ciety, for 1886, has been awarded to Messrs. Capello and Ivens, for their African journeys. A smaller gold medal has been given to the 'Pundit A. K.,' one of the anonymous explorers for England of upper Tibet; and medals of silver and bronze to Messrs. Bloyet and H. Mager, for African topography and the 'Colonial atlas.' The *prix Logerot* is received by M. Marche, for his explorations of the Philippines.

A new oil. — The oil of a species of bamboo of African origin is reported by the Catholic missionaries of Alima in Africa to be an excellent lubricator, and, when refined, to form a fair substitute for olive-oil in the cuisine. The new industry thus created is actually in process of development in the French Kongo region.

Ethnographic map of Asia. —Von Haardt of Vienna has sent out a prospectus of a new ethnographic map of Asia, in six sheets, scale 1: 8,000,000, total size 175 x 140 cm. The scheme includes one hundred and thirty-six ethnic divisions, to be indicated by appropriate tints and hachuring. The subscription price is placed at thirty francs. The classification adopted has its defects; but the map, which will be accompanied by a small explanatory pamphlet, to all interested in the distribution of mankind, will have great value. If successful, it will be followed by maps of other continents, on the same plan. Subscriptions are to be sent to Eduard Hölzel, Vienna, Weyringergasse 19.

ASTRONOMICAL NOTES.

The two comets. — Fabry's comet continues to increase in brightness, and on a clear morning is bright enough to be made out with the naked eye, though it does not reach a sufficient altitude before sunrise to be very conspicuous in the presence of bright moonlight. Barnard described it on the 8th inst. as a hazy object with a faint tail, which, in the telescope, could be traced for five or six degrees. On April 24 the comet will be in the constellation Triangulum, in right ascension $1^h\ 32^m$, north declination 30° 3′, and will appear above the horizon about half-past three in the morning. Its brightness is then 297 times as great as at the time of discovery. The comet is increasing its right ascension, and is moving rapidly south: at the end of April, according to Dr. Oppenheim's ephemeris, it will approach us within a fifth part of the distance of the sun, and its theoretical brightness will be nearly 500 times that at discovery. Barnard's comet is also increasing in brightness, but somewhat more slowly than Fabry's. It makes its nearest approach to the sun in the first week of May, and its nearest to the earth in the latter part of that month. The position for the last of this week (April 24) is: right ascension, $1^h\ 40^m$; north declination, 39° 39′, with a calculated brightness of 62: it is nearly midway between the second magnitude stars β and γ Andromedae, and sets a little after eight o'clock. The astronomical positions we have given can readily be found upon the star-maps (map I.) given in the *Science* Almanac for last year (vol. iv. No. 99) or upon any celestial atlas.

The new nebula in the Pleiades. — The nebula discovered by the Henry brothers of the Paris observatory, upon their photographic negative of the Pleiades taken Nov. 16, 1885, has been seen — now that its existence is known — without great difficulty, by Perrotin and his assistants at Nice, and by Struve with his new 30-inch Clark objective, and also with the 15-inch at Pulkowa. Struve gives a careful description of the nebula, accompanied by a sketch, in the *Astronomische nachrichten* (No. 2,719), and from his observations it seems probable that some of the small stars in the immediate neighborhood may prove to be interesting variables. The nebula is of a characteristic spiral form, and seems to 'escape' from the star Maia. Professor Pickering, upon the announcement of the discovery, recalled the circumstance that certain irregularities had been noticed in a photograph of the Pleiades taken on Nov. 3, 1885, at Harvard college observatory. These irregularities, which had been referred to defects in the photographic process, correspond closely with the descriptions of the nebula, and no doubt represent light photographically visible near Maia. "The explanation thus afforded, of one of the markings on the Cambridge photograph, makes the others of more interest than seemed at first to belong to them. There are indications of nebulous light about Merope; four short parallel streaks directed to the south following side are particularly noticeable, and a faint prolongation of diffuse light may be suspected towards the south, in agreement with the descriptions usually given of the visible nebula in that region. There is also a faint streak of light projecting from Electra on the following side. . . . No nebulous light is noticeable about Alcyone, Atlas, Pleione, or Taygeta."

NOTES AND NEWS.

