binations of meaningless sounds, of which the 'Barbara, celarent, etc., is a typical survival; the translation of letters into numbers and associations formed on ridiculous principles, seasoned with wretched puns, — all these flourished, and had their day. One doctor even invented a pill that would improve the memory; while another announced with great *éclat* that the seat of the memory is the occiput, and that roasted fowl, small birds, and other delicious things, acted favorably on this organ. Even the pledging of the pupils to secrecy is not a new invention. These systems have been well likened to the keys, with enormous brass stars attached, that one gets on steamboats. The object of the appendage is to prevent one from forgetting to leave the key behind, but the encumbrance one has to carry to secure this end is a greater annoyance than the task of remembering to return the key.

Only in very recent times has the scientific study of memory as a psychic function been seriously undertaken, and the subject been popularly treated in a sound manner. The name of Dr. Pick deserves to be mentioned as among those who first broke away from utterly artificial systems, and, while modestly claiming the success of his teaching, presented the topic on a natural basis. His present volume is mainly a reprint of former lectures, with a history of mnemonics, and a series of testimonials of the success of his teaching. It seems to have been brought out by the unjust use of his work by Loisette.

Dr. Kay's work has many points that deserve high commendation. "The author has little faith in arts for improving the memory in two or three lessons, but he has unbounded faith in systems of education, properly conducted, to effect incredible improvements in this direction." Accordingly he approaches the problem from a broad psychological point of view, with no haste to suggest startling practical results. A very small portion of the book is devoted to a study of what is currently understood as memory. The main object is to show the position of memory in the hierarchy of mental powers, and set forth the modern doctrine of its physiological concomitants. An entire chapter is devoted to the relation of body and mind; an equally full description of the senses and their mode of acquiring information is given; the nature of mental images, and the *rôle* of the unconscious, are similarly treated. We are then prepared to consider the special processes upon which a good memory depends. First and foremost is close and accurate attention to the impression at its first appearance. The attention must be trained, and sense-perception made quick and accurate, if memory is to be retentive. Not less important is the association of our knowledge by natural links, and along the lines of our own interests. It is only by such means that a serviceable memory can be developed, if by memory we mean, not the power of performing a few striking mental gymnastics, but the power of having our knowledge ready to hand, and carrying it with little effort. That this problem changes its character with each individual, goes without saying. Mr. Kay's book is full, in fact over-full, of citations from various authorities, and is an admirable book to put in the hands of an intending student of the subject. It is a pity that his physiology is sometimes at fault, that his authorities are at times promiscuously chosen, and especially that he has not taken advantage of the most recent technical studies of the memory, of which the work of Dr. Ebbinghaus is so excellent a type. These seem to be omitted because they are in a foreign tongue. From the liberal use that Mr. Kay makes of translated works, one can infer how much his book would have increased in value had he gone to the originals.

The last volume on our list has little claim to serious consideration, were it not for the practical service that a knowledge of its purpose may render. Mr. Fellows here prints the whole of Loisette's lesson-papers, urging that they have not been copyrighted, and that his signature to a pledge of secrecy was secured on false pretences. He furthermore gives evidence that casts a serious doubt upon the honesty of Loisette's career. The system itself is certainly a most wonderful combination of the endless repetition of a few cant expressions; of persistent reference to the originality and excellence of the Loisettian method, duly emphasized by Italics and bold type; of most careful prescriptions against breathing an atom of this sacred information; and of a general unacknowledged selection from previous writers on the topic. A sentence will probably suffice to illustrate the tone of the teaching: "My Discovery, so far as it pertains to this Lesson, demonstrated *what had never been suspected by any one before*, — that all memories — the strongest as well as the weakest — are PRODIGIOUSLY STRENGTHENED in both Stages by learning and reciting forwards and backwards, or, what is better still, by *making* and *repeating* from memory both ways a series of from 100 to 500 words arranged in conformity to the three Laws given below, which Laws were revealed to me, on their Physiological, or only true side, by my Discovery." It is certainly surprising that this 'system' should have met with the success it had; and it is hoped that its publication in this form will not only prevent the swelling of the list of the victimized, but will warn all against any one who advertises a royal road to any mental acquisition the gate of which is opened only by a fee and a pledge of secrecy.

The Animal Life on Our Sea-Shore. By ANGELO HEILPRIN. Philadelphia, Lippincott. 12°. 50 cents.

