

favor of commemorating the centennial of the constitution at Washington in 1889. The committee has not reported upon the manner of the proposed celebration, and also in regard to the quadri-centennial of 1892; but the action now taken furnishes sufficient assurance that the entire programme as contemplated by the board of promotion, and including its exposition features, will receive the indorsement of congress.

The department of agriculture estimates of area, product, and value, of corn, wheat, and oats for permanent record, are completed. The corn-crop, in round numbers, aggregates 1,665,000,000 bushels, grown on 75,000,000 acres of land, and has a farm value of \$610,000,000. The yield is 22 bushels to the acre, or $4\frac{1}{2}$ bushels less than last year. There is an increase of area of over 3 per cent, and a decrease in product of 14 per cent; while the average price has increased 12 per cent, or from 32.8 to 36.6 cents per bushel. The aggregate product of wheat is 457,000,000 bushels from an area of nearly 37,000,000 acres, having a farm value of \$314,000,000. The average value is 68.7 cents per bushel, against 77.1 for the previous crop, and 64.5 cents for the great crop of 1884. This is 35 per cent reduction from the average value between 1870 and 1880. The product of oats is 624,000,000 bushels, 5,000,000 less than last year, from an average of over 23,000,000 acres, producing a value of \$186,000,000. The average yield is 26.4 bushels against 27.6 last year. The average value is 29.8 cents per bushel; last year, 28.5 cents.

An effort is being made in Washington to secure the hall of the house of representatives for the opening session of the ninth triennial meeting of the International medical congress on the 5th of next September. About two thousand delegates are expected, including some three hundred from Europe. After the opening meeting the congress will be divided into seventeen sections, meeting in the different halls of the city.

An invitation has been received at the department of state, asking the government to appoint a delegate or delegates to the Fourth international prison congress, to meet at St. Petersburg in the year 1890. The President transmitted a message to congress on this subject last week, favoring the appointment of delegates, and they will probably soon be named.

The following bulletins of the U. S. geological survey are now in the hands of the printer: 'Physical properties of iron carburets,' Barus and Strouhal; 'Subsidence of small particles of insoluble solids in liquid,' Barus; 'Types of Laramie flora,' L. F. Ward; 'Peridotite of Elliott county, Ky.,' J. S. Diller; 'The upper benches

and deltas of the glacial Lake Agassiz,' Warren Upham; 'Fossil faunas upper Devonian Genesee section,' H. S. Williams; 'Report of work done in chemical division U. S. geological survey during fiscal year 1885-86,' F. W. Clarke; 'On the tertiary and cretaceous strata of the Tuscaloosa, Tombigbee, and Alabama rivers,' E. A. Smith and L. C. Johnson; 'Historical sketches of general work in Texas,' R. C. Hill; 'Nature and origin of phosphates of lime,' R. A. F. Penrose, jun.; 'Bibliography of American Crustacea,' A. W. Vogdes.

NOTES AND NEWS.

THE literature of spiritualism has recently been increased by an historical sketch of the subject by Dr. Paul Gibier ('Le spiritisme,' etc., Paris, 1887). The author is not a spiritualist, and takes great pains to state his disbelief in the supernatural in big letters. As a further guaranty of the scientific spirit which prompts his inquiry, he appends a list of his contributions to medical science. For the most part, Dr. Gibier contents himself with the rôle of historian. He gives a rapid sketch of the spiritual theories from the ancient Hindoos down to the researches of Crookes and Zöllner. His account of the modern developments in this strange field is quite convenient and readable. An outsider would hardly credit the statement that in Paris (by no means a stronghold of spiritualism) there are not less than 100,000 spiritualists. The statistics of the periodical literature of spiritualism is also astonishing: 13 such periodicals are in French, 27 in English, 36 in Spanish, 5 in German, 3 in Portuguese, 1 in Russian, 2 in Italian. Besides, a Franco-Spanish journal is published at Buenos Ayres, and a Franco-Dutch at Ostend. While the main portion of the work is historical, a few chapters are devoted to the account of séances mainly with the famous slate-writing medium, Slade. These have convinced the author that there are genuine facts in these phenomena which spiritualistic hypothesis, as well as current scientific knowledge, is unable to explain. More research is necessary before the final verdict can be given, and it is cowardly for science to refuse to study all such facts, and seek their explanation.