As stated in our 'Boston letter' of March 12, the liberality and co-operation of the Woman's education association enable the Boston society of natural history to announce that the Seaside laboratory at Annisquam, Mass., will be open to students during the coming summer from June 15 to Aug. 15, 1886. Annisquam is situated on an inlet of Ipswich Bay, on the north side of Cape Ann,

and is about three miles and a half by coach from the Eastern railroad station in Gloucester. 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 or any stated courses of instruction. The laboratory has been in operation for four successive summers, and has fairly met the wants of a number of students, teachers, and investigators. 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 instruction and work of the laboratory will be under the immediate care of Mr. B. H. Van Vleck, assistant in the laboratory of the Boston society of natural history, a gentleman well known as a teacher, and who has also had long experience in collecting and observing at the seaside. Applications should be made immediately, and can be addressed to Mr. B. H. Van Vleck.

— The Boston *Transcript* states that Mr. Alfred Russell Wallace, the celebrated English naturalist, who shares with Darwin the honor of an independent discovery of the law of 'the survival of the fittest,' is coming to the United States on the invitation of Mr. Augustus Lowell of Boston, to deliver a course of eight lectures before the Lowell institute, in that city, beginning in October. It will be remembered that it was on a similar invitation (from Mr. Lowell's father) that Professor Agassiz first came to America, in the autumn of 1846. After completing his Lowell institute course, Mr. Wallace will lecture in other cities, and proposes to return to England in the spring of 1887. His subjects will be chosen from natural history.

— During the past week the occurrence of a large number of insects of a formidable appearance in Washington has attracted considerable attention. The following account of their habits and appearance is given by one of the entomologists of the agricultural department: This large insect of two inches and a half, or more, in length is the Belostoma americanum of entomologists, and belongs to the order Hemiptera, or true bugs. It lives in ponds and sluggish streams during the immature state, in which it has no wings, and is full grown in fall, remaining in the ponds during the winter. When, in the spring, the warm weather awakens them, they come forth at dark, often in immense numbers, and fly about: the sexes mate, and they return to the ponds in which the female deposits her eggs. They are strongly attracted by light, and especially by electric lamps, under which vast numbers often strew the walks, and are crushed under foot. Their sudden appearance often creates alarm; and during the past week or two, specimens have been received from various parts of North Carolina and other southern states, the writers often in evident fear of damage from this insect invasion. But they are perfectly harmless. They are, it is true, able to inflict a very painful bite, for they are provided with a short, sharp beak; but they never do so voluntarily, and they do not live on any thing in the way of vegetable matter outside of the water. They are carnivorous, feeding principally on less powerful water-insects, and not despising an occasional fish, frog, or other bit of flesh that may come in their way. They have been just as abundant in previous seasons, but have not been so much noticed, for the reason that there have not been so many electric lights to which they could be attracted. Like so many of the true bugs, they have a very peculiar and rank smell. A number of other water-insects are also attracted to light, but never in such quantities.

— The following papers were entered to be read at the annual meeting of the National academy of sciences, which convened at Washington, Tuesday, April 20: G. F. Gilbert, The geologic age of the Equus fauna; T. Sterry Hunt, The Cowles electrical furnace; E. D. Cope, On the phylogeny of the Batrachia; On the phylogeny of the placental mammalia; H. A. Newton, The comet of Biela; Elias Loomis, Areas of high barometric pressure over Europe and Asia; Samuel H. Scudder, The cockroach in the past and present; James D. Dana, Biographical memoir of Arnold Guyot.

— In his annual report for 1885, the United States entomologist continues his report on silk-culture in the United States. He does not speak very encouragingly of its immediate success as a profitable industry, and thinks any stimulus given to it must needs be temporary, and that the substantial way of encouraging the industry will be by imposing an import duty on the reeled silk from foreign countries. Two stations have been established by the agricultural department during the past year for the production of reeled silk; and Dr. Riley concludes, that, with the introduction of the improved Serrell reel, the cost of reeled silk per pound may be reduced to $4.38. The cost of several hundred pounds of reeled silk produced at the New Orleans station was $5.90 per pound, or, as corrected for needless expenditure, $5.35: it brought in the market $4.50.

— The meeting of the engineers' club of Philadelphia on April 3 was spent in an interchange of views as to how to best promote a more extended discussion of the numerous subjects brought before the club. Various methods of bringing original papers to the early attention of members likely to discuss them were proposed, and the subject was finally referred to a committee. This is a serious question with most of the scientific clubs of the country, which find their meetings generally of a stiff and formal character, tending to stifle all debate.

