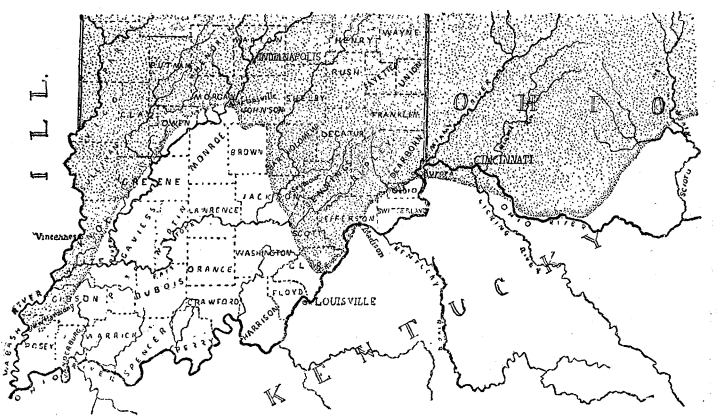
reaction to some organic amine, and hopes to continue the investigation of it. — C. A. Crampton and H. W. Wiley, Bi-rotation of commercial starch-sugars, and a method of analysis based thereon. — G. L. Spencer, A method for the determination of phosphoric acid in commercial fertilizers. This was essentially an improvement on the volumetric uranium process. — H. W. Wiley, A method of determining the end reaction in sugar-reductions.

San Diego society of natural history.

March 7. — Mr. D. Cleveland made remarks relating to a tubular stone found in Temecula Cañon, supposed by him to have been used by the Indians as a pipe. Mention was also made of the Indians using the leaves of several species of Nicotiana (N. Clevelandi and N. Bigelovii) as a substitute for tobacco. — A medium-sized olla was described by Mr. C. R. Orcutt as having been made by the Indians of Lower California in imitation of a teapot, with a nose and perforations in the side of the unglazed pot, and which was used by them to steep the leaves of Mentha Canadensis, L. — Miss K. O. Sessions presented specimens of a rock from San Benito county, Cal., which is largely used in the adulteration of soap, and the best substance known for that purpose. — Mr. Jos. Winchester presented a chart representing the comparative meteorology of San Diego (on San Diego Bay) and Poway (twelve miles from the coast) during the last five years; showing that the rainfall is greatly less near the coast than among the hills, while the humidity of the atmosphere near the coast is greater for ten months in the year than away from the coast. The explanation of the chart by Mr. Winchester was followed by a general discussion. — Mr. C. R. Orcutt read a few notes on the native cacti, mentioning several undescribed species of this county and Lower California.

NOTES AND NEWS.

THE detailed results of Mr. G. F. Wright's studies in 1882 and 1883, of the southernmost drift margin in the Ohio valley, are recently published by the Western reserve historical society. The pamphlet includes a revised reprint of Mr. Wright's lecture on glacial phenomena in the United States, from which we copy, in reduced form, the accompanying figure of part of the drift boundary in the states examined. Several other cuts illustrate the boundary by counties in much greater detail. The description of the district opposite Cincinnati, where the effects of ice-action are traced across the Ohio into Kentucky, is still confessedly incomplete; but, so far as observed, there is no question of the presence of true, unmodified glacial drift south of the river. It is to be noticed that another invasion of Kentucky is marked on the map here given, farther down the valley, at Madison; and that the retreat of the glaciated area towards Indianapolis seems to mark the division between two lobe-like extensions of the drift, which are now found to be frequently characteristic of the old ice-front, wherever studied in detail. The report attempts little of novelty in its subject-matter, being confined closely to questions of distribution; but the continual repetition of the familiar evidences of glaciation, — scratched rocks, heavy till, large granite bowlders, kames, and kettle-holes, — limited by a line of great irregularity, both horizontally and vertically, presents precisely the definite commonplace proof that is wanted in connection with the many scattered observations heretofore made.



MAP OF SOUTHERN INDIANA AND OHIO, SHOWING GLACIAL BOUNDARY.

— The trustees of the Peabody academy of science at Salem have decided to make a fireproof additional building, seventy by fifty feet, and two stories high. The additions to the ethnological collections, especially from Japan and Corea, have been very considerable during the past year.

— A recent calculation of the population and area of Australia states that there are only three human beings to every four square miles.

