matter of the heating had been put into the hands of Mr. F. Tudor. The main coil heats the air to 50° or 60° C., and a supplementary coil at the foot of each flue heats it as much higher as required. As the steam main is below the boiler level, and the return below the tank for condensed water, the arrangement of these coils was quite difficult. Mr. Tudor's fractional valve is applied to each coil, and so adjusted as to just fill the coil with steam; only the condensed water escaping at the lower end, and draining into a tank, from which it is raised by a Davidson pump. The boilers and engines are all in another building, some hundred and fifty feet away. The Davidson pump serves as a water-meter to register the quantity of water condensed in the coils. For this purpose a cylinder around which a piece of paper is wound is revolved by clock-work, and a pencil so connected with the pump piston that it is gradually moved in the direction of the axis of the cylinder by the action of the pump. The length of stroke and size of cylinder being known, an automatic record is thus obtained, showing the quantity of water condensed. It also affords a means of studying many other points, as it shows the time of letting on steam and shutting it off, of starting and stopping the fan, of opening the windows, etc. From the quantity of water condensed, the amount of coal which should be consumed in heating and ventilating the building may be calculated. With the aid of this automatic apparatus, Mr. Woodbridge had studied the matter of cost, and had discovered a considerable waste, though he had not yet been able to arrive at its cause. The results of the system are fully as satisfactory as were anticipated. Professor Nichols has studied the chemical composition of the air, and has found in the case of one room, after it had been fully occupied for one hour by eighty or ninety students, the following proportions of carbonic acid expressed in parts in 10,000, — Feb. 9, 4.3; March 5, 6.1; March 11, 4.5, — thus showing practically no contamination. In regard to moisture, Mr. Woodbridge thought a relative humidity of 40% at a temperature of 65° was sufficient, as with a low relative humidity it is much easier to keep the air sweet. As a whole, the work is highly satisfactory, not because perfect, but because in so many respects it meets the wants it undertook to satisfy.

New-York microscopical society.

May 2. — Mr. Charles H. Denison, in a paper on the gold sands of California, said that the coast of California from its northern to its southern boundary, for a length of nearly seven hundred miles, is strewn with magnetic iron sand, or comminuted magnetite, carrying gold and some other metals. He described the discovery of gold in these sands at Gold Bluff, where the indications are, that the spot was once the mouth of an immense river, now extinct. The process of mining for gold among these sands was described; but this process, said Mr. Denison, has not proved profitable. On the Klamath River the gold is associated with the same sand, and with platinum and iridosmene; while, on the great San Joaquin River, zircons and stream cinnabar are its additional associates. He mentioned, that, while the black sand is water-worn, the quartz is sharp and splintery, as if never subjected to the action of water. Nevertheless, beneath Table Mountain, where it was satisfactorily proved that it had been deposited by water, the gravel had the same sharp features.

NOTES AND NEWS.

IN order to allow an interchange of courtesies between the British and American associations, and enable the members of the two associations to attend both meetings, the meeting of the American association for the advancement of science, this year, will take place at a later date than usual.

The council of the British association has invited the fellows of the American association to join in the meeting at Montreal on the footing of honorary members; and the American association and the local committee of Philadelphia have invited the members of the British association, with their near relatives who may be with them, to take part in the Philadelphia meeting. Invitations have been sent to the leading scientific societies abroad, inviting them to send delegates to the Philadelphia meeting. The probabilities, therefore, are, that the Philadelphia meeting will be largely international in its character; and it is likely that steps will be taken to form an international scientific association. At the same time with the association meeting, the International electrical exhibition will be taking place in Philadelphia, and probably at the close of the week an electrical congress will be held. Other bodies will also be in session during the week, among them the Pennsylvania state agricultural society and the American institute of mining-engineers.

The local committee are actively engaged in perfecting their arrangements for the accommodation of the large number of persons which the unusual circumstances will call to Philadelphia; and, while the contemplated arrangements provide for two thousand members of the association, it is earnestly requested by the committee, that they be notified as early as possible of the intention of members and their families to be present. All members who intend to be at Philadelphia should therefore notify the local secretaries at an early day, and at the same time give their addresses where the 'Local circular' will reach them, if they are to be absent from their permanent homes during the summer. Definite information in relation to lodgings and transportation will be given in the 'Local circular,' with much other important information.