—The Indiana state teachers' association began its annual meeting in Indianapolis Dec. 28, extending its sessions through the two succeeding days. The high school section, and country and village school section, held the sessions on the 28th, and on the other days the association held meetings as a whole. A number of papers were presented in

general session, each supposed to be applicable to the needs of the common schools of Indiana. The following papers were read before the high school section : 'Mathematics as a factor in mind-development,' by J. A. Camagey ; 'Limitations in pedagogical psychology,' by J. R. Hart ; 'Psychology in its relation to English literature,' by A. M. Huycke ; 'Some observations on teaching Latin in the high school,' by George W. Hafford ; and 'Zoölogy in the high school,' by Prof. O. P. Jenkins.

—The *Medical news* contains an interesting statement of the books, pamphlets, etc., in the principal medical libraries of the country. It is as follows :—

	Vol- umes.	Pam- phlets.
Library of surgeon-general's office.....	76,700	106,600
Library of College of physicians of Phila...	34,234	16,026
Library of New York academy of medicine.	20,000	12,000
Boston medical library.....	16,374	13,364
Library of the New York hospital.....	15,860	—
Library of the Pennsylvania hospital.....	15,000	—

—The Bell and Lancaster systems of education, or at least so much of them as relates to the employment of monitors or pupil teachers, have been considered dead. But the *London Journal of education* announces that the Bradford (England) school board has adopted a plan according to which pupil teachers are retained, but on the half-time system, and they are placed during the second half of the time in a central class for instruction under skilled teachers. If pupil teachers are to be retained at all, some such basis as this is the only one on which it should be done.

—Prof. John W. Burgess of Columbia college is to deliver a course of ten lectures at Andover theological seminary during the spring, on 'The influence of the church in modern European history.'

—*Afrikanische nachrichten* is the title of a new monthly, which is published at the press of the geographical institute in Weimar. It is devoted to the extension of information concerning Africa, and will pay especial attention to German interests in that continent.

—The emigration at the German seaports and Antwerp amounted, during the first six months of 1886, to 39,477 persons. For the same period in 1881 it was 126,139 ; in 1882, 117,801 ; in 1883, 94,145 ; in 1884, 90,301 ; in 1885, 63,345.

—An excellent idea may be obtained of what subjects are of greatest contemporary interest to the leading universities abroad by an inspection of the list of lecture-subjects announced. For the

Hilary term at Oxford, for example, the following are some of the courses announced by the leading professors : Professor Bryce announces a course on some leading principles and maxims of Roman law, with illustrations from the Digest ; Professor Dicey, on the law of contract, and on succession to real and personal property ; Professor Burdon-Sanderson, on the physiology of the nervous system ; Professor Sylvester, on surfaces of the second order ; Professor Jowett, on the history of Greek philosophy from Thales to Socrates ; Professor Nettleship, on the history of Latin literature from the earliest times to the end of the second century B.C. ; Professor Wallace, on moral psychology, and on the relations of ethics and aesthetics in German philosophy from Kant to Schopenhauer ; Professor Fowler, on the Aristotelian logic, on the methods of the various sciences, and on the principles of legal and historical evidence ; Prof. Bonamy Price, on free trade and fair trade ; Professor Palgrave, on the sculpturesque and pictorial styles in ancient and modern poetry.

—Mr. Bardeen of Syracuse announces for sale an uncut copy of the 'Orbis pictus' of Comenius. Only one other copy is known to be in America.

—Prof. Max Müller is to lecture at Oxford during the present term on the Vedas.

—We learn from the *Athenaeum* that Professor Bain is about to publish a new and enlarged edition of his 'Rhetoric and composition.' In this edition the author proposes to omit a number of the topics comprised in the existing work, and to bestow a greatly expanded treatment upon points selected on account of their importance as well as their suitability to pupils of a certain standing. In part i. the subjects are, order of words, number of words, the sentence, the paragraph, figures of speech, and intellectual qualities of style. The second part, which will speedily follow, is exclusively devoted to the emotional qualities of style, and is meant to be an introduction to the higher criticism of poetical literature. The first part will be accompanied by a small volume entitled 'On teaching English,' which is partly controversial and partly didactic. It discusses the various methods of English teaching at present in use, and exemplifies the rhetorical method in a series of select lessons. It also handles at some length the vexed question of the definition of poetry.