— The London society of arts has received a donation of twelve hundred pounds from one of its members, Mr. William Westgarth, to be expended on prizes for the best essays on dwellings for the poor, and the reconstruction of central London. The essays should include the following points: 1. The reconstruction of the central part of London with regard to the plan of the streets; 2. Removal of the old and poisoned soil; 3. Re-arrangement of the levels, and provision of subterranean ways for the accommodation of electric wires, pipes for water-supply, sewage, etc., and also provision for warehousing.

The prizes for these essays will be one of five hundred pounds, and one of two hundred and fifty

pounds. Three prizes, of one hundred and fifty pounds each, are to be given, either separately or to the writer of the larger essay, for the best treatment of the engineering, the architectural, and the sanitary considerations involved in the scheme. Mr. Westgarth's views as regards the prizes, and his hopes as to the value of the essays, may be fairly understood from a paper read by him at the Society of arts on Feb. 6, which embodied his own ideas on the question. The prize will be adjudged on Dec. 31, 1884.

— The researches of Dr. Angus Smith, one of the English inspectors under the Rivers pollution prevention act, have led him to the discovery that in all natural waters sugar ferments, and hydrogen gas is given off. The proportion of hydrogen given off varies with the organic impurity of the water, from the mountain stream to the worst sewage, so that the proportion of hydrogen evolved appears likely to prove a quantitative test of the activity or virulence of the microbes present in the water. Dr. Angus Smith's researches will probably be embodied in his next report. The importance of his discovery will be plain to every one familiar with recent micro-biological research, and suggests a test of the miasmatic condition of particular soils, and, of course, localities.

— A new French work by Dr. Bordier of the Paris School of anthropology, called '*Géographie médicale*,' gives an account of the geographical distribution of diseases, including a mass of information bearing on the relations between particular maladies, and climate, topography, and even race.

— We learn from the *Observatory* (March), that, in consequence of M. Houzeau's resignation of the directorship of the Royal observatory at Brussels, a committee, consisting of MM. Liagre, Mailly, and Stas, has been appointed to preside over that institution, and the following appointments have been made: M. Niesten has been appointed chief of the department of mathematical astronomy; M. C. Fievez is temporarily intrusted with the direction of the physical department, and, with M. Lagrange, has been promoted from the rank of assistant to that of astronomer; and M. Vincent has been promoted to the rank of meteorologist. Vol. iv. of the new series of annals has just been published, and contains, in addition to the meridian observations for 1879–81, drawings of the moon, observations of Jupiter's satellites, physical observations of Jupiter and of comets (*b*) and (*c*) 1881, and a study of the solar spectrum.

— The hydraulic method of mining has lately been used to remove some bluffs at the opening of the Dutch Gap canal. There had been trouble from caving in, obstructing the entrance. At the suggestion of Mr. C. P. E. Burgwyn, a powerful stream of water was directed against the banks, while a strong enough current was running to carry off the material as it fell, with a result highly satisfactory, as reported.

— It is said that a recent cold blizzard in southern Oregon killed thousands of robins and blue-jays, which usually winter in this latitude with safety. The birds have had no such experience since 1862.

— The bulletins of the Paris society of anthropology are always especially full on the subject of anatomy in its bearings on the natural history of man. Part iii. of vol. xvi. contains some very interesting papers of this description. M. C. Ikow, in discussing the color of the skin, eyes, and hair, says that a sufficient number of individuals in most ethnic groups will display a regular gamut of shades. Our knowledge of pigment itself is very imperfect. We do not know whether there is one pigment or whether there are several. It would be very useful to anthropology to know the chemistry of these pigments, the conditions of their occurrence, the influence of external and internal circumstances in modifying them. Domestication in animals produces great variability. It is therefore allowable to suppose that the endless variety in the environment of man occasioned by his occupying nearly all the earth, the endless variety of functional activities occasioned by the great range of food, etc., act similarly to domestication in animals. It may not be the sun immediately that turns the negro's skin black, and the Russian's hair white; but, mediately, the myriad physical movements consequent upon the sun's action act together to bring about the changes under discussion. Heredity must not be overlooked among the conservative powers. Mr. Ikow considers that there are fundamental eye-colors, just as there are fundamental race-forms. In opposition to Broca's brown, green, blue, and gray fundamental shades, he maintains that gray and blue eyes have no pigment whatever, their color being due to the structure of the iris. He further claims that Broca's colors correspond to no natural groups of humanity. The classifications of colors in the eyes, hair, and skin, are given in tabular form.