THIS is a handbook on the local fauna of Philadelphia and of the much-frequented New Jersey and south Long Island coasts, which will certainly prove extremely interesting to all who care to know something of the animal forms they may see during their summer vacations. The book may be relied upon as being thoroughly accurate; but it is in no way hard reading for the unscientific, and tells them just what they want to know, which is what they may see by the seashore, and where to see it, at the same time giving in each case the life-history of any specimen they may procure. We already have Emerton's 'Life on the Seashore,' designed for the New England coast, and this little book covers another region largely frequented during the summer season. It treats of the shell-fish, the jelly-fish, the star-fish, the worms and sponges, and some coastwise fishes.

NOTES AND NEWS.

THE letters in recent numbers of *Science* describing a peculiar form of northern lights serve to call to the mind of the editor of the *Progressive Age* a sight that he witnessed in August of last year when on board the steamship 'Ozama,' passing along the north-east coast of the island of Santo Domingo, and near to the northern entrance to Mona Passage which connects, between the islands of Porto Rico on the east, and Santo Domingo on the west, the Atlantic Ocean on the north, and the Caribbean Sea on the south. "We were southward bound, and the hour was about nine o'clock at night. The moon was at its full, or thereabouts, and very bright, as is the case in the tropics, especially in the summer season. The sky was entirely clear at the time, with the exception of a small cloud forward of the ship some distance, but between the moon and the coast, which is low and flat for many miles at that part. Suddenly a sharp shower of rain commenced to fall from the cloud, and immediately there appeared over the land, apparently close to the edge of the coast, the most perfect and beautiful rainbow it has ever been the pleasure of the writer to see. Everybody but the writer and the captain, who was on the bridge, were below at the time. The latter said it was the first occurrence of the kind that had come under his observation. That was certainly the case with me."

— The number of words in a person's vocabulary has been frequently and variously estimated. The old philologists thought that few persons used more than ten thousand words, while the ordinary unlettered man possessed from three thousand to four thousand words. It is well known that Shakspeare's vocabulary includes fifteen thousand words, and Milton's eight thousand words. A Swiss writer, M. Edmont de Beaumont, has recently made estimates far in advance of these. He maintains that rustics have at their command as many as seven thousand words; artisans, ten thousand; tradesmen, fifteen thousand; men of culture, twenty thousand; and university graduates, twenty-five thousand. The minimum number of words "without which one makes a pitiful figure in a conversation among cultivated persons is ten thousand." M. Beaumont himself claims to have the use of twenty thousand words in several languages.

— An entirely new machine has been invented for printing postal-cards from the roll, and to turn them out packed in bundles of twenty-five. It prints the cards at the rate of three hundred a minute in the usual way, by means of a rotary press. A set of knives then cuts the cards off, and drops them four abreast into little cells especially prepared for them. When twenty-five cards have dropped out, a set of steel fingers turns the pack over, twines a paper band about it, and pastes it together. The packages are caught in an endless belt of buckets, which carry them into an adjoining room, where they are received by girls, who place them in boxes ready for delivery. One man can look after two machines.

— According to the *Engineering Journal*, the new Argentine-Pacific Railroad from Buenos Ayres to the foot of the Andes has on it what is probably the longest tangent in the world. This is 340 kilometres (211 miles) without a curve. It is also a remarkable fact that in this distance there is not a single bridge, and no opening larger than an ordinary culvert. The level nature of the country will be appreciated from the statement of the further fact that on the 340 kilometres there is no cut greater than one metre in depth, and no fill of a height exceeding one metre. The country, in fact, seems to be almost an ideal one for railroad-construction. There are some drawbacks, however, one being that there is almost an entire absence of wood on the plain across which the western end of the road is located. This has led to the extensive use of metallic ties, which will be used on nearly the entire road. Work has already been begun on the mountain section of the road, which is to cross the Andes and unite with the Chilian line.

— The *Engineering Journal* comments on the contest between armor-plates and projectiles, which has been renewed abroad. Some recent experiments with steel and composite plates made in England seem to indicate that for the present the projectiles have the worst of it. On the other hand, it is announced that the Krupp Company is now building at Essen the largest gun yet made: it is for the Italian armor-clad 'Sardegna,' and will weigh 139 tons, will be 52½ feet long, and have a bore of 15.7 inches. This gun will, it is stated, fire a steel shell weighing 1,630 pounds, with an initial velocity of 2,630 feet per second, or a heavier shell of 2,300 pounds, with an initial velocity of 2,100 feet. It is expected by the makers that this projectile will be able to knock out of time any armor-plate now afloat, and that there will then devolve upon the other side the problem of building a vessel which can float armor-plates heavy enough to resist these shells.