A series of receptions will be offered the association and its guests, including one at the Academy of music after the president's address, a reception at the Academy of fine arts, a garden party at Haverford college, and a microscopical exhibition at the Academy of natural sciences. The botanical section of the Academy of natural sciences will hold at the academy a special meeting for botanists. There will also be visits to the International electrical exhibition, the

Zoölogical gardens, Fairmount park, Independence hall, and other places of interest; and the various institutions in the city will welcome the association to their halls. During the meeting, free excursions will be offered, to the seashore, the anthracite-coal regions, and other places of interest, and possibly limited excursions to more distant points after the meeting. Special botanical and geological excursions will also be made.

The local committee are now preparing a map and guide-book for the use of members. The association post-office will be established in the Academy of music, under charge of Gen. Huidekoper, postmaster of Philadelphia; and letters and packages bearing the letters A.A.A.S. will be delivered there. Special free telegraphic facilities for personal messages have been secured, including the use of the transatlantic cable for the benefit of foreign guests. The transportation of specimens, apparatus, etc., will be attended to by the local committee, who will give particulars on receiving applications through the local secretaries. Every possible care will be taken of objects sent for exhibition or use during the meeting, and a suitable hall will be provided for their exhibition. It is hoped that members having specimens or apparatus of particular interest will exhibit them at the meeting.

The meeting will be called to order, in general session, at ten o'clock on Thursday morning, Sept. 4, in the Academy of music, by President C. A. Young of Princeton, who will resign the chair to the president-elect, Prof. J. P. Lesley of Philadelphia. After the adjournment of the general session, the sections will organize in their respective halls. General sessions and sections will be held on Friday. The vice-presidents of the sections will probably give their addresses during the day; and in the evening President Young will deliver his address at the Academy of music, after which there will be a reception tendered to the members of the association and their invited guests by the local committee and citizens of Philadelphia. Saturday will probably be given up to excursions and receptions. The general programme for the rest of the meeting will be similar to that at previous meetings.

The headquarters of the association will be at the Academy of music, which is on Broad street, in the centre of the city, very near the station of the Pennsylvania railroad and several large hotels. The sections will be amply accommodated in other halls in the immediate vicinity.

The offices of the permanent secretary and local committee, the association post-office, etc., will be at the Academy of music after Sept. 1: previous to that they will be at the Academy of natural sciences. The permanent secretary will establish his office in Philadelphia on Aug. 22.

The officers of several of the sections are arranging for special topics of discussion for the different days of the meeting. A committee of section D has already sent out a special circular. The vice-president of section E wishes it to be known that several papers have been already promised upon the subject of the crystalline rocks, which will probably form a special topic for discussion by geologists; and that it is proposed to assign particular days to prominent subjects in geology, a large number of papers being expected. The officers of the sections are ready to receive suggestions from members; and any special plans for the advancement of the work of the sections will be made known on application.

— The annual meeting of the society for the promotion of agricultural science will be held in Philadelphia during the meeting of the American association.

— The first mail from Kadiak Island received this season has arrived at San Francisco, bringing dates to May 2. According to the correspondent of the *Bulletin*, the account of the eruption of the volcano on Augustine Island, Cook's Inlet, sent by the last advices of 1883, was much exaggerated. The island "was not split in two, and no new island was formed; but the west side of the summit has fallen in, forming a new crater, while the whole island has risen to such an extent as to fill up the only bay or boat harbor, and to extend the reefs, or sea-otter rocks, running out from the island in various directions." The hunting-party feared to be lost has arrived safely in Kadiak. No tidal waves were observed on the west shore of Cook's Inlet or on Kadiak Island. The winter had been very mild, the mercury not having fallen below 10° F.; and spring began in March, wild-flowers being in bloom in the latter part of April.

