"Phantasms of the Living," I., 63–71) — answers which he says were foreign to the conscious intelligence of either of them, and which contained an attempt at deliberate invention rather than plead guilty to total ignorance. If, under suggestion, a hypnotic subject were told to jump over a house, he would not be able to do it, but he would jump as high as he could.

Among miscellaneous questions one only is worth recording. It was, "Are you the spirit of my grandmother?" This was the only time the idea of spirits was introduced, and as it was obviously put jestingly, it did not convey any real suggestion of their agency. The answer accordingly was, "No, I was in ———"; and here followed a remarkably well-executed outline map of Africa, such as few persons, and certainly not C., could have drawn from memory; every important bay and promontory being — as we found on comparison with the atlas — correctly shown, and in due proportion. At one point only was it in error.

The explanation was not that C. was guided by some defunct geographer or Africander, but that she had been getting up the geography of Africa that morning with the aid of the map; and thus had the pictorial memory of the passive personality, unconsciously to herself, recorded, and reproduced this complicated observation, which she had made without effort, and which was merely incidental to her task.

Such are the few and slight experiments which I have ventured to lay before the society. I have done so mainly for two reasons; first, the hope that sufficient interest may be aroused in those who hear of them to induce other and more important essays in this interesting method of investigation; and, second, to indicate the lines on which it may, I think, be most profitably pursued. It would seem that nothing is ever really forgotten, though the bygone memories evoked by pencil, or crystal, may appear so new and strange that we fail to recognize them as ever having been included in our experience.

EXTENSION OF UNIVERSITY TEACHING.

THE American Society for the Extension of University Teaching was founded in response to a deeply felt want for a national association which might assist in promoting the work of university extension.

The friends of popular education feel that the time has come for a better utilization of the facilities for instruction which are to be found in our existing educational institutions.

Our common schools, academies, high schools, colleges, and universities offer good opportunities for an education to those who are able to attend them for twelve or fifteen consecutive years. But the persons able to do this in our communities form a very small fraction of the population. The average child can attend school only four, or at most five, full years, — a period barely sufficient to make a beginning in the rudiments of an education. This is a significant fact, and it justifies the statement that the great mass of the community are in large part cut off from any direct participation in the higher branches of science, for the cultivation of which our advanced institutions of learning are organized.

The credit of recognizing this fact in all its significance, and of determining to change it, if possible, is due to the English universities. In order to test whether it were not practicable to utilize the magnificent facilities of the old English centres of learning for the purposes of popular instruction, a movement was organized to which the name of "University Extension" was given, and which involved sending out lecturers and professors from the universities to give courses of instruction at various places throughout the country. The effort was crowned with success, and has attracted universal attention.

Among the first communities to recognize the possibility for such work in the United States was the city of Philadelphia. For the purpose of testing whether there was a general demand for university extension, a call was issued for a meeting of those citizens interested in the movement. As a result, a local society was organized in order to make an experiment in and around Philadelphia. Having assured itself of the co-operation of the professors of the colleges and universities in or near the city, including the University of Pennsylvania, Princeton University, Bryn Mawr, Haverford, Rutgers, and Swarthmore, the society sent its secretary to England to study the movement there and make a report, and submit plans of organization.

The services of Mr. Richard G. Moulton of Cambridge, England, were secured, and, aided by professors from the above institutions, systematic instruction was undertaken at several different points in November, 1890. The success far exceeded all anticipations. Over forty courses of instruction, embracing two hundred and fifty lectures, were given, with an aggregate attendance of over 50,000, thus surpassing all English records. The demand for courses from a distance was so great that it could not be met.

As a consequence of this experience it was determined to establish a national society to aid in the inauguration and prosecution of this great work, and to do, as far as possible, for the country at large, what the local society has done for Philadelphia. The co-operation of a large number of representative institutions was assured from the outset, and the number of institutions committed to the movement is rapidly increasing.