—Captain Gore of the royal engineers is to construct the new map of Afghanistan from the surveys, reconnaissances, and explorations made by the Afghan boundary commission.

— The healing-springs of Bosnia and Herzegovina seem destined to occupy a prominent place among the health-resorts of the world. Professor Ludwig of Vienna, in the course of an official journey recently, discovered over fifty medicinal springs. The best are those at Banjaluka, Serajewo, and Dolnja-Tuzla.

— According to the newest and best maps of New Guinea, that region, including the small island lying near its coast, has an area of not less than 795,223 square kilometres. Of this territory, 390,560 square kilometres are under Dutch protection, 225,463 under English, and 179,200 under German.

— During the holidays a meeting was held at University college, Toronto, to organize a modern-language association for the Province of Ontario.

— *Modern-language notes* announces that Professor Crane of Cornell university is preparing an extensive work on the great mediaeval collections of Latin stories, their sources and imitations in the modern languages. A large part of the material has been taken from unedited manuscripts in the British museum and National library at Paris, or from early printed books. Among the former class are the *exempla* or illustrative stories contained in the sermons of Jacques de Vitry, bishop of Acre and the historian of the Crusades. Although these stories are of the greatest value for the question of the diffusion of popular tales, they have never before been edited. Professor Crane's work, which is entitled 'Mediaeval story-books and stories,' will cover the entire range of mediaeval Latin fiction, including *contes dévots*, fables, apologues, historical anecdotes, jests, etc., and will be valuable not only to the student of comparative literature and folk-lore, but also to those interested in mediaeval culture and history.

— In order to aid the law-students in the study of the year-books and other legal documents in Norman French, the trustees of Columbia college have provided a lecturer on Norman French for the law-school.

— The December issue of the Johns Hopkins university circulars contains the report of Prof. W. K. Brooks on the Zoölogical work of the university since 1878, and also a series of papers on the work of the marine laboratory during the past summer.

— From time to time the English papers publish reports as to the health of Mr. Herbert Spencer. It is now said to be improving.

— The *Athenaeum* announces that the second volume of Professor Pfeiderer's 'Philosophy of

religion,' now in the press, will include not only many corrections and additions by the author, but also some new matter on the English philosophers of the present day.

— The present series of free public lectures at Columbia college, which it is hoped will become a permanent institution, was opened on Saturday, Jan. 8, by William Henry Bishop, who spoke on 'Characters and dialect in fiction.' Last Saturday Mr. E. A. Nadal lectured on 'Recollections of the south.' Tickets for these lectures are issued because of the limited capacity of the lecture-hall, but they may be obtained free of charge by addressing the registrar, Columbia college.

— Those who have followed the Irish question in British politics, and who have read Mr. Gladstone's 'History of an idea,' will be interested in the presentation of the opposite view by Lord Brabourne. This was first printed in *Blackwood's magazine*, but is now issued separately.

— In the January number of the *Andover review*, Prof. George H. Palmer of Harvard defends his view of the elective system against its critics, and closes the discussion on that subject which has been going on in the columns of the review for a year past.

— 1,800,000 francs have been subscribed to establish the Pasteur institute in Paris. Some of the largest contributions have been received from English brewers, as a token of their appreciation of Pasteur's work in connection with fermentation.

— The New York cremation society, which has its crematorium at Fresh Pond, Long Island, has incinerated eighty-four bodies during the past year.

— M. Peyraud considers one of the best means of determining the death of an individual to be cauterization by Vienna paste. If the eschar forms slowly, and is of a yellow color or transparent, death may be positively declared, while, if it is red, brown, or black, life still exists.

— The following officers were elected at the annual meeting of the Appalachian mountain club in Boston, Jan. 12: president, Prof. Alpheus Hyatt of Cambridge; vice-president, Robert C. Pitman of Newton; recording secretary, Rosewell B. Lawrence; treasurer, Gardner M. Jones. Committees: on natural history, George Dimmock of Cambridge; on topography, Prof. E. E. Burton; on art, Charles W. Sanderson; on explorations, Frank O. Carpenter; on improvements, Isaac Y. Chubbuck. Trustees, Professor William H. Niles of Cambridge, Augustus E. Scott of Lexington,

Charles W. Kennard. It was also voted that the admission-fee be hereafter five dollars.