— The chemical laboratory of Fresenius at Wiesbaden enjoys a very large attendance, says the *Chemical news*. In the winter term, 1885-86, there were 90 students on the books. Of these, 58 were from Germany, 6 from Austro-Hungary, 6 from North America, 5 from England, 5 from Russia, 3 from France, 2 from Switzerland, 2 from Holland, 1 from Luxemburg, 1 from Sweden, and 1 from Norway. Besides the director, Geh. Hofrath Prof. Dr. R. Fresenius, there are engaged as teachers in the establishment Prof. Dr. H. Fresenius, Dr. E. Borgmann, Dr. W. Fresenius, Dr. E. Hintz, Dr. med. F. Hueppe, and Architect Brahm. The assistants in the instruction laboratory were two in number, in the private laboratory twelve, and in the versuchsstation three. During the last term, besides the scientific researches, a great number of analyses were undertaken in the different departments of the laboratory and the versuchsstation on behalf of manufacture, trade, mining, agriculture, and hygiene.

— The Woman's education association of Boston has made arrangements for a course of lessons in botany by Prof. George L. Goodale of Harvard university. The course is designed to present the principal laws of life and growth of plants, and will deal especially with methods for cultivating and collecting plants for study. Each lecture will occupy about half an hour, and, as in former years, will be followed by a practical exercise in the examination of plants. These laboratory exercises are arranged for beginners, but will also serve to supplement previous courses of botanical practice. The lectures will begin on Monday, March 22, and will be given on Fridays and Mondays in the rooms of the Natural history society. Tickets for the course, at ten dollars, may be obtained at the Natural history rooms.

— It is proposed to raise a fund by public subscription for the purpose of presenting a testimonial to the Rev. H. H. Higgins of England, in recognition of the services he has rendered to the cause of education, and especially to the various departments of science during the last forty-three years. Contributions may be sent to Baron L. Bevas, 1 Lord Str., Liverpool, Eng.

— The office of *secrétaire perpétuel* of the French academy, left vacant by the death of M. Jamin, has been filled by the election of M. Vulpian. The two principal candidates were M. Vulpian and M. Alphonse Milne Edwards, the former of whom received twenty-six, the latter twenty-four votes.

— It has long been known that petroleum existed in the vicinity of Jemsah, on the west coast of the Red Sea, about one hundred and seventy miles south of Suez; but previous explorations have produced no result. In September, 1884, a Belgian mining engineer, M. Debay, was sent to report on the possibilities of the practical working of the oil-beds, and, after much trouble, he has finally succeeded in reaching practical results. After penetrating successively through gypsum, containing veins and nests of sulphur, shale, green and blue clay, limestone, and sandstone, the drill, on Feb. 28, fell suddenly forty centimetres, and petroleum rose to a point two metres above the sea-level. On receipt of the news, Nubar Pasha arranged an expedition of experts, from whose examination there has resulted the establishment of the following facts: that petroleum undoubtedly exists; that the geological formation of the country is favorable to the existence of larger quantities at lower depths; that the store of oil is generally distributed over a large area in the neighborhood; that under existing unfavorable conditions a single source yields about two tons daily; that the specific gravity is .88; and that the spot is easily accessible from the coast, where there is good anchorage.

— The ravages of the phylloxera have, during the past year, extended into a number of cantons in Switzerland where the insect has never been hitherto observed, and have caused considerable uneasiness in the wine-producing industry. In connection with the continual extension of the fields of its devastation in foreign countries, it is of interest to note, that, in Professor Hilgard's last report of the viticultural work in California, it is stated that the habits of the insect in that state deviate from those observed in foreign countries to such an extent that the dangers of infection are much lessened. These differences in habits consist in the rarity of the winged female form, and the apparent absence of winter eggs, both probably due to the climatic influences. The mercurial vapor remedy, of which much has been hoped, has, in the hands of Professor Hilgard and his assistant Mr. F. W. Morse, failed to produce its promised results as a phylloxera insecticide.

— A new explosive has been invented by F. Redtenbacher, a mining engineer in Austria. It probably contains only the elements of ordinary powder, but in proportions determined by twenty odd years of research. This powder is brownish black in color. The advantages of the explosive, which is known as 'miline,' are its insensibility to percussion or friction, and that it can only be ignited by a spark. There exists, therefore, little danger in its transportation and preparation. It does not undergo any modification under the influence of temperature, and only ignites at 335° to 340° C. It burns with little smoke, and does not produce any deleterious gas. It can be employed exactly as powder, and, when well tamped, its effects are comparable with those of dynamite.