The American society proposes to collect information as to the experiments now going on in this work in the various parts of the world, and make it accessible to all who are interested in this movement. It will, as far as possible, form branch societies to take up and push the work in and around their localities. It will try to secure a staff of persons trained by actual experience in organizing and lecturing, who may be placed at the disposal of the local societies to assist them in organizing and prosecuting the work. It will strive to make every college and university in the country a centre of university extension.

It is confidently believed that university extension will not only aid greatly the progress of popular education by affording vastly increased facilities for study, but will also benefit the colleges and universities by exciting a wide-spread interest in the work.

The association proposes to publish a journal, to be called *University Extension*, which will serve as a medium of communication between the national society and the local branches, and will give full information as to the progress of the work in all parts of the country.

To do this work efficiently will require large funds. The only sources of income at present are the fees of members ($5 annual fee, $50 life-membership fee) and the voluntary contributions of friends of the movement. The membership fee and all other contributions may be sent, payable to the order of Frederick B. Miles, Treasurer of the American Society for the Extension of University Teaching, 1602 Chestnut Street, Philadelphia. All other communications should be sent to the General Secretary, George Henderson, 1602 Chestnut Street.

NOTES AND NEWS.

BEGINNING with the class entering in September, 1892, the regular course necessary to obtain the degree of M.D. at the Harvard Medical School will be four years. A similar change in the course of medical study is proposed at the University of Pennsylvania.

— Mr. James E. Keeler has been appointed director of the Allegheny Observatory, succeeding Mr. S. P. Langley, secretary of the Smithsonian Institution, who recently resigned the directorship of the observatory.

— The Kenwood Physical Observatory, Forty-sixth Street and Drexel Boulevard, Chicago, will be dedicated on Monday evening, June 15, at eight o'clock. Addresses will be delivered by Professor C. A. Young of Princeton, Professor G. W. Hough, and others.

— A special inquiry was made in the census of last year as to the vital statistics of the Jews in this country. Returns were received from 10,618 Jewish families, representing 60,630 persons.

According to the *Sanitary Inspector*, the death-rate obtained from the figures is one third less for males and one-fourth less for females than among the rest of the population. On the other hand, the marriage and birth rates are low.

— A singlar case of spontaneous combustion is reported, where a painter engaged in a mill removed his overalls at 6 P.M. to go home. At half-past eight the watchman, discovering smoke in the mill, summoned the engineer, and together they searched the premises carefully, tracing the smoke to a small room in which the overalls were discovered, and in one pocket was a bunch of greasy waste that had ignited, showing, says *Architecture and Building*, that spontaneous combustion may ensue in less than three hours if the conditions are favorable.

— It is proposed to hold in the club-room of the Appalachian Mountain Club, Boston, next autumn, an exhibition of botanical specimens, given or loaned for the purpose by members of the club or their friends. All persons who are willing to aid in this matter, whether botanists or not, are requested to communicate with the councillor of natural history of the club, or with Mr. Walter R. Davis of the excursion committee. It is hoped that many specimens may be obtained during the summer, especially of plants distinctly Alpine in habit.

— Professor S. P. Langley of the Smithsonian Institution announces that there has been established, as a department of the institution, a physical laboratory, which has been furnished with specially designed apparatus for the prosecution of investigations in radiant energy and other departments of telluric and astrophysics. The communication of new memoirs bearing in any way on such researches is requested, and for them it is hoped that proper return can be made in due time. All scientific men will rejoice in these improved facilities for the continuance of Professor Langley's famous investigations.

— Bulletin No. 17 of the Kansas Agricultural Experiment Station gives the results of three years' experiments in the artificial crossing of a large number of varieties of corn. The different races — as dent, flint, soft, sweet, and pop corn — were all crossed with difficulty. The effect of the cross was seldom visible the first year, but the second generation showed very generally ears more or less completely blended, often exactly intermediate between the two parental types. The product of the third year is generally true to the seed planted; that is, by selecting diverse grains from any ears, ears are obtained with grains usually like those planted. Any desired form of a cross can therefore be perpetuated.