— From statistics based on the census of 1886, it appears, that, of the 51,600 families applying to the authorities for aid in Paris, 2,739 were foreign, comprising more than 7,000 persons. Of 100 heads of families of foreign origin, 27.31 were German; the English only figured in these statistics for 0.95; the Austrians, for 1.79; the Spanish, for 1.06; the Dutch, for 6.97; the Italians, for 7.12; the Russians, for 3.36; the Swiss, for 5.44; the Roumanians, Servians, and Bulgarians, for 1.31. Of 1,000 foreigners living in Paris, 253 were Belgians; 168, Germans; 71, English; 29, Austrians; 21 Spanish; 91, Dutch; 125, Italians; 42, Russians; 132, Swiss.

— On the 20th of June last, M. H. Lecoq, accompanied by an aeronaut, ascended, at quarter-past seven in the morning, from Paris, in a balloon of 700 cubic metres capacity. The balloon quickly reached a height of 600 metres, and moved towards the south-east. The sun appeared as a bright red disk, and it lighted Paris with a yellowish light, producing a most singular effect. After having crossed the Seine above the Isle of St. Louis, about half-past eight M. Lecoq saw that the thunder-cloud which had commenced to form when they started was approaching rapidly, and it was not long before they heard the thunder. Immediately the balloon, influenced by the electric attraction, rose towards the cloud, accompanied, or rather preceded, by the pieces of paper which the balloonists had thrown from their basket. At twenty minutes of eight, and at a height of 1,100 metres, the balloon entered a cloud-mass of a greenish-gray color, which immediately shut out from them all sight of the earth. Even the guide-rope could not be seen for more than a few metres. The cloud was illuminated by intermittent flashes, immediately followed by short peals of thunder. The balloon constantly rotated, and ascended and descended, without the interference of the balloonists; and, what is a rare thing in a balloon, they felt almost constantly a very considerable wind, which shook the balloon, and gave to the basket a swinging motion of considerable amplitude. Soon the storm broke with its full force, and the lightning was followed immediately by the thunder. M. Lecoq states that neither he nor his companion felt any ill effects further than the oppression which is always experienced in an atmosphere highly charged with electricity. On the ropes of the balloon he observed some manifestations of St. Elmo's fire. At certain times a sensation as of a current of cold air was very perceptible. This was followed immediately by a rapid ascension, and the expelled gas descended even to the basket. During one of these ascents the balloon reached a height of 1,600 metres, which was the maximum. At this height the storm was at its greatest force. The discharges of lightning took place between a cumulus-cloud, in which floated the balloon, and the cirrus-cloud above. The ascension was especially interesting on account of the long time during which the balloon staid in the thunder-cloud, — a circumstance which rarely occurs. M. Lecoq was specially impressed by the violent movements of the air, and by the rapid ascents and descents which took place in the middle of the electrified cumulus, as if due to a powerful attraction which affected the balloon and light bodies floating in the air.

— The total number of European troops in English India in 1886 was 61,015, and the average death-rate per thousand was 15.18; in the province of Bengal there were 39,000 men, and the death-rate was 15.5; in the province of Madras, 11,000, and the death-rate 16.2; province of Bombay, 11,000, death-rate 12.7. The number of native troops was 106,010, and the death-rate was 19.46 per thousand.

— Some eighteen months ago the French Senate passed a law providing for civil or religious funerals, and for burial or cremation, according to the desires of the parties interested; but as yet the administrative authorities have not determined on the conditions to be observed in the different modes of disposing of a body, and as yet Paris is without a proper crematory. Early in the year a commission was sent to Milan and Zurich to investigate the crematories in use in those cities. This commission reports that the Italians are not better off in Milan than the French in Père Lachaise. Cremation at Milan lasts two hours; at Paris it lasts an hour and a half, with an expense of from fifteen to twenty francs. The commission estimates that the time is too long, but that the expense cannot be reduced. They hope to be able in a few months to effect a cremation in from one-half to three-quarters of an hour at the outside. In this connection, it may be mentioned that there exists in Paris a society for the advancement of cremation, numbering at present six hundred members. It seeks by all legal means to assure every person who desires it that his body shall be cremated after death. Membership does not imply any engagement to accept this method, but leaves complete liberty of choice.