The most elaborate paper in the number is by Dr. Réné Collignon (pp. 463–526), upon the anthropometric elements of the principal races in France. It is well known that an effort is now making to replace the slow and unsatisfactory measurement of skeletons, of whose racial identity there must always be some doubt, with the much more convenient examination of the living. The Paris school of anthropology has two sets of observations, called the full and the abridged scheme; and the latter of these has been taken on a hundred Celts, a hundred Cymrians, fifty Lorrains, and thirty Mediterraneans (Catalans). These two hundred and eighty individuals are compared in every way which Collignon's genius could devise to give a scientific result. The variations imputable to height are the following: when the height increases, it is due to the augmentation of the length of the legs; all other parts diminish proportionally. So that the people are not far from wrong when they say of a tall man, 'He is all legs.' The only part of the body (except the special measures of the head and face) sensibly affected in its proportions by race is the trunk: it is long in the Catalans, short in the Celts, medium in the Cymri.

— The council of the Academy of natural sciences of Philadelphia announces that Prof. H. Carvill Lewis will deliver a course of twenty lectures upon the geology and mineralogy of eastern Pennsylvania,

beginning April 15. Every alternate lecture will be given in the open air, at different localities of geological interest in the neighborhood of the city. These field-lectures will take place on Saturdays, the excursions occupying the greater part of the day. The final field-lecture (June 21) will treat of coal and the methods of surface and underground mining, as illustrated in the neighborhood of Hazelton, Penn. Visits will be made to the mines of Mr. Coxe, at Drifton, and to the Hollywood colliery, near Hazelton, where the end of a coal-basin has been completely uncovered.

— It is hoped that the next annual meeting of the National educational association of the United States, to be held in the capitol building, Madison, Wis., July 15–18, will be the largest educational meeting ever held in this country.

— An extended course of instruction in mineralogy will be given by Prof. H. Carvill Lewis, at the Academy of natural sciences, Philadelphia, during the coming autumn and winter.

— The two remaining lectures of the course of free lectures under the auspices of the New-York academy of sciences, are, April 21, Recent discoveries in the prehistoric mounds of Ohio, by Prof. F. W. Putnam of Cambridge, Mass.; and, May 19, The glacial epoch in North America, by Prof. H. Carvill Lewis of Philadelphia.

— Dr. L. Waldo has just completed the erection of a normal clock at the Yale college observatory, to be used as a mean-time standard in the horological work of that institution. The movement and pendulum are parts of the gravity escapement clock built by Richard Bond (No. 367), and which had a phenomenal record under Mr. Hartnup at Liverpool, and later under Prof. W. A. Rogers of Cambridge. The case from Dr. Waldo's designs is built of cast-iron, with planed back and front, to which are clamped the plate-glass doors. The entire case rests upon two brick piers, which rise to the height of the movement, and insure stability to the pendulum suspension. Thermometers, a barometer, and a cup of calcic chloride, are placed within the case, which can be exhausted to any barometric pressure desired by an air-pump attached to its side. The escapement, and arc of vibration, can be observed and adjusted with the greatest accuracy. The clock is erected in the clock-room of the observatory, which was specially built to secure uniformity of temperature.

— During the week from June 28 to July 5, inclusive, it is proposed to institute a summer school of geology at the Delaware Water-Gap, Monroe county, Penn. Those desiring to join this class should make application to Prof. H. Carvill Lewis, Academy of natural sciences, Philadelphia.

— In the neighborhood of the Puerto de Toledo, Madrid, the manufacture of artificial whalebone has been started. It is made from the horns of black cattle and buffaloes. It is said that the factory is provided with all modern improvements, and that its products are already competing successfully with similar articles which are imported from abroad.

— The *Engineer* of Feb. 1 gives a very easy practical suggestion for preventing the boiler-explosions which occur so frequently in the early morning, while the boilers are being fired up, after standing with fire in all night, and the water on the simmer. It is suggested that a little air and cold water should be forced into the boiler before vigorous fires are made, so as to impart some air to the water, and lessen its superheated condition.

