS admirable little book is a grammar-school geometry, and as such lies midway between the courses in geometrical drawing followed in some of our city schools, and a course in ordinary demonstrative geometry. It is intended to follow the study of arithmetic. The method followed is in great part that of question and answer. Each new idea is put in very simple language. Definitions are carefully explained, and in many cases illustrated by cuts. In short, every difficulty which the pupil is likely to meet with seems to have been anticipated. The few demonstrations that are given are all based on the method of equal triangles. The most important feature of the book is the large number of exercises. Of these, those which involve the metric system are separated from the others, and can be omitted if desired. A cheap case of drawing-instruments accompanies the book. The book is adapted to the needs of every grammar-school in the country, and could with advantage be used in all of them. For practical knowledge gained, few branches would better repay the time devoted to the study of this book. It is printed in the elegant style in which the publishers are accustomed to issue their works. G. W. SAWIN.

Trigonometry for Beginners. By Rev. J. B. LOCK, M.A. New York, Macmillan, 1886. 16°. 60 cents.

THIS little book is an abridgment of the 'Elementary Trigonometry' by the same author. Very little knowledge of geometry is assumed. Some points, such as the circular measure of an angle, the fact that the ratios depend only on the magnitude of the angle, and the explanation of tables, are much better put than it is customary to find them. The book also contains a very large number (about seven hundred and fifty) of exercises, which are much better chosen than those in the trigonometries in common use, those in formula-work being particularly good. These exercises, together with the low price of the book, make it especially valuable as a secondary treatise for teachers who are using another text-book. The book is too small for the amount it contains, and as a consequence its pages are much crowded.

Geometry in Space. By R. C. J. NIXON, M.A. Oxford, Clarendon Pr. 12°. (New York, Macmillan, 90 cents.)

THIS is a brief treatment of solid geometry, modelled on that of Euclid. A short introduction on perspective is prefixed, however, and some modern ideas are introduced, such as anharmonic ratio, similitude, inversion, and poles and polars, these subjects being very briefly treated. The number of exercises is also large. A chapter on the geometrical theory of perspective is appended. The book is well printed, but would be much improved if the type were larger.

NOTES AND NEWS.

THE third part of the annual report of the Geological Survey of Pennsylvania has just been issued. It treats of the operations in the anthracite-coal region, and is accompanied by an atlas, embracing the coal-region, and based upon the triangulation of the United

States Coast Survey. The report contains, besides the results of geological surveys, valuable statistics of the production and shipment of anthracite coal for 1885 and 1886. At the same time have been issued the atlas-sheets embracing Bucks and Montgomery Counties.

— Ch. Montigny was led by an occasional observation to the study of the scintillations of stars and their relations to atmospheric disturbances. On Dec. 7, 1886, he noticed, during his observations at Brussels, that the scintillations of the stars suddenly increased, although the meteorological instruments showed no change whatever. A few hours later, however, the barometer began to sink, and a gale arose which lasted for two days. This led the observer to the conclusion that the high strata of the atmosphere were disturbed hours before the instruments were in any way affected. A thorough investigation of observations showed that this was of frequent occurrence, and that the scintillations also continued after the storm had passed. Besides this, they were the stronger the fiercer the storms raged, and the nearer the minimum passed the place of observation.

— The 'Second Annual Report of the Meteorological Institute of Roumania for the Year 1886' is a valuable contribution to our knowledge of the climate of south-eastern Europe. It contains only the results of observations made at Bucharest, although a considerable number of stations of the second order have collected meteorological data, the appropriations being insufficient for their publication. The director of the institute, Prof. Stefan C. Hepitos, well deserves the thanks of meteorologists for the valuable work he has done, the amount of which is astonishing, considering that all has been done with an annual appropriation of less than $2,400. He sets forth an interesting plan of increasing the number of stations and of a thorough study of the climatic elements of Roumania, which, if carried out, would give us the much-desired data on the meteorology of that region.

