when once begun, the thawing and breaking-up of the ice on a large river proceed more rapidly than on a smaller one. This retardation is greater on the Volga than on any other river in Russia. On the major part of its middle and lower course it remains unfrozen for more than thirty days after the temperature has fallen below 0°, and it does not open in the spring until at least fifteen days after the temperature rises to that point.

To-day, at the yearly meeting of the Academy of sciences, a commemorative gold medal was presented to Gen. N. M. Prjevalsky. O. E.

St. Petersburg, Jan. 10.

## *NOTES AND NEWS.*

AT the last meeting of the board of regents, two assistant secretaries were appointed to aid the secretary in the work of the Smithsonian institution. Prof. S. P. Langley of Alleghany City, Penn., was appointed as assistant secretary in charge of exchanges, publications, and the library; and Prof. G. Brown Goode, as assistant secretary in charge of the national museum.

— The Cincinnati society of natural history presents an unusually attractive course of free popular scientific lectures the present season. This is the sixth course, and the subjects are as follows: 'Climate, plant-life, and consumption,' Dr. W. A. Dun; 'Deep-sea explorations,' Joseph F. James; 'The moon,' J. G. Porter; 'The retreat of the ice and the evolution of Lake Erie,' E. W. Claypole; 'The U. S. fish commission,' Herbert Jenney; 'Forestry,' R. H. Warder; 'Sun-spots,' Amos R. Wells; 'Gas as a fuel,' N. W. Lord; 'Glaciers and earthquakes,' J. W. Hall; 'Primeval man,' E. D. Cope; 'Bird-life,' F. W. Langdon. The first lecture was given on Jan. 14, and the others follow at intervals of one week. The society is unusually active this year, and is in a prosperous condition. A lyceum for young people has been inaugurated, and ninety names are now enrolled. The object is to interest children in the study of natural history, and there is every reason to believe the plan will succeed. In addition to these, a course of lectures on physiology, by Dr. C. E. Caldwell, to the school-teachers, is being given. Sixty have been enrolled, and each lecture has been well attended.

— The recent election in the California academy of sciences held in San Francisco resulted in the election of the following officers: president, H. W. Harkness; first vice-president, H. H. Behr; second vice-president, G. Hewston; corresponding secretary, H. Ferrer; recording secretary, Charles G. Yale; treasurer, John Dalber; librarian, Carlos Troyer; director of the museum, J. C. Cooper; trustees, Charles S. Crocker, T. P. Madden, J. M. McDonald, E. L. G. Steele, S. W. Holladay, Dr. Hayes, and E. J. Molera. Prof. George Davidson, who had been president of the academy for fifteen years, was not re-elected. By the will of the late James Lick, the academy will receive two hundred thousand dollars, a portion of which will be devoted to the erection of a new building.

— Consul Bissinger, at Beirut, in a recent report to the department of state, says that the preliminary and experimental borings in the extensive oil regions on the littoral of the Red Sea are being pushed forward with unabated vigor by the Egyptian government. An efficient staff of geologists, mining engineers, and other experts from the United States, Great Britain, and Belgium, are busily at work, ably seconded by experienced assistants from the American and Russian oil-fields. Improved machinery and mechanical appliances of every description have recently been landed at the newly constructed harbor situated about two miles north-north-east of the petroleum wells. These wells are pools of a black-looking, bitumen-like substance, which emit an unmistakable odor, and scent the desert air for miles around. The whole district, from Gemsah in the south to over twenty miles north of Djebel Teyt, presents every indication of the presence of oil; and when it is remembered that oil was 'struck' at a moderate depth at the first boring, and a 'flowing well' was produced at a greater depth at a subsequent boring, there is every reason, it is claimed by those having devoted much time and thought to the subject, to believe that the fields contain petroleum deposits in such abundance as to fully justify the immense expenditures ventured in the elaborate preliminary operations by the Egyptian government. A more recent report announces that well No. 1, at Gemsah, is now spouting pure, heavy petroleum at a depth of 125 feet.

— The house library committee has made a favorable report on the resolution providing for a joint committee of five senators and eight members to consider the expediency of holding, in 1892, an international exhibition of the industries and products of all nations, to be held at Washington in 1892, to commemorate the four hundredth anniversary of the discovery of America.

— An amendment will be added to the sundry civil bill in the senate, constituting the secretary of state, the secretary of the Smithsonian institution, and the librarian of congress, a com-

mission to report to congress the character and value of the historical and other manuscripts belonging to the government, and what method and policy should be pursued in regard to editing them.

— The Yellowstone park bill was passed by the senate last week. It defines the park boundaries, places it under the exclusive jurisdiction of the United States, and sets the territory apart as a public park and pleasure-ground for the benefit of the people. The secretary of the interior is authorized to make rules for the management and care of the park, and provision is made for a detail of troops to protect its beauties. All hunting of wild animals or birds, except animals dangerous to human life, fishing with nets or traps, is prohibited, and violations are punished by fine and imprisonment. The President is to appoint a commissioner, who is to reside in the park, and act as a justice of the peace in placing offenders within the jurisdiction of a district court.