— The new Sydney paper, *The Australian graphic*, is illustrated by typographic etchings on glass plates made by the process of Mr. H. S. Crocker. The writing or drawing is executed with a resist crayon, made of a waxy material; and it need scarcely be said that hydrofluoric acid is used as the etching-fluid. It has been noticed that the tendency to undercutting is remarkably small, so that no precautions are required but an occasional stopping-out of the finer parts. The glass plates are cemented down on metal blocks for use in the printing-machine; but it is not stated how the clearing-out of large whites, and the turning of the blocks, are effected. It is said that the inventor originally intended to print from electrotypes taken from the glass; but this is found unnecessary in practice, as no inconvenience is caused by the use of the glass itself in the printing-press.

— M. Poincaré has been investigating the physiological action of petroleum-vapors, and gives his results in the *Journal de pharmacie et de chemie*, vii. 290. He found that an atmosphere charged with petroleum-vapors, such as is respired by workmen engaged in the petroleum industry, proved fatal to guinea-pigs after periods of exposure of from one to two years. Dogs and rabbits, under similar treatment, manifested languor, and loss of appetite. The work-people themselves complain only of an irritation of the membrane of the nose, and headache. It is nevertheless evident, that precautions should be observed, to prevent, as much as possible, the respiration of these vapors by the human subject.

— The fourth part of the transactions of the Ottawa field-naturalists' club shows marks of unusual activity on the part of so small a society (one hundred and thirty members), printing reports of no less than six different branches. The scientific papers are very fitly concerned mostly with local natural history.

— Sixty-nine species of butterflies are credited to Maine, and briefly described by Prof. C. H. Fernald in a paper of 106 pages, appended to the annual report of the State college of agriculture and the mechanic arts, at Orono, Me., for 1883.

— The catalogue of stars prepared from observations at the Glasgow observatory, extending over the years 1860 to 1881, has just been published by Professor Robert Grant, the Royal society having contributed largely toward the expense of printing from the government-grant fund.

— Mr. W. Mathieu Williams, in his usual science notes for the *Gentleman's magazine*, mentions an ingenious application of oxalic acid by saturating blotting-paper with it. The blotting-paper will then not

only absorb the excess of ink from a blot, but will remove the blot altogether; provided, always, the ink be of the old-fashioned kind, unmixed with indigo or aniline color. Such blotting-paper may, however, deal with signatures as well as blots: this is one reason for using the inks that are not entirely dependent upon the iron salt. Oxalic acid, however, is not very dangerous as a means of fraud, seeing that a trace of the writing, or the blot, remains; and this may be brought out again into full legibility by adding ferrocyanide of potassium or gallic acid.

— In his lecture given in London on house-drainage, Capt. Galton drew attention to the formation of nitre in the organic remains in the subsoil of old cities and villages. The wells of Delhi were at one time completely contaminated thereby; and there are many factories of saltpetre in India whose supplies are derived from this source. During the English blockade of European ports, Napoleon I. procured his nitre for gunpowder from the subsoil of Paris. The *Engineer* remarks that the conversion of ancestors into explosive material is more objectionable than Shakspeare's ultimate fate of Caesar, — to 'stop a hole to keep the wind away.'

— The Worshipful company of grocers, one of the old London guilds, has endowed a prize of a thousand pounds, to be offered once in every four years, and to be awarded for the discovery of any proof with regard to a subject in connection with sanitary service named by the company. The first essays for this discovery prize which is to be open to universal competition, British and foreign, are to be sent in by Dec. 31, 1886, the following problem being the test: "the discovery of a method by which the vaccinum contagium may be cultivated apart from the animal body, in some medium or media not otherwise zymotic; the method to be such that the contagium may be, by means of it, multiplied to an indefinite extent in successive generations, and the product after any number of such generations shall (so far as can within the time be tested) prove itself of identical potency with standard vaccine lymph."

— The memorial tablet to Elihu Root, lately professor of mathematics and physics in Amherst college, and which was destroyed in the burning of the Walker Hall two years ago, has recently been restored to its former location in the philosophical lecture-room of that building. The inscription reads as follows: —

"IN MEMORY OF
ELIHU ROOT,
PROFESSOR IN THIS COLLEGE FOR FOUR YEARS.
Born Died
Sept. 14, 1845. Dec. 3, 1880.
'SPEREMUS.'
A.D. 1883, restored from the fire of March, 1882."

This memorial was originally erected in June, 1881, by the graduating class of that year.

— The *Seconde société de Teyler*, of Harlem, has offered again its gold medal for a satisfactory essay "to furnish a critical study of all that has been said for and against spontaneous generation, especially during the last twenty-five years." The competing essays should be sent to the society before the 1st of April, 1886.