— Since our last issue two men have died who have been prominently connected with the science of America. The one was Gen. W. B. Hazen, the head of the U.S. signal service, and the other Prof. E. L. Youmans, to whom Americans owe a debt for his successful labors in rendering available to them much of the best scientific thought of the time.

— As is usual, the *Athenaeum* prints in its first January number a series of essays on the continental literature for the past year. The article on French literature is by Gabriel Sarrazin, and contains incidentally a savage denunciation of M. Zola. The article on Germany, from the pen of Hofrath Zimmermann, is as interesting as usual. Arminius Vámbéry writes of Hungarian literature, and R. Bonghi of that of Italy.

— The *Woman's journal* has been emphasizing the well-known fact that female teachers greatly preponderate in this country. To so great an extent is this true, that, in respect of elementary schools, those cities are the exceptions in which male teachers are employed, save as principals, or teachers of some special branch, say, German. Taking the ten cities of Baltimore, Boston, Brooklyn, Chicago, Cincinnati, New Orleans, New York, Philadelphia, San Francisco, and St. Louis together, there are 12,719 public-school teachers, of whom 11,540 are women. The average percentage of male teachers in these cities is 9.

— The entrance of Sir Henry Roscoe upon a political career necessitates the giving-up of his chair at Owens college, Manchester. Mr. H. B. Dixon of Trinity college, Oxford, has been called to succeed him.

— The *Educational times* says that "the friends of education have much reason for rejoicing in the fact that a large number of the memorials which are to render her majesty's jubilee memorable will take an educational form. Technical schools, colleges, and endowments of professorships will be, in many cases, the visible signs by which contemporary English loyalty will be evidenced to unborn generations."

— According to the *Journal of education*, the modern Greeks are, in one respect at least, aiming as high as the ancient Greeks: they are beginning to conquer the world — the world, at any rate, of the east — by culture. A correspondent of the *Journal des débats* gives some account, in this connection, of the great advance which higher education in Greece has made of recent years. There

are 33 gymnasia in the kingdom, 200 secondary schools, and 1,717 primary schools. These are all public. Among the private educational establishments, the first place must be given to the Society for the higher education of women, in connection with which a lycée for girls was established a few years ago, with a staff of 76 teachers and 1,476 pupils. Greeks send their girls there from all parts of the east. Education is very liberally endowed in Greece; and the sums which Greeks settled in foreign countries send home for this purpose are very large. One result, of course, is that the Greeks are almost entirely in possession of the learned professions in Turkey. Illiteracy, too, is rare in the kingdom: in the most out-of-the-way hill countries you will see little scholars reading their Plutarch's 'Lives.'

— The Standard typograph company, whose typograph was described and illustrated in *Science* for Sept. 17, 1886, have published a little pamphlet calling attention to recent improvements in their machine. By the use of 'slugs,' or strips of metal, instead of a single sheet, the lines of type-impressions may be spaced or 'leaded' any desirable distance apart, in the same manner as ordinary type. The use of what is known as 'self-spacing' type, that is, type whose width of face is a certain determinate multiple of an established unit, removes some, though not all, of the difficulty in 'justifying' or spacing uniformly between the words. These two points are decided improvements; but the specimens of work given in the pamphlet show that many of the defects and imperfections previously mentioned in *Science* still remain.

— In lecturing before the Society of natural history at Berlin, Professor Stricker has employed with much success an electric lamp of 4,000 candle-power for the projection of microscopic sections upon a screen, employing a magnifying power of six to eight thousand diameters. It is stated that the definition obtained is very satisfactory.

— In a letter to a London newspaper, Sir Edward Watkins advocates a system of experimental boring, by the British government, with a view to discovering natural gas in England. The many advantages derived from the use of such gas at Pittsburg and elsewhere in Pennsylvania are stated as incentives to the undertaking of such work by the government.

— A new type of submarine torpedo-boat is being experimented with at the West India docks, London, England. The peculiar feature of the boat is the means adopted to secure immersion or flotation, which consists in increasing or reducing

her displacement by projecting or withdrawing telescopic chambers in her sides, instead of pumping water into or out of ballast tanks, the method usually followed in similar boats. The boat is spindle-shaped, 60 feet long and 8 feet in diameter amidships, built of $\frac{3}{8}$ -inch steel, and is propelled by an electric motor of 45 horse-power, current being furnished by storage batteries.

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.

Popular science.