— A letter lately received from Emin Pasha by one of his ornithological correspondents in Europe is dated from one of the larger islands on Lake Victoria Nyanza in November last. According to *Nature*, it is full of details about birds, in which, as is well known, the Pasha takes the keenest interest, and alludes especially to an apparently new *Gralline* form, with three toes, met with in that district. Emin was on the point of starting southwards into the territory near the north end of Lake Tanganyika, and is now probably somewhere in that little-known country. He had been joined by Dr. Stuhlman, a young naturalist of Hamburg. Dr. G. Hartlaub of Bremen has just published a memoir on the birds collected by Emin during his return to the coast with the Stanley expedition and his subsequent sojourn at Bagamoyo. The specimens are referred to 140 species, of which eight are described as new to science.

— The curve shown by the graphic daily record of the magnetic declination, or variation of the compass, at Washington during the exceptionally severe magnetic storm that occurred about the middle of May, is of special interest. Beginning at 7 A.M. on the 13th, the magnetic disturbance attained its maximum between 6 and 11 P.M. of the following day, and again between 4 and 10 A.M. of the 15th, not finally ending until the 18th. During this storm the direction of the magnetic needle changed 48′ in 9½ hours. A correspondingly large disturbance was indicated by the instruments registering the horizontal-force component of the earth's magnetism. A marked feature of the storm was an oscillating movement of the north end of the magnetic needle to the eastward, attaining a maximum departure from normal of 35′ on the 14th, between 6 and 11 P.M., accompanied by a large decrease in the horizontal-force and increase in the vertical component. During the afternoon and evening of the 15th the north end of the needle was deflected to the westward, accompanied by a decrease of horizontal force even greater than during the evening of the 14th, and a corresponding decrease in vertical force.

— Serafini and Arata have made some investigations to determine the correctness of the belief that the foliage of trees has some influence in filtering out the bacterial contents of the atmosphere. Their method of procedure, says the *Sanitary Inspector*, was to determine the number of bacteria in air under motion before and after it had reached the woods. The barometrical pressure, direction and strength of the wind, temperature at the edge and in the midst of the woods, humidity and rainfall, were all taken into consideration. As the number of observations was only forty, the investigators give the results with some reserve, nevertheless they believe that they are justified in affirming that forests do exercise the power of straining out the bacteria that are brought to them by the wind.

— Mr. C. Powell Karr, an architect of New York City, has extended his courses of home study in architecture. The instruction is conducted by mail. When these courses were initiated in 1887 they were established to aid young men and women, who, while holding a preference for architecture over its sister arts, have been denied an early opportunity of preparing themselves for their chosen work. At the present time, when so many universities have thoroughly organized and flourishing architectural courses, it would seem almost superfluous to supplement them by such a series of courses, but there is a great advantage in entering the collegiate life well equipped and thoroughly enlightened, and many have availed themselves of this system. It has been found also that there are a limited number of young men and women who are now engaged in pursuits allied to architecture who could and would avail themselves of these courses, and for them especially the revision has been made, the courses expanded and made individually applicable to the advancement of their professional and business interests. Among the students are found carpenters, masons, builders, contractors, professional draughtsmen, architects' superintendents, and even practising architects themselves. Architects have been quick to respond to the advantages offered them by the course in architectural engineering, as they feel the necessity of being in touch with the practice of the profession in the metropolis, and of having a living reference upon questions of difficult construction or technical procedure that may arise at a moment's notice.