— By a happy accident, just as a plan for a topographical survey of Massachusetts is being considered, the discovery has been made of some original unpublished documents, relating to the former geodetic survey, by Borden. One is a letter of forty pages, addressed to the Hon. Theophilus Parsons, then chairman of the joint committee of the legislature, in which Mr. Borden reviews the whole matter of the state survey, describing in a very simple manner the methods used and the results obtained, and concluding with a detailed statement of the expense of the work from 1830 to 1841: the other is a paper addressed to the American academy of arts and sciences, dated August, 1850, in which is described in great detail, accompanied by carefully-drawn plates, the base-measuring apparatus, devised, constructed, and used by Borden in measuring the base-line in the Connecticut valley. The work done with this apparatus was of the most accurate character, the difference between two measurements of a line over seven miles long being less than a quarter of an inch. This paper was never sent to the academy; but, after various wanderings, both have reached the hands of Professor Vose of the Massachusetts institute of technology, who has presented them to the academy. It is to be hoped that the academy will print them in full at an early day.

— Messrs. Henry Edwards and S. Lowell Elliot announce that they will publish from time to time independent monographs of North-American Lepidoptera, with colored illustrations, prepared by different American entomologists. Ten are already announced by Dr. A. S. Packard, Messrs. Roland Thaxter, Eugene M. Aaron, R. M. Stretch, W. H. Edwards, B. Neumogen, and the futherers of the enterprise. They are to be published at only a slight advance upon the actual cost.

— In view of the communication by Dr. Bradner to the Academy of natural sciences at Philadelphia, reported on p. 334 of *Science*, a correspondent from Newark, O., warns us that any inscribed stones said to originate from that locality may be looked upon as certainly spurious. Years ago certain parties in that place made a business of manufacturing and burying inscribed stones and other objects in the autumn, and exhuming them the following spring in the presence of innocent witnesses. Some of the parties to these frauds afterwards confessed to them; and no such objects, excepting such as were spurious, have ever been known from that region.

— Mr. Winfred A. Stearns proposes, if a sufficient number of subscriptions can be procured, to publish at Amherst, Mass., under the auspices of the Massachusetts agricultural college, a scientific journal, to be devoted exclusively to the interests of natural history in the state of Massachusetts, and to be called the *Bulletin of the natural history of the state of Massachusetts.*

— Among recent deaths, we notice those of Dr. J. W. Gintl, professor emeritus of physics and mathematics, at Graz, Dec. 22, 1883, in his eightieth year; Ch. H. Merrifield, Jan. 1, at Hove; Professor Hermann Schlegel, director of the museum of Leyden; Prof. H. C. Berghaus, the well-known geographer, in his eighty-seventh year, at Stettin, Feb. 17; Quintino Sella, president of the *Accademia dei lincei*, at Biela, March 14; and Dr. E. Behm, the geographer.

— M. Adams, says the *Athenaeum*, has successfully established an optical telegraph between the islands of Mauritius and Reunion, a distance of two hundred and forty-five kilometres. Observers in Mauritius can read the signals without difficulty, and the arrangements for announcing cyclones are in process of completion.

— Russia has two polar stations on Weyprecht's plan, — one at Sagastyr (the mouth of the Lena), and the other at Little Karmakuly, Moller Bay (the west coast of Novaia Zemlia). According to the latest news, which is, as may be understood, slow to reach St. Petersburg, the Lena station was in good condition, and is to be continued until July, 1884. Thus the stations which are most interesting and most difficult to reach (the Lena and Lady Franklin Bay) will have the longest course of observations. The Novaia Zemlia station has finished its observations; and the members, consisting of Lieut. Andrejew, Midshipman Wolodkowsky, Drs. Grinewetzky, Kriwoskeya, and seamen, have returned.

Lieut. Andrejew, in a lecture before the Geographical society, gave the following facts in regard to the station. The latitude of the station was determined by observation of the sun and stars; the longitude, by double chronometer comparison between Karmakuly and Archangel. The observations comprised hourly reading of the magnetic and meteorological instruments, with more frequent reading of the former on stated days and during magnetic disturbances. The results have not yet been calculated. Scurvy was prevented by exercise and the use of good fresh food, and the health of all was good. The death of one seaman happened under somewhat strange circumstances: he disappeared, and after long search was found undressed, in the snow, with his legs frozen. They were amputated, but he died soon after.