— We had occasion to review in *Science*, some time ago, the cardinal characteristics of the scientific work of the leading nations considered as a whole; and the fact was noted that German ideas have set a common standard in scientific research, which is accepted in most European countries. No English-speaking person, interested in the history or progress of investigation, nowadays would think himself competent to work in any scientific field without a pretty thorough first-hand knowledge of what had been previously written on the subject in at least two or three foreign languages, in particular the German. It is perhaps not too strong a thing to say, that no school in this country has pursued a better method of study, or done more good in the direction of assisting the learner to acquire a really useful knowledge of German and French, than the Summer school of languages, which has been held in the halls of Amherst college for a number of years past. We learn that the school will be continued this year under the general direction of Professor Montague of the department of modern languages in that college; that the department of German instruction will be in charge of Professor Heness, principal of the school of modern languages at New Haven, and Professor Zuellig, late of Boston; and that the incentives to and the facilities for acquiring this language at the coming session of the school are expected to be of a high order. The department of French will be in charge of Professor Bernard, late of L'École Albert-le-Grand, Paris; and a department of Latin and Greek will be conducted this year, as formerly, with Professor Shumway of Rutgers college as principal. As is well known, the

instruction at the Summer school of languages is based on what is popularly called the natural or inductive method, only modified according to the genius and individuality of each teacher. Only the language to be learned is used as the medium of communication; and the aim is to so interest the learner in the study, that his work becomes, instead of a task, a pleasure and an inspiration. If results may be regarded as a sufficient indication, the method appears to be the best by which the pupil is taught, not only to read, but also to write and speak the language, and to understand it when spoken by others. These ends were quite impossible to attain within a brief period by the old systems; but very rapid acquirements of the learner, according to the new method, become possible from the opportunities offered of hearing and speaking the language several hours each day with a native teacher; thus conducing to a great familiarity with the new tongue, approaching as nearly as may be the advantages actually derivable from sojourn on foreign soil.

— A meeting of the trustees of the Peabody museum of archeology of Harvard university was held at the museum in Cambridge on the 20th inst. After an inspection of the several rooms, and the method of arrangement of the collections illustrating the development of mankind in early times in various parts of the world, and the arts and customs of existing races, the Hon. Robert C. Winthrop called the meeting to order, and, in very complimentary terms to the curator, expressed the satisfaction of the trustees with the methods adopted and results secured. Other members of the board also expressed their satisfaction with the appearance of the museum, and the work of the curator and his assistants; and, on motion of the Hon. Stephen Salisbury, Dr. Wheatland was requested to enter upon the records of the board an expression of the appreciation of the trustees of the work of the curator, and their perfect satisfaction with his arrangement of the collections.

Mr. S. H. Scudder called attention to the explorations which had been made under the auspices of the museum, of which the curator, Mr. F. W. Putnam, then gave a brief account, dwelling particularly on those by Dr. Metz and himself in the great mound of the Turner group, in the Little Miami valley, Ohio. On motion of Professor Asa Gray, the curator was requested to prepare a full account of the Ohio group, as soon as the exploration shall be completed, for publication by the museum, and also to present a paper on the same topic at the approaching meeting of the American association for the advancement of science, that these important explorations by the museum may be more widely known. In accepting this very pleasant duty, the curator stated that it would be necessary to obtain a thousand dollars at once, for the further promotion of the Ohio explorations, which were being conducted in the most thorough and scientific manner. John C. Phillips, Esq., the treasurer of the board, stated that there were no funds available for the purpose; but he thought the importance of the work warranted a call for subscriptions to aid the museum in this exploration, and said that he would most willingly give a further contribution of two hundred dollars for the purpose. Mr. Salisbury offered another hundred dollars, and the curator was authorized to obtain additional subscriptions with the assistance of the trustees. Subscriptions can be made to J. C. Phillips, treasurer, State Street, Boston, to any of the trustees, or to the curator at the museum. Due credit for all contributions will be given in the annual reports of the trustees.

— The London health exhibition was very far from complete on the opening day. The dairy department, however, was in full work; many varieties of churn being in use, and butter at one shilling and ninepence per pound made before the visitors' eyes, if they had patience to wait for it. One dairy company had a cow in the stall to prove the genuine nature of the original material. Among the most interesting exhibits were some specimens of ensilage, — one from Lord Walsingham's, being in very good condition; and another from Lord Tollemache's, having been in the silo since June 13.