— The Prince of Monaco has published several preliminary papers on the results of the cruises of his sailing yacht 'L'Hirondelle.' In 1885 her course was from Lorient to Cape Finisterre and the Azores, whence an excursion was made north-westward as far as 44° north latitude. Having returned to the Azores, she sailed north-north-west as far as 50° north latitude, and then returned to Lorient. In 1886 the prince sailed westward from Cape Finisterre until he reached the twentieth degree west from Paris, which he followed to 50° north latitude. The special object of this cruise being to ascertain the connection of the currents of the Bay of Biscay with those of the Atlantic, a great number of floats were immersed on this route, part of which were found again, thus furnishing valuable material regarding the currents of the North Atlantic. The last cruise was even more extended than the first ones. Starting from the Azores, the prince followed a straight line to Newfoundland, thus crossing the Gulf Stream drift. On this line 931 floats were set adrift. At the same time, soundings, bathythermometrical readings, and dredgings were made. Attention was paid to the subject of fisheries, particularly to that of the sardine, which was formerly so abundant on the French coasts, while it has now almost disappeared.

— Prof. F. W. Clark of the National Museum will make a unique collection of mineral species for exhibition at the Cincinnati Exposition. A portion of the twenty-five thousand dollars appropriated by Congress to enable the Government of the United States to participate in that exposition has been placed at Professor Clark's disposition, and he will supplement the specimens he will select from the museum collection with others obtained especially for this occasion. The collection will be of great scientific value.

— *Petermann's Mitteilungen* for May publishes a full account of Captain van Gèle's exploration of the Obangi, accompanied by a map which has been constructed by B. Hassenstein, who reduced Junker's observations in the country adjoining the upper Welle. He calls attention to the important fact that Junker learned of the existence of a chief called Bangusso four days' journey west from Singio. Van Gèle discovered a northern tributary of the Welle, which was called by the natives Bangasso as coming from Bangasso: therefore it is probable that Van Gèle's Bangasso is the lower course of Junker's Mbomo, on the banks of which Bangusso's village is situated. In this case the Kutu would prove to be a tributary of the Mbomo. Since the great discoveries in the basin of the Kassai no expedition has helped more to make clear the hydrography of Central Africa than Van Gèle's, the limits of the Kongo watershed being now pretty well known.

— The Linnæan Society held its centenary celebration May 24, according to *Nature* of that date. The following eulogia were pronounced: on Linnæus, by Prof. Thöre Fries, the present occupant of the chair of botany at Upsala; on Robert Brown, by Sir Joseph Hooker; on Charles Darwin, by Professor Flower; on George Bentham, by Mr. W. T. Thiselton Dyer. The Linnæan gold medal, instituted by the society on the occasion of its centenary, was presented to Sir Joseph Hooker (botanist) and Sir Richard Owen (zoölogist). In subsequent years the presentation will be alternately to a botanist and zoölogist.

— 'Popular Physics,' by J. Dorman Steele, Ph.D. (A. S. Barnes & Co., publishers, New York), forms the third of a new series, upon the sciences. Many of the features of its parent book, 'Fourteen Weeks in Physics,' will serve to identify this new work. —— T. Fisher Unwin, 26 Paternoster Square, London, announces a second edition, revised and rewritten on the basis of the first edition by Edward Newman, of 'Birdsnesting and Bird-skinning,'— a description of the nests and eggs of birds which breed in Britain; with directions for their collection and preservation, a chapter on bird-skinning, and description and woodcuts of the instruments necessary to the collector, — by Miller Christy. —— Messrs. James W. Queen & Co., Philadelphia, have just issued a new and very complete edition of their catalogue of electrical testing apparatus. This covers nearly every form of apparatus called for in a well-equipped electrical laboratory.

— In the June *Andover Review* Dr. Bemis continues his papers on immigration, pointing out in the present number the distribution of our immigrants. The experiment at Harvard in solving the problem of the relation of religion in its outward form to university life, is clearly stated by Rev. D. N. Beach. Professor James of the University of Pennsylvania gives an account of the requirements for the degree of Ph.D. in German universities. —— *The American Garden* for June is a special rose number. —— The approaching 'heated term' renders an article on 'Summer Indigestion and Diarrhœa' in the current number of *Babyhood* seasonable.