— Mr. A. Vogel has recently shown (*Centralblatt f. agric. chemie*) that cinchona-trees, growing in hot-houses in Europe, develop no quinine in their bark.

— King Oscar of Sweden has ordained two prize contests on oriental subjects, — one, the history of the Semitic languages; the other, a description of the Arabic civilization before the time of Mohammed. The prizes are a gold medal worth 1,000 Swedish crowns, and a sum of money equal to 1,250 Swedish crowns. The treatises may be written in Latin or German, and may be forwarded to Professor Fleischer of Leipzig, or Professor Nöldecke of Strassburg, before June 30, 1888.

— The investigation before the Massachusetts legislative committee on the subject of arsenic in wall-paper indicates that the danger has been exaggerated. Prof. C. F. Chandler testified, that, from careful experiments, under no conditions could arsenical poisoning occur through breathing arsenurated hydrogen from wall-paper, and that the only source of danger would be from friction alone.

— Prof. L. Geiger of Berlin is about to issue a *Zeitschrift für die geschichte der Juden in Deutschland*. It will be scientific in character and treatment, and, in addition to essays and reports of research, it will contain summaries of historical materials that are difficult of access or hitherto unprinted. It will also make its bibliographical notes an especial feature.

— The Smithsonian report for 1884, just issued, contains, like the previous ones, the secretary's annual report, and summaries of scientific progress in the natural sciences, by E. S. Holden, C. G. Rockwood, F. M. Green, C. Abbe, G. F. Barker, H. C. Bolton, E. S. Dana, J. B. Marcou, T. Gill, and O. T. Mason, together with a number of miscellaneous papers on anthropology.

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.*

New York agricultural experiment-station.

In your review of the fourth annual report of the New York agricultural experiment-station (*Science*, vii. No. 165) you deal very leniently with some of the most glaring faults of that report. This is certainly the pleasanter way; but does it best subserve the cause of truth and progress? That station is unquestionably doing valuable work for the cause of progressive agriculture, and, because of the ability thus manifested, the anxiety of the friends of that cause is the greater that its splendid opportunities should not be frittered away in a kind of work which, if persisted in, will inevitably bring about its ruin.

The fundamental mistake in the management of this station, as manifested by this report, is the endeavor to cover too much ground. The field of agricultural experimentation is so vast, that he who would accomplish any worthy result must confine his labors to a limited portion of it; but in this case so many problems have been attacked, that few receive that close and careful attention which is the first requisite of truly scientific work. The director makes frequent reference to the necessary incompleteness and unreliability of isolated tests, and does good work in showing the variability of duplicates; but the infrequency with which he collates the results of his present experiments with those previously made by himself or other equally competent authorities, and the frequency with which he disregards his own testimony respecting the necessity for the duplication of tests, intensify the feeling that the value of a large proportion of the work of this station is seriously impaired by its desultory character.

The impression, that, in much of this work, quantity is attained at the expense of accuracy, is strengthened by page after page of the report. Typographical errors are difficult to wholly avoid; but it is putting the case very mildly to say that they occur with unnecessary frequency here. This point, however, might be passed without notice were these the only evidences of hasty or careless work. In the tabulated report of the experiment in feeding starch-waste, for instance, we are left to conjecture which columns of figures relate to hay, and which to starch-meal, while no practical feeder would have been guilty of the absurdity of feeding a rich meal *ad libitum*, and following it by hay fed in the same manner, where it was desired to make a scientific test of the feeding-value of either food. Under the circumstances, the allusion to the capriciousness of appetite in the cows under test is amusing.

The fertilizer test recorded on p. 40 affords another striking example, both of the crudity of the methods employed at this station, and of the carelessness in reporting results. What would the magnificent Rothamsted experiments have amounted to, had the plots in Broadbalk field received enormous dressings of fertilizers one year, none the next, and varying quantities in the succeeding years, or if their interpreter had shown such carelessness in the summarizing of results as has been shown in giving the total quantities of fertilizers used in this case?

In conclusion, I must wholly dissent from the idea conveyed in the closing paragraph of your review,