— The evil repute of the cat still clings to him, says the *Illustrated American*. A Finisterre cat which has served nine masters in succession is believed to have the right of carrying off the soul of the ninth to hell. In Upper Brittany there are sometimes seen enormous cats engaged in holding a meeting. If any one presumes to intrude upon their presence, they surround and tease him for a time. Then a long needle is driven into his heart and he is dismissed. Hypochondria ensues, and he slowly wastes away. A black tom-cat, says a Russian proverb, at the end of seven years becomes a devil. A Breton farmer, who neglected to take the usual precaution of putting his tom-cat to death before it completed its seventh year, was found dead in bed one morning, with his throat terribly torn. Suspicion fell upon innocent persons, who were likely to be hanged on circumstantial evidence. Luckily, a boy observed that the cat of the house was always watching the corpse with eyes that blazed with rage. So he fastened to the dead man's arm a string, the end of which he dropped through the window into the yard. Then he told the police to watch the body secretly, while he pulled the string. They did so. When the boy gave the string a pull, the corpse's arm jerked. The cat imagined its master had revived. With one bound it sprang upon the bed, and furiously tore away at the corpse's wounded neck. Whereupon it was condemned to be burned alive, and the suspected persons were set free. It is believed that a cat's viciousness depends to a great degree upon the length of its tail. If the end of its tail be cut off, it is unable to take

part in the witch's *sabbat*. When a Walloon maiden wishes to refuse a suitor with contumely, she gives him a cat, and tells him to count its hairs. It is generally believed in France that a bachelor who treads on a cat's tail will find no woman to marry him till a full year has passed by. In Germany, in England, and in France many a religious *fête* of the middle ages culminated in pitching a cat off a height or into a bonfire. Indeed, as recently as 1818 a decree was issued at Ypres, in Flanders, forbidding the throwing of a cat off a high tower in commemoration of a Christian festival. Fontenelle told Moncrif that he had been brought up to believe that not a single cat could be found in town on the eve of St. John's, because they all went on that day to the witches' *sabbat*. It is readily intelligible from this why the people on that day threw into the fire all cats that were foolish enough to be caught. They actually believed that in doing so they were ridding the country of sorcerers.

— That the possibilities of agriculture in all parts and altitudes of Wyoming may be fairly tested, the trustees of the Agricultural Experiment Station of that State have established experiment farms in several different places. The west-central portion and the altitude of 5,500 feet above sea-level are represented by the Lander experiment farm of 137 acres, under irrigation, in Fremont County. The Laramie plains and the altitude of 7,000 feet are represented by the Wyoming University experiment farm of 640 acres, irrigated, in Albany County. The North Platte valley and the altitude of 6,000 feet are represented by the Saratoga experiment farm of 40 acres, Carbon County, irrigated. The northern part of the State and the altitude of 4,000 feet are represented by the Sheridan experiment farm of 50 acres, under irrigation, in Sheridan County. North-eastern Wyoming, with the greatest rain-fall and the altitude of 4,500 feet, is represented by the Sundance experiment farm of 49 acres, to be carried on without irrigation, in Crook County. South-eastern Wyoming, the Sybille valley, and the altitude of 5,000 feet, are represented by the Wheatland experiment farm, irrigated, in Laramie County. As the report of the Governor of Wyoming for 1889 shows that four-fifths of the State is between the altitudes of 4,000 and 8,000 feet, it is evident that the farming and grazing lands of Wyoming are now well represented. As soon, however, as the funds will permit, it is intended that other experiment farms will be established.

— Bulletin No. 14 of the Missouri Agricultural Experiment Station is devoted to a report on experiments with corn made in 1890. In these experiments a trial of deep and shallow tillage gave an increase of over fourteen bushels per acre, or twenty-one per cent of the entire yield, in favor of shallow tillage in 1889, and nearly thirteen bushels, or thirty per cent of the yield, in 1890. The implement used for shallow tillage was made expressly for this experiment, and has a number of knives running an inch or more under the surface, loosening the soil and effectually destroying weeds in its path, but not lifting the soil sufficiently to cover the weeds in the hill unless quite small. The Illinois Experiment Station at Champaign has made similar experiments, in which the average increase in favor of shallow culture was nearly eight bushels per acre over a period of three years. The Ohio Experiment Station has conducted similar experiments, using a cultivator not so well adapted to the purpose as the one described, but with results also in favor of shallow tillage. The Missouri bulletin, already quoted, also reports a series of experiments instituted for the purpose of determining the most profitable amount of culture for corn. The results of these experiments, and they are in harmony with similar tests made at the experiment stations of Illinois, New York, and Ohio, indicate that nothing is gained by cultivating incessantly. If the weeds are kept down and the ground is cultivated sufficiently to prevent a hard crust forming, two or three workings will produce as large a yield as half a dozen.