— It is not often that a part of Edwards's superb 'Butterflies of North America' appears with so much interesting matter in it as is found in the fifth number, just issued. A rare form of Californian *Melitæa* is figured, — of which all efforts to obtain the early stages have so far been unsuccessful, — two species of *Erebia* from the Rocky Mountains, and our eastern *Portlandia*. The plate of the latter is crowded with figures of early stages in most exquisite delineation. Although figured long ago by Abbot, his drawings, published by Boisduval & LeConte, were among the worst he ever made, so as to be quite misleading; while Mr. Edwards figures also the egg and every stage of the caterpillar, — a thing the more difficult to do, as it hibernates in the middle of its larval life. The text gives a complete history of this interesting and excessively local species, the habits of which are described in very different terms by different observers. But the most interesting of all is the plate of *Erebia*, which figures, as we have said, two species, giving for one of them the egg and earliest stage of the caterpillar; the latter never before figured or described for this genus, although thirty or forty species are known in Europe. That it should finally be made known by a naturalist in Eastern America, where it is unknown, is a curious commentary on the zeal of our transatlantic brethren. The species has been taken only by one collector, and only at a height of from twelve thousand to fourteen thousand feet on the front range of the Rocky Mountains in Colorado, where the ground is covered by broken black rocks, above which the butterfly, which is of a deep black color, rarely rises far, and upon which when alighted it can scarcely be detected. When we learn from the cover that the expense of the preceding number was only

partly covered by a grant from the Elizabeth Thompson science fund (the first help the author has had), we can gauge to some extent our past pecuniary indebtedness to the indefatigable author, who steadily issues these incomparable iconographs.

— W. William Topley, general secretary of the committee on organization of the coming (fourth) session of the International Geological Congress in London, desires that all scientific societies, libraries, institutions of learning, and individuals having any interest in the publications relating to the purpose of the congress, and the volume of its Proceedings containing the reports, papers, maps, etc., should secure these publications at the trifling cost of the membership fee to the congress, of ten shillings, or about two dollars and a half. For every such sum sent to him at the museum, 28 Jermyn Street, London, the sender, whether an institution or an individual, will receive all the documents which it or he would receive were the sender actually present as a member of the congress. Some of these publications, not to speak of the volume, will be of great value, and cannot be otherwise procured. Address William Topley, Esq., general secretary International Congress of Geologists, Museum, 28 Jermyn Street, London. The volumes of previous sessions of the congress alone are now difficult to procure at twice this cost, or more.

— The Royal Society of Canada has, since its establishment, done much to promote the interests of science in the Dominion. In his annual address delivered at the recent meeting which was held in Ottawa May 22–24, the president, Dr. Lawson of Halifax, reviewed the work of the society during the past year. The Transactions of the society for 1887 fill a large volume; although, of seventy papers which were presented, only forty were printed, the rest being kept back by the authors for the purpose of being perfected by additional work. He called attention to the preponderance of papers in the geological and biological section over those in the sections of English and French literature, which had increased more and more, showing the greater interest taken in science as compared to history and philology. In the course of his address he urged the granting of aid from the British Parliament for the purpose of making observations of tides and currents. This would not only be of substantial value to the shipping community, but would be a benefit to the country at large. A committee was appointed to cooperate with the British Association in pressing the necessity of such observations upon the Parliament, but so far no practical result has followed. A scientific federation of the empire, which was being agitated under the auspices of the Royal Society in London, also engaged attention, and was considered a matter of the greatest importance, in view of the aid that could be given to a geological survey of the Dominion. A committee appointed to inquire into the matter reported favorably on the subject, and the council of the Royal Society was given permission to act upon this report. On Friday the sections presented their reports. The section for French literature stated that they had decided to establish a fund of ten thousand dollars for a prize at the French Academy, to be called 'The New France Prize;' the interest, three hundred dollars, to be given in annual prizes to the author of the best work in French, to be published in France or Canada, on a subject to be determined by the academy. Sanford Fleming was elected president for the ensuing year.