It is often very popular indeed. Here is an article on the voices of animals by Detler von Geyern (whoever he is), from *Ueber Land und Meer*, translated for the *Popular science monthly*, January, 1887, written in the good old traditional vein, quoting what anybody has said on the subject in a wonder-mongering way, as if every thing said and written must be true. And Herr von Geyern himself says, "Fish can produce no sound in water, because air is lacking as a medium to propagate the waves of sound; and yet we incline to the belief that water itself may admit of forming some kind of sound-waves which the fish may be capable of exciting, and which will be experienced and comprehended by other fish;" and he adds, "As far as we are concerned, of course, fish will remain mute," etc.—as if between fifty and a hundred species of fish are not known to make sounds, many of which have been described and explained by naturalists; and as if water and every other elastic medium were not well known as propagators of sound, often better than air,—a fact familiar to boys, who hold their heads under water, while bathing, to hear the loud sound made by the striking-together of two stones under water in the hands of a companion at a little distance.

H. W. P.

Grinnell, Io., Jan. 14.

The natural method of language-teaching.

I read with much pleasure the recent article of Professor Carpenter on the natural method of teaching languages. Such articles are in the direct interest of truth, and therefore of science; for the more the claims and achievements of the teachers of these methods are scrutinized, the more evident their weakness becomes. Every intelligent teacher knows that there is little if any thing really new in any of these methods, and every good teacher of languages has employed several, if not all, of their varieties and sub-varieties, each of which is superior to the others in the opinion of their self-styled inventors. We are safe in assuming that the natural method of learning a foreign language is at least as old as the time of Cain, for it is both probable that he learned the language of the people of Nod, and that he used neither grammar nor dictionary.

I believe, that, in the main, great improvements have been made recently in the teaching of languages, but not greater than, or even so great as, in the natural and physical sciences, as they are commonly called. For some reason the teachers of the last two have either been more modest in proclaim-

ing their progress, or they have been more generally aware that they are only employing methods that the best teachers in these departments, as in all others, have been using to a greater or less extent ever since the birth of science.

Several years ago I took considerable pains to examine, both at first-hand and at second-hand, the claims of several of the most widely known teachers of natural methods as applied to foreign languages. I then made some statements that agree almost verbatim with those made by Professor Carpenter. In spite of the well-established fact of every-day experience, that the adult is able to retrace but very imperfectly the psychological experiences of his early years, we are told that all persons, no matter how old, should, if desirous of learning a foreign language, proceed exactly in the same way that they learned their mother-tongue. This is the inductive method run riot, while experience and generalization count for nothing. To me the best refutation of the claims of most teachers of natural methods lies in the fact, that, while professing to be able to teach us to "read, write, and speak their vernacular correctly in an incredibly short time," I have not yet found one or heard of one who spoke English more than passably, even after years of practice. Shall we say, 'Physician, heal thyself'? or shall we excuse their shortcomings for the reason that 'physicians never take their own prescriptions'? CHAS. W. SUPER.

Athens, O., Jan. 16.

Stereoscopic vision.

The letters in the last two numbers of *Science* (ix. Nos. 204, 205) in relation to stereoscopic vision lead me to ask if any of your readers have ever tried the experiment of viewing a stereoscopic picture with the naked eye, and, by changing the focal distance, or visual angle of the eyes, so adjusting them, while looking at the picture, or, more properly, the two pictures, that the full stereoscopic effect is produced, and all parts of the picture stand out distinct, and in as bold relief as when seen through the two glasses. The first effect of the change of the visual angle, from the paper on which the pictures are imprinted to a more distant range of vision, is to double the number of the pictures, four now coming into view. The two inner ones overlap more or less, and slide over each other to right and left, as the visual angle undergoes alteration, until finally, when the proper adjustment is reached, the two pictures coincide in all their parts, coalescing, as it were, like two drops of water or two globules of quicksilver when they meet and run together. And now there are three pictures in view, and the eyes may be turned about from one point to another, and any part or particular object in the picture minutely inspected in any one of the three copies. The central picture is the most clear and distinct, being held in view by both eyes, while the two outer ones are respectively visible to only one eye.

W. W. ANDERSON, M.D.

Stateburg, S.C., Jan. 13.

An electric ball of fire.

In the summer of 1881 it was my good fortune to observe some electrical phenomena in the way of 'globular lightning,' which differ, I think, in some respects, from any other case on record. It consisted of a ball of fire which rolled down an iron water-