— Recent experiments in the laboratories of the Johns Hopkins University have shown that in one gram of loamy soil there are 3,740,000,000 particles. To the surface of each of these minute particles a thin film of moisture adheres by capillary attraction. The tips of the rootlets of plants have the power to absorb this hygroscopic water with the substances it holds in solution. The spaces between the particles of soil should be filled with air. If filled with water the plant will be killed by drowning. These experiments are of special interest in Wyoming, where soggy soil is rare, and the thickness of the film of moisture on the soil particle is the vital problem. Further experiments in the laboratories named have shown that certain alkalies have the power to thicken and retain the film of moisture on the soil particle. Experiments with these chemicals are being tried on the University experiment farm and grass fields of Wyoming, under the direction of Dice McLaren, in the hope of good results to the arid soils of that State. Gypsum and many other crystals have the property of absorbing and retaining vast amounts of moisture. It is probable that the rootlets of plants have the power to absorb this water of crystallization. Researches on this point are in progress at the station. Among the subjects used are ground gypsum and calcined gypsum. In moist climates gypsum is used as a reagent to set free the potash, nitrates, and phosphates in the soil. In the dry climate of the West gypsum may be found to have the further merit of absorbing water in wet times and of retaining it for the use of plants in dry times. In this connection experiments will be tried at the station with many native phosphates, nitrates, and other fertilizers, and with the waste products of glass and soda works.

— The other day, says *Nature* of May 28, Professor Vambéry delivered in Edinburgh, under the auspices of the Royal Scottish Geographical Society, an interesting lecture on British civilization and influences in Asia. He had many pleasant things to say about England, but did not quite overlook her shortcomings. He said he was immensely struck by the indifference shown by the public at large to every thing that concerned Asia. He had lectured in more than twenty towns in England, and found, even among the middle classes, great ignorance in regard to Asiatic geography and ethnography. Asiatic languages, moreover, were greatly neglected. Germany, which had not got any territory in Asia, bestowed far greater attention upon the old world than England. He opined that if the interest in Asia would increase in England commensurately with its political power and influence over the various races in Asia, Britain would decidedly remain there a permanent power which could never be ousted by any rival. He thought that there ought to be more schools for oriental languages in England. There was a general supposition that Britons in general could not learn foreign languages, but that was not true. The greatest linguists of our age had been British, as, example, Lord Strangford for Turkish, and the late Sir Richard Burton and the late Professor Palmer for Arabic. Then there were scholars like Sir James Redhouse, Sir Henry Rawlinson, Sir William White, and many others, bearing evidence of the brilliant linguistic capacity of the British. He believed that nothing could be easier than to recruit in England a goodly number of oriental linguists for employment in various Asiatic countries.

— In a communication to the New York *Sun*, not long since, Mr. George F. Kunz, the well-known expert in gems, called attention to a property of the diamond which may serve as a means of distinguishing it from other substances. Referring to the paper of Robert Boyle "On a Remarkable Diamond that Shines in the Dark," published in the "Transactions of the Royal Society" in 1663, Mr. Kunz remarks that this paper has been indirectly alluded to by a number of authors, but never read. Among a number of other facts, Boyle mentions one diamond that phosphoresced simply by the heat of the hand, absorbed light by being held near a candle, and emitted light on being rubbed. He stated that many diamonds emitted light by being rubbed in the dark. The experiments made by Mr. Kunz show conclusively not only that Boyle's statement that some diamonds phosphoresce in the dark after exposure to the sunlight or an arc electric light is true, but also that all diamonds emit light by rubbing them on wood, cloth, or metal, a property which will probably prove of great value in distinguishing between the diamond and other hard stones, as well as paste, none of which exhibit this phenomenon, and will be welcomed by the general public who do not possess the experience of the dealer in diamonds. The property is evidently not electric, or it would not be visible on being rubbed on metal.