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.*

Twenty copies of the number containing his communication will be furnished free to any correspondent on request.

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

Genealogy of Ideas.

IN the study of the genealogy of ideas there is a series of questions which have sprung up as corollaries to the problems involved in similarities. In Col. Lane Fox's exhibition of weapons, structure is the fundamental concept. All weapons of the same plan of structure are in the same row. The second concept is complexity of form and structure, and the pieces are arranged in their row according to their elaboration, the worst on the left. No good anthropologist would argue from this order that the row represented a genealogical line, in which each one at the right is child of the one immediately on its left. The only safe conclusion is, that the history of invention has travelled somewhat in this manner.

The corollary to all this is, that arranging the arts of different races in such a developmental series gives us a fair means of gauging these races in the scale of excellence and advancement. If people A are found in the whole group of series to stand on the left of people B, then they are an inferior people. If, on the contrary, we make ourselves A, and, comparing our inventions and institutions of all kinds with those of B, we discover that we stand on the right rather than on the left, there should be no hesitation in rating ourselves accordingly.

The next corollary is, that we cannot neglect historical studies. Genealogies are to be traced historically. The Russian banjo did not descend from the Aleut banjo, but really descended to it, and shows that which occurs again and again in arts and institutions, the degradation of invention.

O. T. MASON.

Washington, May 30.

New York Schools.

AFTER investigating the English musical system known as the Tonic-Sol-Fa, and finding its great superiority to the staff method, which I had taught for twenty years, I naturally sought to interest music-teachers and educational people in the system. For this purpose I had several interviews with Superintendent Jasper. My reception from him was about as cordial as if I had been the vendor of a quack nostrum. At last he settled the question by saying very emphatically, "Mr. Seward, I am *opposed* to the Tonic-Sol-Fa System!" As he knew nothing about it, and refused to give any attention to the overwhelming testimony of English and American teachers, in favor of the system, I was led to ask myself what progress could possibly be made by the New York schools in any direction under the control of such a superintendent.

THEODORE F. SEWARD.

East Orange, N.J., May 30.

YOUR editorial note in the issue of your paper for May 25, discussing the system employed in the New York public schools and the relation of the present superintendent to it, ought to have been read by every teacher in New York City. The truth is, that barnacles by the score are nourished and fattened by the present state of affairs, and all their powerful influence is enlisted against any change. The publishers and the politicians run the schools at present, and neither publishers nor politicians hesitate to use corrupt and debasing means to attain their ends. One man who knows as well as any one else — if not better than any one else — how thoroughly rotten and inefficient the present administration is, takes the stand, and calmly testifies that it is scholastically perfect and sound! Why? Because his text-books are used, and he fears their being displaced by others if a new *régime* is inaugurated, or if he offends the "powers that be" at present.

New York's citizens do not understand the present crisis, or there would be an agitation which would put those in favor of high license, clean streets, or home rule into a dismal shade. The minds and manners of nearly two hundred thousand children are involved. Can nothing be done?

A PROFESSIONAL OBSERVER.

New York, June 1.

Answers.

32. HUMAN BEINGS AS PACK-ANIMALS. — Referring to my friend Professor Mason's query No. 32, I beg to refer him to Darwin's 'Voyage of the Beagle,' Chapter XVI., pp. 340 and 341, for a capital account of the 'duty' of men used as beasts of burden. The passage is too long to quote here, but any one interested can easily turn to it. The Chinese porters of San Francisco would furnish him with examples of high 'duty' also. I regret that I cannot give numerical estimates. I can only say that loads which I have vainly tried to lift from the ground were carried by undersized Chinese at quite a rapid walk. In many cases such loads are carried up and down hills too steep to drive upon.

EDWARD S. HOLDEN.

San José, Cal., May 28.