— Late research in this country and in Europe implies that some plants have the power of getting nitrogen from the air. How they obtain it, how much is gathered by the foliage, and how much comes through the soil and the roots of the plants, are things to be found out. If there are plants that can draw this scarcest and costliest of all the elements of plant-food from the air, it is important to know what plants they are, and the circumstances under which they get it. If the nitrogen must first be introduced into the soil by natural processes or by manuring, we need to know how this can be done most economically. How much nitrogen plants can obtain from the atmosphere, is a problem best studied by experiments on a small scale in the greenhouse and laboratory. For the investigation of this latter question, which has a high scientific as well as practical importance, Storrs School Agricultural Experiment Station at Mansfield, Conn., has begun a series of experiments in pots by the method of sand-and-water culture. Late research implies that the minute organisms called microbes or bacteria may have something to do with the acquisition of atmospheric nitrogen. This especial problem is being studied in connection with the experiments on nitrogen-supply under the immediate supervision of the director, Prof. W. O. Atwater.

— *Nature* states that the vapor-density of sulphur has been redetermined by Dr. Biltz in the laboratory of Prof. Victor Meyer with unexpected results. It has hitherto been generally accepted that at a temperature (524° C.) not very far removed from its boiling-point (447° C.) the molecule of sulphur is built up of six atoms. This assumption is based upon vapor-density determinations by Dumas and Mitscherlich, who obtained values about this temperature pointing to a hexatomic molecule. However, the work of the last few years upon the chlorides of aluminium, tin, and iron, has opened the eyes of chemists to the fact that the double formulæ Al_2Cl_6, Sn_2Cl_4, and Fe_2Cl_6, resting as they did upon a few experiments performed within a very limited range of temperature, are erroneous, and have no foundation in fact. The older work upon the constitution of sulphur molecules was notably of this class. The experiments themselves were irreproachable, and completed with all the skill for which the experimenters were famous; but unfortunately the temperatures at which they worked were not sufficiently removed from each other, there being only a difference of 27° C. between their maxima and minima. It is now, moreover, a demonstrated law that the existence of molecules of fixed composition can only be assumed when the vapor-density remains constant within a notable interval of temperature: hence a series of fresh determinations have been undertaken in the case of sulphur. Experiments conducted at 518° in a bath of vaporized pentasulphide of phosphorus by Dumas's method gave values averaging about 7.0, which are nearly coincident with Dumas's own. At the higher temperature of 606°, using a bath of stannous chloride vapor, the density had diminished to 4.7. At 860°, as is well known, sulphur vapor attains the normal constitution of two atoms to the molecule, and the density remains constant for about 200° higher still: hence, in order to finally set the question at rest, a series of ten determinations were made at intervals of about 10°–15° from 468° to 606°, with the conclusive result that the density regularly diminished from 7.9 at the former, to 4.7 at the latter temperature. Hence the notion of S_6 is completely dissipated: there is no more experimental reason for it than there is for the existence of molecules of the constitution S_5 or S_n. None but the value corresponding to the normal composition, S_2, stands the test of interval of temperature: therefore we must conclude that sulphur obeys the usual law, and that its molecules when completely vaporized are each composed of two atoms.

— The following comparison of several physical measurements of men belonging to the "upper professional classes, well fed, well clothed," with Cambridge students, suggests interesting reflections on the superiority of university men: —

	Height.	Pull.	Squeeze.	Breadth.	Weight.
Cambridge men.....	68.9	83	87.5	25.4	153.6
Non-university men..	67.9	74	85	21.9	143

— In *Wide Awake* for July, Sallie Joy White writes of Helen Keller, to whom we have already referred, "The ideas of death and burial had never been communicated to her; but, taken into a cemetery on account of some beautiful flowers there, she grew pale and grave, and put her little hand upon her teacher's eyes and her mother's, and spelled out 'cry, cry,' and her own eyes filled with tears. Her teacher says that one day when her brother was coming toward them, as they were walking, Helen knew it, spelled his name repeatedly, and started in the right direction to meet him; and that she gives the names of people she meets walking or riding as soon as their presence is recognized; and that often, when she is about to make known some plan, the child will anticipate her and spell out the very plan about to be unfolded. Whether this be the action of some sharpened sense already known to us and named, or the awaking and working of some sense not recognized and named, is interesting matter for study."