— We have already referred to the observations of Lessar in regard to the character of the valley or depression which had been regarded as an ancient channel of the Oxus, south of Khiva. From Bala Ichemi he turned to the eastward, to Kavakli, on the Amu Daria, and, according to letters just received, found no trace of any ancient river-bed. Gen. Stebnitzki and other explorers of this region do not accept as yet the opinion of Lessar in this particular.

— A very interesting addition to the mollusca of the United States is made by Stearns, who describes, in the *Proceedings* of the Philadelphia academy, Pyrgula nevadensis, from specimens obtained by Xenos Clarke and R. E. Call, at Pyramid and Walker's lakes, Nevada. The species is found living in the depths of the lakes, and fossil on the shores; but the specimens collected all appear to have been destitute of the soft parts, for which reason the generic relations cannot be said to be definitely settled, though probably correctly surmised. A fossil shell had previously been described from the post-pliocene of Illinois, by Wolf; but its affinities may be said to be very imperfectly determined. The identity of Tryonia clathrata Stm. with Amnicola protea of Gould, which Mr. Stearns seems to consider as undoubted, is deserving of further investigation at least; as in many thousands of the latter we have never seen a specimen of Tryonia, or any approximation to one, judged by the standard of Stimpson's original specimens and figures.

— Professor Boyd Dawkins reports the discovery of a skull of the musk-ox (Ovibos moschatus) in the forest-bed of Trimingham, near Cromer, — a formation which is believed to be certainly preglacial. The discovery is considered to add to the evidence that the glacial epoch does not represent a condition of environment separating two distinct faunas.

— The agricultural and mechanical college of Texas has issued a bulletin in which it calls attention to the need of a more careful study of the agricultural necessities of the state, and offers the advantages of the college for analyses of soils and fertilizers, and experiments on methods of feeding, on the grasses suitable to Texas, etc. A special request is made for samples of wool.

— It is stated that Senhor Antonio Lopez Mendes is about to undertake an important study of the Amazon basin, including the main river and its affluents to their westernmost extension.

— Vols. v. and vi. of the census reports, comprising the report upon cotton-production by Prof. E. W. Hilgard, have just issued from the government printing-office. These volumes contain respectively 924 and 848 pages, and are amply illustrated with maps showing density of cotton-production and classes of soils. The great degree of attention given to this branch of agriculture by the census is amply warranted by the importance of this industry, the product of which, during the census year, was valued at nearly $300,000,000. A happier selection than Professor Hilgard for carrying on this investigation probably could not have been made. His long study of the geology and soils of the lower Mississippi states, with the agricultural methods practised there, enabled him to bring to this work a vast store of knowledge which was directly applicable to the subject.

The report is in two parts. The first contains a chapter on the general subject of cotton-culture in the United States; an extended table of measurements of cotton fibre from all sections of the cotton-belt; a chapter on the uses of cotton-seed and cotton-seed oil, and one upon soil investigations. The body of this part is taken up with the detailed report upon cotton-culture in the states of Louisiana, Mississippi, Tennessee, Kentucky, Missouri, Arkansas, and Texas, and Indian Territory. Part ii. consists of similar

reports upon Alabama, Florida, Georgia, South Carolina, North Carolina, and Virginia. An appendix to part ii. contains notes upon California, Utah, Arizona, and New Mexico, considered in relation to their possibilities as cotton-producing states or territories. Of these detailed reports, Professor Hilgard, besides planning and supervising all, wrote those upon Louisiana and Mississippi, and the notes upon California, etc. To Prof. R. H. Loughridge were assigned those upon Georgia, Missouri, Arkansas, Texas, and Indian Territory; to Prof. James M. Safford, Kentucky and Tennessee; to Dr. E. A. Smith, Alabama and Florida; while Prof. W. C. Kerr contributed the reports upon North Carolina and Virginia, and Major Harry Hammond that upon South Carolina.

All these state reports, with the exception of that relating to South Carolina, are upon the same plan. Each opens with tables of the leading agricultural statistics of the state. Then there follows a description of the topography, climate, and soils, with numerous analyses of the latter, — a subject to which Professor Hilgard is disposed to attach great importance. This is followed by agricultural descriptions of the several counties, and by cultural and economic details, which are derived from answers to schedule questions.