— A cable despatch from Dun Echt, June 21, announces an ephemeris of Tuttle's comet; but as yet it is not known whether the comet has been seen since the chance observation at Vienna, May 26. The ephemeris, as cabled, is as follows: —

Date.	Right Ascension.	Declination.	Light.
	h. m. s.	*deg. min.*	
June 21	17 23 04	+28 51	1.16
June 25	17 21 00	+27 01	–
June 29	17 19 20	+25 09	–
July 3	17 18 36	+23 14	0.80

On neither of the probable returns of this comet, since its discovery by Mr. H. P. Tuttle at the Harvard observatory in 1858, has it been seen.

— At the meeting of the Society of arts, held on May 14, a new word was brought into currency by Professor Fleming Jenkins, who read a paper on 'Telepherage,' which he defined as a designation of all modes of transport effected automatically by the aid of electricity. The particular scheme under consideration was the forwarding vehicles by means of electricity along a single suspended wire or rod. Here a model was shown consisting of two concentric octagons of wire, round which two trains steadily ran. The lecturer denied that the plan was intended to compete with steam or ordinary electric railways: it was merely intended as a mode of transporting heavy goods. The cost, he calculated, after allowing for maintenance and outlay, would be twopence per ton per mile. Where railways did not exist, and might not promise to pay the cost of construction, he thought he might with confidence predict that this invention would prove of value.

— A bronze equestrian statue of Gen. Dufour was erected on the Place Neuve at Geneva, Switzerland, on the 2d of June. The president and other notabilities of the confederation were present, together with an immense concourse of people. The success

of the occasion was enhanced by one of those beautiful days of spring for which Switzerland is so justly celebrated.

Guillaume Henri Dufour (born at Constance in 1787; died at Geneva the 14th of July, 1875) is the most conspicuous figure of Switzerland during the nineteenth century. His popularity as a general who three times commanded the Swiss army — twice under very trying circumstances, such as the civil war of the 'Sonderbund' in 1847, and the Prussian war-pressure of 1855–56 — is well deserved. He will also be remembered as the president of the first international congress of the Red cross society. But it is as a *savant* that we shall consider him. The orator of the day, Col. Aubert, president of the committee of the monument, said, "As a topographical engineer, he conceived, directed, and executed for the confederation that splendid map of Switzerland which leaves far behind it all that had previously been done of the same kind, reaching a perfection which has been copied, perhaps attained, but never yet surpassed,"— a just appreciation of so distinguished a topographer.

Dufour's map, the official 'Carte topographique de la Suisse,' in twenty-five sheets (scale 1 : 100,000), is a true *chef-d'oeuvre*, a veritable model. A reduction in four sheets, on the scale of 1 : 250,000, also constructed under his direction, is a still more exquisite specimen of topography. We should be glad to see our government follow the lead of the Swiss republic, and give to its citizens, and to the scientific, agricultural, industrial, and commercial world, such a boon as a topographical atlas of the entire country, on the scale of 1 : 100,000, and thus supply an actual need of the present time.

The geodetic triangulation of Switzerland was begun by Dufour in 1832; and by agreement with the Piedmontese and French governments, which had undertaken a similar triangulation, the summit of the mountain of La Dôle, in the Jura, was considered as the terminal point of the three surveys. Major Delcros, of the topographical corps of the French engineers, starting from Havre and Paris as a base, was the last to finish its work: the two other observers had taken for the bases of their triangles, one, the shores of the Lake of Constance and the valley of the Upper Rhine, and the other the plains of the River Po; and to their delight, on comparing notes with Delcros, a difference of less than three metres was found for the elevation of the summit of La Dôle above the level of the sea, — a very remarkable case of exactness, when we consider the time and means; for it was long before the electric telegraph, the prismatic-light observations, and the very perfect instruments now in use.

— Dr. Dominik Kammel von Hardegger, a wealthy Austrian and eager sportsman, proposes to start in the ensuing autumn for Harar and the Somal country. He will be accompanied by Dr. Philipp Paulitschke, professor of geography at the University of Vienna, who has just published 'Die geographische erforschung der Adal-länder und Harar's' (Leipzig, *Frohberg*), an elaborate essay on the geographical exploration of the countries which the expedition i likely to visit.