— G. Stanley Hall has accepted the presidency of Clark University, Worcester, Mass. The two following extracts, the first from the letter tendering the position, the second from Professor Hall's letter of acceptance, throw some light on what may be the policy and character of the as yet unformed institution. The trustees write, "In the work to which you are thus called, the trustees promise you a hearty and unselfish co-operation. They desire to impose on you no trammels. They have no friends for whom they wish to provide at the expense of the interests of the institution, no pet theories to press upon you in derogation of your judgment, no sectarian tests to apply, no guaranties to require, save such as are implied by your acceptance of this trust. Their single desire is to fit men for the highest duties of life, and to that end that this institution, in whatever branches of sound learning it may find itself engaged, may be made a leader and a light. To this high purpose they have dedicated their university, and, in calling you to the first position of influence and authority for its accomplishment, they give you their present confidence, and the assurance of sympathy, co-operation, and support." Dr. Hall replied, "The work of organizing another college of the old New England type, or even the attempt to duplicate those that are best among the established institutions, old or new, would not induce me to leave. But as I have come to know the rare educational wisdom, as well as the rare munificence, of your founder; the single and express desire of the corporation, that, in whatever branches of sound learning it may engage, the new university may be a leader and a light; the many advantages of location afforded by your city, which seem to make the place of this great foundation no less auspicious than is the present time; the public co-operation, interest, and good-will of your citizens; and as I realize how these influences, once fairly organized, must tend in this day to still further university progress along old lines and the opening of new ones, — I am drawn with hope and enthusiasm, too strong to resist, from this present to the future service to which you call me."

— The value and popularity of the general government exhibits at the great fairs in this country are becoming so universally recognized, that Congress is asked to authorize the sending of such exhibits to every important exhibition that is held. The latest applicant is the Virginia Agricultural, Mechanical, and Tobacco Exposition, to be held in Richmond from Oct. 3 to Nov. 21 of the present year. The sum asked for is twenty-five thousand dollars, five thousand each for the Agricultural Department and the Fish Commission, and fifteen thousand for the Smithsonian Institution and National Museum. It would be establishing a rather dangerous precedent to send a government exhibit to a State fair, for every other State in the Union will immediately demand that the interest in their State fairs shall be promoted by an appropriation by Congress.

— In a recording rain-gauge recently devised by M. Brassard, as described in *Nature*, the water passes from the bottom of the receiver into a centrally pivoted trough, having each arm slightly depressed in the middle. It fills the two divisions alternately. The filled arm goes down, and empties itself into a lower trough, and the rocking thus caused is registered by an ordinary counter. Each rocking of the trough indicates one-tenth of a millimetre of water having fallen into the receiver. The instrument is designed to eliminate the error usually arising from evaporation.

— Advices from the fishing-village of Kerschkaranza, in the Kola Peninsula, on the White Sea, state, according to *Nature*, that on Jan. 5 a curious and destructive phenomenon occurred there. At 4 A.M. the inhabitants were awakened by a peculiar, dull, heavy detonation like that of distant artillery. Piled up to a height of several hundred feet, the ice — in consequence, no doubt, of the enormous pressure of the ocean-ice without — was seen to begin moving from the north-west towards the shore. The gigantic ice wall moved irresistibly forward, and soon reached the shore and the village, which it completely buried, the ice extending a mile inland. The forward movement of the ice lasted four hours. No lives were lost.

— According to the report of the inspector of schools in Hong Kong for the past year, as noticed in *Nature*, the total number of schools subject to government supervision was 94, as against 45 in 1877 and 13 in 1867; the numbers of scholars for the corresponding years being respectively 5,974, 3,144, and 700. Of the 5,974 pupils who attended schools under government supervision in 1887, 4,160 attended missionary schools, and 1,814 the government undenominational establishments. In the colony there are five classes of

schools: (1) Chinese, where a purely Chinese education is given; (2) Romanized Chinese, in which a European education is given in the Chinese language; (3) Portuguese, where a European education is given in the Portuguese language only; (4) Anglo-Chinese schools, numbering eight, with 1,160 scholars; (5) English schools, numbering six, with 688 scholars, in which the children are taught in the English language only. The Government Central School presented 384 boys for the annual examination, and of these 375 passed; that is, the very high percentage of 97.65. At this latter school the subjects taught are reading, dictation, arithmetic, Chinese into English, English into Chinese, grammar, geography, map-drawing, composition, Euclid, algebra, mensuration, history, and Latin.

— *Nature* is authority for the statement that on April 29, when off the Westman Islands, Iceland, the captain of the Danish mail-steamer 'Laura' threw overboard a letter written in Danish. On May 6 the letter was found in the stomach of a cod caught by a French fisherman off Reykjanæs, about one hundred and twenty miles distant. The man showed it to the French consul at Reykjavik, who submitted it to the captain of the 'Laura.' It was much decomposed, but still readable.