The report upon each state is followed by an index, evidently with the intention of making a separate issue of each report; and the entire report is closed with a very complete general index.

— Mr. Isao Iijima, a Japanese student under Professor Leuckart, has recently submitted a dissertation to the University of Leipzig for obtaining the degree of Ph.D. The judgment passed by the examining committee was, "Dissertatio, egregia — Examinatio, summa cum laude." Mr. Iijima has won his degree within two years from the time of his arrival in Germany. Students usually require from two to three or more years to accomplish the same end.

— The Johns Hopkins university circular for March prints an unusual number of scientific notes, abstracts of papers read before the various associations to which the active life of the university has given birth. It notes, also, the formation of a new archeological society, and of the purchase of a considerable mineralogical collection, which has been placed in charge of the associate in mineralogy, Dr. G. H. Williams. Extracts are given from Dr. Hartwell's address on physical culture at the opening of the new gymnasium last December, and of a lecture on the influence of athletic games on Greek art, by Dr. Waldstein of Cambridge, Eng. Plans are printed of the new chemical laboratory, and announcements are made of a series of fifteen lectures on classical archeology, now just closing, by Dr. Waldstein, Professor Gildersleeve, Dr. Emerson, and Messrs. Clarke and Stillman. A similar related series of sixteen historical lectures on chemistry is in progress, participated in by ten persons.

— A new species of trap-door spider, a species of Cteniza, has been discovered at San José, Cal. The common though little-known species of southern California is known as C. californica; and its trap-door nest is usually placed in museums beside the tarantula (Mygale Hentzii), and erroneously labelled as the tarantula's nest. This popular error, by which dealers in curiosities generally profit, is stranger, since the tarantula is usually too large to enter the nest of Cteniza, and itself makes no nest, occupying crevices in the ground or under stones, spinning a small web.

— The Boston society of natural history announces that the seaside laboratory, at Annisquam, Mass., will be open to students during the coming summer from June 20 to Sept. 1. The purpose of the laboratory is to afford opportunities for the study of the development, anatomy, and habits of common types of marine animals, under suitable direction and advice. There will be no attempt to give lectures nor any stated courses of instruction. Those who have had some experience in a laboratory, who have attended practical lessons, or who have taught in the schools, are sufficiently qualified to make use of this opportunity. The work will be under the immediate care of Mr. J. S. Kingsley during June and July, and Mr. B. H. Van Vleck during August. Applications should be addressed to Professor Alpheus Hyatt, Boston society of natural history.

— Koban is the name of an ancient necropolis in the Caucasus, explored by Chantre in 1882, and said by him to be the most interesting in that region. In 1869 a flood took away a part of the hill of Koban; and the owner, one Kanoukoff, an Ossete, discovered along the portion of the hill left, bones and objects of metal. Finding that they were not gold, he sold them to the museum of Tiflis. For several years this site has been dug by local archeologists; and in 1882 Chantre commenced a systematic exploration. Koban is a little Ossete village, three thousand metres above sea-level, on Tagaour Mountain, thirty-five kilometres distant from Vladikawkaz. The necropolis occupies two hectares. Transverse ditches from one to three metres deep disclosed twenty-two sepultures. Simple inhumation without incineration had been the mode of burial. The coffins were of plank or stone, and were not oriented. The bodies lay doubled up, and on the right side. More than three thousand objects have been recovered, mostly of bronze: of these, Chantre secured sixteen hundred and ninety-seven. The list includes articles of the toilet, arms, and utensils. The origin and the antiquity of these objects are alike unknown, a diversity existing between the contents of this and other cemeteries in the same region. Ethnological comparisons and classical allusions lead to the supposition that the ancient Ossetes came from the Caspian Sea. These people live now in the centre of the Caucasus, in the defiles, more or less rugged, of Mount Kasbeck. There remain only a hundred thousand of them. Those of the north present some resemblances to the Kabardians and Tchitchens, who surround them. Those of

the south borrow from their neighbors, the Georgians, some of their usages.