— We learn from *Nature* of June 12 that a new scheme of a polar expedition has been recently submitted by several officers of the Russian navy to the minister, Admiral Shestakoff. Starting from the idea that it is impossible to reach the north pole by sea on account of the archipelagoes that cover the circumpolar region, the Russian officers propose to start an expedition on sledges from the New Siberia Islands, which are nine hundred nautical miles distant from the pole. This space is to be covered by sledge-parties, who would make depots of provisions on the newly-discovered islands, and thus slowly but surely advance towards the north, securing at the same time the return journey of the expedition. When elaborated, the scheme will be submitted to the learned societies, and the necessary money raised by subscriptions.

— The death of Dr. Robert Angus Smith, on May 12 will be a great loss to science, as well as to a large circle of friends to whom his kind heart and sympathetic nature had endeared him. Dr. Angus Smith was born near Glasgow, Feb. 15, 1817. He was educated first at Glasgow, then studied chemistry at Giessen, under Liebig, from 1839 to 1841. A report which he presented to the British association in 1848, on the air and water of towns, gave a great impulse to the question at that time; and a paper on the air of towns, in the *Journal of the chemical society* of 1858, first produced data establishing the differences of the town and country air, wherever found. His latest discovery, by which he tested the amount of injurious gas likely to arise from water more or less contaminated with sewage, was noted in *Science* only a few months ago. Dr. Angus Smith was for many years government inspector of chemical works, and had been a member of the Royal society since 1857.

— The Milan society for the commercial exploration of Africa has organized a circumnavigation of Africa, with a view of affording the pupils of the High school of commerce, and others, an opportunity of becoming acquainted with likely markets for Italian products. The steamer will leave Genoa on the 1st of September, and the whole voyage will occupy four months. A professor is to lecture during the voyage on the commercial geography of Africa.

— Stanley's note-book of his Kongo experiences from the 24th of August, 1883, to January, 1884, has been published in Brussels. He gives an account of the important expedition from Stanley Pool to Stanley Fall, which solved a geographical problem. He followed the Kongo to the mouth of the Aronhonïmi; and his explorations established the identity of that stream with the Quené, which was discovered by Schweinfurth. The banks are thickly populated, but the people not warlike; and the villages are rich in ivory and other African products. The style of architecture is different from that on the banks of the Kongo. Stanley met with no opposition, though he encountered a fleet of above a thousand boats. He reports that the condition of the settlement of the

International society is very satisfactory, and Leopoldville increasing rapidly.

— The report of the Ohio meteorological bureau for April gives, in addition to the usual statistical tables for its twenty odd stations, a descriptive account of the Jamestown tornadoes of April 27, by E. H. Mark, secretary. There seem to have been two adjacent but separate tornadoes, moving easterly about sixty miles an hour. One of them had a path about seven miles long; and the other, thirty miles, of which eleven miles were skipped over without damage. The width of the paths varied from two hundred feet to a quarter of a mile. Rain and hail fell to one side of the track, and sometimes on the track as well; but it is not stated whether the latter happened before, during, or after the passage of the funnel-cloud. About three hundred buildings were destroyed or damaged, besides many smaller outhouses and sheds of which no note was taken; and five persons were killed. Trees four feet in diameter were snapped off like twigs; cows were lifted over fences, and whirled around in the air; an iron bar six feet long, and weighing about a hundred pounds, was carried a hundred and fifty feet across a canal, and lodged in the fork of a tree. The violent action of the first tornado began at the meeting of two clouds, — a heavy, dark cloud from the south-west; and a light, yellow one from the north-west. A witness of their combat said, 'The dark cloud whipped the yellow one.' The ordinary funnel-cloud was formed from their union, and performed all the usual freaks, swaying from side to side, 'bounding over the country,' rising and falling 'like a ball attached to a rubber cord.' It is to be regretted, that, in the description of the apparent movements of the cloud, forms of expression are used that imply a downward motion. An abstract of Mr. Finley's characteristics of tornadoes is appended, both to call attention to the observations that should be made on passing storms, and to point out how their danger may be best avoided.