— There being no provision in this country for the accurate comparison of electrical standards and apparatus, it has been decided to provide means for such measurements at Johns Hopkins University. The work will be under the general direction of Professor Rowland and under the immediate supervision of Dr. Duncan. The comparisons will be made by G. A. Liebig, Ph.D., who has been appointed assistant in electricity. The importance of such provision for the comparison of standards has been for some time recognized. Such representative bodies as the American Association for the Advancement of Science, and the National Electrical Conference, held in 1884 at Philadelphia, have discussed the possibility of a bureau of standards, and have favored its establishment. It is not probable that the government will take any steps in the matter, at least for the present, and, as time goes on, the need becomes more pressing. There is needed some laboratory where instruments can be compared with standards of undoubted correctness, by accurate methods and careful observers, under uniform and determinate conditions. These requirements are filled by the standards and apparatus in the possession of this university, and by the facilities and experience that the laboratory offers.

— A new and greatly improved edition of the photographic map of the normal solar spectrum, made by Prof. H. A. Rowland, extending from the extreme ultra-violet down to and including B to wave-length 6950, is now being printed. The old map, published in 1886, was made by means of a grating ruled on the old dividing-engine, which was originally intended for only small gratings. Furthermore, it was not printed in a sufficiently careful manner; and the negatives, which were originally none too good, soon became broken or defaced, so that many of the prints, especially the later ones, were not satisfactory. The whole work has now been gone over again. A new dividing-engine to rule large gratings has been constructed, and has proved to be superior in every way to the old one, although the old one is almost equal to it for small-size gratings. Several concave gratings of 6 inches diameter and 21½ feet radius have been ruled with 10,000 or 20,000 lines to the inch, giving definition hitherto undreamed of. Professor Rowland has devoted years to the making of dry plates, simple and orthochromatic, and is thus better prepared than before for the work of making the map. He has also revised his list of standard wave-lengths, and extended them into the ultra-violet, and has placed the scale upon the photographs with greater care than before.

— Bulletin No. 4 of the Ohio Agricultural Experiment Station discusses some elaborate experiments in preventing curculio injury to cherries, and treats in a practical way the best midsummer remedies for the chinch-bug, which has lately appeared in destructive numbers in Ohio. In the cherry experiment, which was conducted by the station entomologist, Clarence M. Weed, 22,500 cherries were individually cut open and examined, and the conclusion reached that three-fourths of the cherries liable to injury by the curculio can be saved, without danger to the user, by spraying with a solution of London purple soon after the blossoms fall. This bulletin will be sent free to any Ohio farmer who will address Ohio Agricultural Experiment Station, Columbus, O.

— At a meeting of the Paris Academy of Sciences, July 2, there was presented a series of drawings of the planet Mars made by M. Perrotin, director of the observatory at Nice. In the discussion which followed, M. Fizeau offered an explanation of the singular canals observed on the surface of Mars, which resemble slightly canals used for irrigation. The explanation which he gives is, that on the surface of Mars there must be large glaciers similar to those which exist on the earth, but of an extent far greater, and that the movements and crevasses are much more pronounced. This hypothesis, as M. Fizeau claims, accords perfectly with our present knowledge of the planet. We know, first, that the seasons are twice as long as on the earth; second, that the force of gravity is feeble; third, that the temperature is probably much lower than that of the earth; and, fourth, that the atmosphere is less developed than that of the earth, less extended, and consequently less able to absorb and preserve the solar heat.

— The Royal Society of New South Wales offers its medal and a money prize for the best communication (provided it be of sufficient merit) containing the results of original research or observation upon each of the following subjects: — to be sent in not later than May 1, 1889, 'On the Chemistry of the Australian Gums and Resins' (the society's medal and £25), 'On the Aborigines of Australia' (the society's medal and £25), 'On the Iron-Ore Deposits of New South Wales' (the society's medal and £25), 'List of the Marine Fauna of Port Jackson, with Descriptive Notes as to Habits, Distribution, etc.' (the society's medal and £25); to be sent in not later than May 1, 1890, 'Influence of the Australian Climate, General and Local, in the Development and Modification of Disease' (the society's medal and £25), 'On the Silver-Ore Deposits of New South Wales' (the society's medal and £25), 'On the Occurrence of Precious Stones in New South Wales, with a Description of the Deposits in which They are found' (the society's medal and £25). The competition is in no way confined to members of the society, nor to residents in Australia, but is open to all without any restriction whatever, excepting that a prize will not be awarded to a member of the council for the time being; neither will an award be made for a mere compilation, however meritorious in its way. The communication, to be successful, must be either wholly or in part the result of original observation or research on the part of the contributor.