— *Terramares* is an Italian archeological term, adopted into the French scheme of Mortillet and Chantre with an appropriate symbol. Castione, the most noteworthy of the Italian terramares, is a hillock on a plain in the province of Parma, three metres higher than the surrounding area. Its former inhabitants, aiming to avoid places subject to inundation, halted upon this low plateau of bluish clay, not yet covered with the deposit of alluvium. The space occupied by the village, or settlement, was somewhat rectangular, containing about nine thousand square metres, and was enclosed by a ditch, or basin, oriented, its axis deviating thirty degrees from north to south. The first palafitte constructed over this broad ditch was floored with puncheons covered with calcareous sand, whereon were built huts of wood or straw. Through holes in the floors were thrown ashes, cinders, refuse of all kinds. Of course, when this process had filled up the space beneath, the people had to burn their rude huts, draw up the piles, and commence over again. From the relics found in the terramares, it is possible to derive some notion of the time of their construction, which seems to have had its beginning in the age of stone, and extended through the age of bronze. If it reached the age of iron, it was when the last layer was forming. Pigorini regards unfavorably the opinion that the basins surrounding the terramares were systematically fed by streams of water.

— Whoever studied the Tunis department of our centennial exhibition, saw a large, thick plank, whose under surface was thickly set with teeth of chipped flint. This was the *tribulum* (a Latin word, meaning a threshing-sledge, whence the word 'tribulation'). We are not surprised to see this old threshing-sledge in use in northern Africa. Indeed, it is one of the delightful cases of survival that so often spring upon us. Mr. Léon Didelot has written a chapter on this implement (*Bull. soc. anthrop. Lyon*, ii. 75) in which he not only describes one minutely, but quotes the writings of numerous early writers on the subject.

— 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. 1°. To be sent in not later than Sept. 30, 1884: Origin and mode of occurrence of gold-bearing veins and of the associated minerals, the society's medal and twenty-five pounds; Influence of the Australian climate in producing modifications of diseases, the society's medal and twenty-five pounds; The infusoria peculiar to Australia, the society's medal and twenty-five pounds; The water-supply in the *interior* of New South Wales, the society's medal and twenty-five pounds. 2°. To be sent in not later than May 1, 1885: Anatomy and life-history of Echidna and Platypus, the society's medal and twenty-five pounds; Anatomy and life-history of Mollusca peculiar to Australia, the society's medal and twenty-five pounds; The chemical composition of the products from the so-called kerosene shale of New South Wales, the society's medal and twenty-five pounds. 3°. To be sent in not later than May 1, 1886: The chemistry of the Australian gums and resins, the society's medal and twenty-five pounds. The competition is in no way confined to members of the society, nor to residents in Australia. 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. No award will be made for a mere compilation, however meritorious in its way.

— M. Grunes has published in *La métallurgie* the result of a year's researches on the oxidizability of iron and steel under the influence of moist air, fresh, sea, and acidulated water. The numerous results are in the highest degree instructive. We can only state that iron is dissolved rapidly by sea-water, cast-iron losing about half as much as steel, and that *spiegeleisen* is the most powerfully acted on by sea-water.

— A circular has been issued by a committee of the Mechanical science section of the American association, urging all engineers and others interested to make the meeting of the section at Philadelphia a notable one.

— The programme of observations of the small planets Victoria and Sappho in 1882, for determination of the solar parallax, drawn up by Dr. David Gill, her Majesty's astronomer at the Cape of Good Hope, appears to have met with general favor at the hands of astronomers in different parts of the world. The latest contribution of observations is a series published in No. 2574 of the *Astronomische nachrichten* (band 108), made by Professor Kurt Bohlin at the observatory at Upsala. The observations were begun early in August, 1882, and continued for somewhat more than two months.

— Every member of the group of small planets discovered up to the present time has now a name; No. 233, discovered by Borelly at Marseilles, May 11, 1883, having received the name Asterope. The elements of the orbit of No. 235, Carolina, have been determined by Professor Frisby.

— Dr. Finsch's account of the anthropology of the South-Sea Islands has just been published by Asher of Berlin. Dr. Finsch secured no less than a hundred and sixty-four casts of the faces of the inhabitants from sixty-one different islands: so his facts will not rest on individual observation alone. These casts have been on view at the Berlin 'Panopticum.'

— The use of the dynamo-electric machine for the ventilation of mines is reported from Saxony. At the Carola pits, Messrs. Siemens and Halske, the German electricians, have inaugurated the system. At the pit bank a dynamo is stationed, which is coupled up by shafting with the engine. By means of copper conductors, this machine is connected with another dynamo, two thousand five hundred feet away in the depths of the mine. This latter is connected with a powerful centrifugal fan. The cost of working these combined machines is six shillings and threepence per day, which means threepence for every million cubic feet of air delivered.