— The May number of the *Journal of the anthropological institute* contains President Flower's address on the aims and prospects of the study of anthropology. The great difficulty of the study of anthropology, he said, is the multifarious nature of the branches of knowledge comprehended under the title. The most important elements of difference between races are: 1°, structural characters; 2°, mental and moral characters; 3°, language; 4°, social customs. All these should be carefully studied by those who have any share in the government of people belonging to races alien to themselves.

— Mr. W. F. Denning of Bristol has computed, from his own observations made in the early part of 1869, and in February of the present year, a new value of the rotation-period of the planet Mars. He observed the central meridian passages of the 'hour-glass,' or 'Kaiser Sea,' as being the most prominent and suitable feature on the planet for such comparisons; and the result of his discussion gives, for the sidereal rotation-period of Mars, $24^h\ 37^m\ 22^s.34$, the interval covering 5,349 rotations. This period is in good agreement with those derived by Kaiser, Schmidt, and Proctor, from much longer series of observations. Mr. Denning also collects the principal previous determinations of this constant, and has, in all, six values (all within $0^s.6$ of each other), the mean of which is $24^h\ 37^m\ 22^s.626$. This corresponds to a daily rate of 350°.8922.

— Mr. Sereno E. Bishop of Honolulu has added sixteen pages to the Krakatoa literature in a little paper on the 'equatorial' smoke-stream from Krakatoa, in which he wishes to call more especial attention to a phenomenon consequent on the great eruption, that he thinks has not received sufficient notice. This is the "swift, strong fling from the eruptive column of Krakatoa of a vast stream of smoke, due west with great precision along a narrow equatorial belt at an enormous velocity, nearly around the globe." If the facts as here stated are fully confirmed, there will certainly be a remarkably rapid westward propagation of sunset effects to be explained; but the method of explanation suggested by Mr. Bishop is very unsatisfactory in assuming a limit to the atmosphere at forty-five miles altitude. Beginning with this unwarranted assumption, the author supposes that the volcanic gases, vapors, and finest dust would form a flat, conical accumulation over the point of eruption and above the atmosphere. Down the slopes of this flat cone, the gases would slide with accelerated velocity, but chiefly to the westward on account of lagging behind the meridian of eruption (the lagging is given as twenty-six miles an hour at an elevation of a hundred miles, but should be fifty-two miles an hour); and thus the rapid westward propagation of the sunsets can be accounted for. There can be no question as to the *tendency* to action somewhat in the manner here suggested; but whether this tendency will be fully realized is very questionable, unless decidedly greater elevations than a hundred miles were reached. The presence of some thin remnant of an atmosphere, even above a hundred miles, is demanded by observations on meteorites; and the condensation of volcanic vapors at that altitude would be very rapid. The neglect of these facts is a serious weakness in Mr. Bishop's theory.

— Honolulu papers of latest date report a renewal of the red sunsets.

— The new *Zeitschrift für wissenschaftliche mikroskopie und für mikroskopische technik*, edited by Dr. W. J. Behrens of Göttingen, makes a good impression by its first number, being very attractively printed, and having good contents. There are eight original articles upon various practical matters, a series of abstracts of the important recent contributions to microscopical technique, and several reviews of books lately published. Now that the art of preparing objects and using the instrument has progressed in so many directions, microscopical science needs a journal devoted to technique; and we trust this new suitor for subscriptions will find support to make it thrive. The present number of the *Zeitschrift* contains a list of papers referring to matters of microscopical technique, and published between Jan. 1 and Dec. 1, 1883. Hereafter the lists will be quarterly.

— The principal question to be discussed in Geneva, at the summer congress of the Red cross society, is the neutrality of hospital ships.

— John A. Ryder has reprinted, from the annual report of the U. S. fish-commission for 1882, a long essay with several plates on the embryology of teleosts. The author brings forward many interesting observations, and shows evident familiarity with the literature of the subject, although he does not appear to always judge the value of previous publications correctly; for instance, when he quotes Hoffmann's observations on segmentation. He has a little eccentricity of nomenclature, writing of 'embryography,' 'yelk,' etc., and applying the term 'germ-layer,' not to any part of the germ, but to the ectoplasm of the ovum! The essay contains a certainly unnecessary number of lengthy extracts and abstracts from earlier writers. Why must there be so much padding in our government publications? We must condole with Mr. Ryder on his plates, for the care and skill he displays in drawing are sadly obliterated by the photo-engravings. We can only protest against the blind infatuation with which the fish-commission rejects all good means of illustration, and insists upon the exclusive use of process cuts, which represent very few things well, and are the worst possible means of representing delicate and transparent embryos.