— Senator Hoar, in his recent oration at the Marietta centennial, spoke of the Ordinance of 1787, by which the North-west Territory was established, as "one of the three little deeds of American constitutional liberty." "It belongs," he said, "with the Declaration of Independence and the Constitution." Yet how many Americans, even good scholars, have ever read the Ordinance of 1787? Few would know where to look for it, and, looking, would probably find it only in the appendix to some obscure and dusty volume. Many, therefore, at this time will be glad to know that the directors of the 'Old South Studies' have incorporated it in their new general series of 'Old South Leaflets,' which are published for schools and the trade by D. C. Heath & Co., Boston, and that it is now ready for distribution. These 'Old South Leaflets,' which sell for the small price of five cents a copy or three dollars per hundred, are the means of bringing a great number of important original documents into the service of our historical students. —— Ginn & Co. will publish shortly a 'Manual of Astronomy,' by Prof. C. A. Young of Princeton College. —— The first number of a new monthly journal devoted to physics was published in St. Petersburg in May. The object of this journal is to give each month a *résumé* of progress in the science. —— E. & J. B. Young & Co. will publish shortly 'The Last Journals of Bishop Hannington.' The volume will be somewhat a continuation of the 'Memoirs of Bishop Hannington,' though, of course, treating altogether of the later years of his life, and of his work in Africa. —— G. P. Putnam's Sons have in preparation 'Omitted Chapters of History Disclosed in the Life and Papers of Edmund Randolph, Governor of Virginia, First Attorney-General United States, Secretary of State, etc.,' by Moncure D. Conway. The volume will contain copies of a large number of

unpublished documents from the British and French foreign offices. —— George Routledge & Sons will publish shortly 'The Handy Reference Atlas of the World,' by John Bartholomew, containing 100 maps and plans, a complete index, and geographical statistics. —— D. C. Heath & Co. have ready a collection of twenty-five models and twenty-five photographs by N. S. Shaler, William M. Davis, and T. W. Harris, instructors in geology in Harvard College, designed to show the principal features in the structure of the superficial aspects of the earth's crust, with extensive text descriptive of each figure, prepared for the use of beginners in geology. This collection is now in use in the laboratory of Harvard College, by the Boston School of Natural History, and a dozen other schools of various grades. Messrs. Heath & Co. will also publish very soon an 'Illustrated Primer,' by Sarah Fuller, principal of the Horace Mann School for the Deaf, Boston. The aim of this little book is to familiarize the deaf children with the printed forms of words and sentences which they have learned to speak. To associate these with the objects, there are introduced many simple cuts of common objects with which the pupils are acquainted. —— Harper & Brothers have just issued a handsomely illustrated work, entitled 'The Capitals of Spanish America,' by W. E. Curtis, in which all the great cities in the central and southern parts of this Western continent are described at length, and their ancient history retold. —— 'The Injurious Influences of City Life' is the subject of a brief but striking paper, by Walter B. Platt, M.D., to appear in the August *Popular Science Monthly*. The limitation of muscular movements, the noise, and the pavements in a city, are the principal sources of the effects to which he refers. —— Messrs. Eyre & Spottiswoode, London, have issued two new volumes of the 'Report on the Scientific Results of the Voyage of the "Challenger,"' — Vol. XXIV., 'Zoölogy (2 parts, text and plates), Report on the Crustacea Macrura;' Vol. XXV., 'Zoölogy, Report on the Tetractinellida.' —— Roberts Brothers have just ready 'Harvard Vespers,' a collection of the sermons preached to the students by Phillips Brooks, E. E. Hale, A. P. Peabody, and Dr. Gordon, of the Old South, Boston. —— D. C. Heath & Co. will publish shortly some selected poems from Lamartine's 'Premières et Nouvelles Meditations.' They will be edited, with biographical sketch and notes, by George O. Curme, professor of German and French, Cornell College, Mount Vernon, Io. —— The University Publishing Company will hereafter publish Prof. A. Knoflach's works on 'German Simplified' and 'Spanish Simplified.' These works, heretofore published by the author, have had a fair sale, which it is hoped will be extended by the transfer to an enterprising firm like the University Publishing Company. —— Funk & Wagnalls have just ready 'Nobody Knows,' by A Nobody, which deals with what the author calls 'social wrongs.' —— Houghton, Mifflin, & Co. announce 'Political Essays,' by James Russell Lowell, which will doubtless attract remarkable attention. Most of the essays date back to the time of the war and the reconstruction which followed. The closing paper is his New York address in April last, on 'The Place of the Independent in Politics.' —— Harper & Bros. have issued 'The Names and Portraits of Birds which interest Gunners,' containing descriptions of birds generally shot in the eastern portion of the United States, and giving the different names by which they are commonly known in other parts of the country.