The essay itself contains many valuable observations. By an amusing inadvertence, New-York harbor is said to be filled with a unique fluid; for its waters "were found to have *less than half* the normal average specific gravity of those of the open sea"! The italics are ours. Ryder has studied principally the ovarian ova, the formation of the germinal disk, segmentation, the formation of the neurula, and as much of the organogeny as can be followed out upon the transparent embryo. The work has been done with evident care and patience, and is to be supplemented by further researches, partly by the aid of sections. The observations made as to the formation of the germinal disk, the relations of the vitelline sac, the development of the ribs, muscle-plates, and fins, may be signalized as being of especial interest and importance. It must be doubted, however, whether Ryder's view as to the significance of what he strangely calls the 'yelk hypoblast' can be accepted.

— The report of the entomologist, published in the last report of the U. S. commissioner of agriculture, contains an account of the lepidopterous insects which infest cabbage in this country; a report on the causes of destruction of evergreen forests in northern New England, and New York, by Professor Packard; a report of progress in experiments in the destruction of scale insects, by H. G. Hubbard; and accounts of the imported elm-beetle, and the lesser migratory locust. The report is illustrated by thirteen full-page plates, about one-half of which are original.

— At the meeting of the Royal geographical society, held in London on May 12, it was announced that gold medals had been awarded to Mr. A. Colquhoun and Dr. Julius Haast. That given to Mr. Colquhoun as for his journey from Canton to the Trawadi at Rhamo in 1882, during which he executed surveys of the whole route from Wa-Chan (a hundred and fifty miles west of Canton) to Talifu, thirteen hundred miles of which had never before been surveyed. The medal to Dr. Haast was in consideration of his systematic explorations of the southern islands of New Zealand, — in the course of which he ascertained the altitudes of a hundred and thirty stations, and collected material for a map, the manuscript of which he presented to the society, — and for his numerous contributions to our knowledge of New Zealand.

— The Albert medal of the Society of arts has been awarded by the council of the society, with the approval of the Prince of Wales (the president), to Capt. James Buchanan Eads, "the American engineer, whose works have been of great service in improving the water communications of North America, and have thereby rendered valuable aid to the commerce of the world."

— Herr Ernst von Hesse Wartegg is starting on an exploring expedition in Mexico and Central America to collect material for his new work on the archeology of those regions.

— Reports from Cape Colony state that Dr. Holub's plans are approaching success, in spite of his early difficulties with the colonial customs-house, which demanded duty on his explorer's outfit and scientific instruments. The aid sent from Europe has enabled him to cross the Transvaal, and enter the interior of Africa from there. During his involuntary stay in Cape Town, he explored the Somerset Mountains, where he made some interesting ornithological studies, and despatched specimens to Europe. The collections of the fauna and flora of South Africa, which he intends to make on his wanderings, he has promised to divide among the societies which have contributed to the expenses of the expedition.

— The twelfth annual session of the American public health association will be held Oct. 14-17, 1884, at St. Louis, Mo., and the following topics are proposed for consideration: Hygiene of the habitations of the poor, Hygiene of occupations, School hygiene, Adulteration of food, Water-pollution, Disposal of sewage by irrigation or chemical action, The observable effect upon the public health of official sanitary supervision, The work of municipal and state boards of health. Extensive preparations are now under way for making this the largest meeting that the association has ever held; and the committee urge the attendance and co-operation of persons in all trades and professions, interested in the advancement of public health and general sanitary science.

— Mr. G. F. Kunz, at the meeting of the New-York academy of sciences, May 19, exhibited a yellowish-green cut gem of fluorite chlorophane, from Hunter county, Va., and remarked, that, although too soft for gem purposes, this stone was possibly the first gem cut that phosphoresced without any great heating. The gem was passed around in a vial of warm water, and in the dark showed a very plain pale-green light.