— At a meeting of the French Academy of Sciences, July 2, Prof. S. P. Langley was elected a corresponding member.

— In June, 1887, a committee of the Howard Association invited the co-operation of their friends and the public to enable them to issue, and distribute at home and abroad, certain works which their secretary, Mr. Tallack, had prepared, embodying important facts, figures, and observations collected by the association during the past twenty years, in reference to prison discipline and the best methods of the treatment and prevention of crime, together with the questions of intemperance and capital punishment. The works alluded to are now nearly ready for the press, and are three in number. It is hoped that they may each be issued during the year 1888. The contents of two of these books will include the following subjects: — 'Prison Discipline, and the Best Modes of the Treatment and Prevention of Crime,' including chapters on the existing British, continental, and American systems of prison and penal discipline; separation and association in jails; prison visitation; penal labor; prison officers; the police; imprisonment for long terms and for life; the aid of discharged prisoners; habitual offenders; probation and conditional liberation; juvenile delinquency; reformatory and industrial schools; pauper children; sentences; various modes of punishment and prevention, etc.: and 'The Death-Penalty at Home and Abroad,' including chapters on the limits and operation of deterrence and penalty; British and foreign official statistics of murder and its punishment; judicial mistakes; insanity and homicide; the law of murder; American homicide; the prerogative of pardon; modes of execution; the abolition of capital punishment, regular and irregular; perverted clemency; substitutes for the infliction of death; alternative dangers; the opinions, on this question, of John Stuart Mill, Justice Sir Fitzjames Stephen, Lord Bramwell, Prince Bismarck, Earl Russell, Right Hon. Joseph Henley, M.P., Right Hon. John Bright, M.P., King Oscar I., and others; the Bible and capital punishment, etc. The above appeal has been widely issued in the form of a circular. It has hitherto only elicited £62 4s., and this sum has been exclusively contributed by eleven friends who were previously subscribers to the association, and familiar with its services. It is obvious that much more effectual help is necessary to enable the committee to carry out their wishes.

— Germany is taking an interest in the exploration of the Antarctic regions. An expedition is being organized by Dr. Neumayer of the Hamburg Observatory.

LETTERS TO THE EDITOR.

Onondaga White-Dog Feast.

DANIEL LA FORT testified before the legislative committee this month that the Onondagas burned no white dog this year, because the Indian breed had run out. He told me soon after the feast, which occurred as usual, minus the dog, that it was a sacred breed, and no others could be used; and I think none was burned last year. Of course, this is partially an excuse for letting the custom die out, as Indian dogs could be procured from other Iroquois if so desired. The feast has fallen into decay, though its observance in some ways will continue a while longer. The presumption is, that some intelligent Indians are assisting in its gradual disuse. This decay has been quite marked in this generation. Forty years ago, two dogs were burned; twenty years ago, but one, but this was on a blazing pile outside the council-house. Five years ago they opened the top of the council-house stove, and dumped the dead victim into that. Now there is no dog at all.

The last feast attracted some antiquarians from a distance, who were much disappointed at the omission, — Hamlet, with Hamlet left out, — but there was no remedy. The dog had had its day.

It is customary to call this an ancient feast, and to suppose it identical with the white-dog feast of the Senecas, which it much resembles. I have before now pointed out the differences, one of the principal of which is the time at which the dog is killed. With the Senecas this was at the beginning of the principal feast-day, and it remained hung up until the fifth, when it was taken down and burned. Among the Onondagas the killing and burning were always on the same day. The Onondagas had such a sacrifice but once a year; the Senecas, on any important occasion, sacrificing several dogs during Sullivan's invasion in 1779. With them the custom seems but little over a century old, the Onondagas adopting it later, while the other nations may not have had it at all. At least, it has been described only in these two, and that but at a late day. The Onondagas simply added a striking rite to their earlier dream-feast, which had the periodical observance of the later dog-feast. That they had it from the Senecas seems reasonable; but whence the latter obtained it is not so clear. It may prove a late outgrowth of earlier customs, dog's-flesh having been always highly esteemed by the Indians. Unknown, apparently, to the French missionaries, it is already among the things that have been. In a very short time the other rites of the feast will disappear, as feasts themselves have been dropped. I recently had the good fortune to be present at the Onondaga planting-feast, which has never been described. W. M. BEAUCHAMP.

Baldwinsville, July 12.