— One of the most complete and most valuable collections of Indian folk-lore yet published is the volume of 'Indian traditions of north-western Canada' (*Traditions Indiennes du Canada Nord-west*), which has just appeared in the series of '*Les littératures populaires de toutes les nations*' (Paris, Maissonneuve Frères et Ch. Leclerc). The author, the Rev. Emile Petitot, who was for twenty years a missionary among the tribes of the far north, is well known to scholars by his excellent comparative grammar and dictionary of the Dènè-Dindjiè dialects, and by many other useful works on the philology and ethnography of northern America. The present collection is chiefly devoted to the legends and traditions of the far-spread Athabascan tribes — styled Dènè-Dindjiè by the author — occupying the vast region between the Eskimo of the northern coasts and the Algonquin and Dakota tribes of the Red River and Saskatchewan countries on the south. The stories are given in the bald simplicity of a literal version, with no attempt at literary garnishing, — a fact made clear by the addition, in some cases, of the original, with an interlinear translation. Even in this rude guise, evidence of no small imaginative power is frequently apparent. What is chiefly remarkable is that (with a very few exceptions) these Athabascan legends differ totally, in their incidents and their mythology, from the folk-tales of their neighbors, — the Eskimo on the one side, and the Algonquin and Dakota tribes on the other. The exceptions are in a few of the stories of the more southern tribes, which differ widely from the rest, and are clearly borrowed from the Algonquin Crees. This distinct character of the Athabascan legends confirms the fact, which has been noticed by Major Powell and other careful observers, that the Indians of each linguistic family have their own special mythology, different from all others, — a fact certainly of great and far-reaching importance in ethnological science. M. Petitot has some fanciful theories about a connection between the Indians and the ten tribes of Israel, and also — what seems rather inconsistent — about the reference of some of the legends to the glacial era, the change in the earth's axis, and other primeval events. As in the case of that learned and estimable but somewhat visionary writer, the late Abbé Brasseur de Bourbourg, — of whom our author much reminds us, — readers can accept the valuable facts which he honestly gives them, without troubling themselves about his peculiar hypotheses.

— Following the monograph on 'Co-operation in a western city,' by Albert Shaw, Ph.D., the American economic association announces the publication of a history of 'Co-operation in New England,' by Edward W. Bemis, Ph.D., to be issued Feb. 5. Dr. Bemis has made a study of co-operation, and this work will be a guide for co-operators, and contain many facts to interest the student of the labor problem. Copies may be had of Dr. Richard T. Ely, secretary, Johns Hopkins university, Baltimore, Md.

— Mr. G. W. Hill of the Nautical almanac office, Washington, was awarded the gold medal of the Royal astronomical society, at the December meeting, for his laborious and masterly researches upon the 'Lunar theory.'

— 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: — Series vi. (to be sent in not later than May 1, 1887): No. 20, 'On the silver-ore deposits of New South Wales,' the society's medal and £25; No. 21, 'Origin and mode of occurrence of gold-bearing veins and of the associated minerals,' the society's medal and £25; No. 22, 'Influence of the Australian climate in producing modifications of diseases,' the society's medal and £25; No. 23, 'On the Infusoria peculiar to Australia,' the society's medal and £25. Series vii. (to be sent in not later than May 1, 1888): No. 24, 'Anatomy and life-history of the Echidna and Platypus,' the society's medal and £25; No. 25, 'Anatomy and life-history of Mollusca peculiar to Australia,' the society's medal and £25; No. 26, 'The chemical composition of the products from the so-called kerosene shale of New South Wales,' the society's

medal and £25. Series viii. (to be sent in not later than May 1, 1889): No. 27, 'On the chemistry of the Australian gums and resins,' the society's medal and £25; No. 28, 'On the aborigines of Australia,' the society's medal and £25; No. 29, 'On the iron-ore deposits of New South Wales,' the society's medal and £25; No. 30, 'List of the marine fauna of Port Jackson, with descriptive notes as to habits, distribution, etc.,' the society's medal and £35. The competition is in no way confined to members of the society, nor to residents in Australia, but is open to all without restriction. No award will be made for a mere compilation, however meritorious in its way: 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.

— The annual report of the director of the Harvard observatory, which was presented to the visiting committtee on Dec. 7, has just been printed as a part of the report of the president of the university. Professor Pickering is to be congratulated upon the highly satisfactory financial basis on which the observatory is at length placed, through the munificence of the late Robert Treat Paine. About half of the Paine bequest, or $164,198, is now available; and the endowment of the observatory, which was $164,000 in 1875, and $227,000 in 1885, has now risen to $398,046. A share of the increased funds must be applied, for the present, to needed repairs, and to the publication of observations already made. The 15-inch equatorial is to have a new mounting, and Professor Pickering hopes that at no distant day means may be found for replacing the observatory building by one better adapted to the requirements of modern astronomy. The report details the work of the various instruments, particular attention being given to the subject of photometry, as in past years. The most important new work of the observatory is in the field of stellar photography. For this investigation Mrs. Draper has lent the 11-inch photographic lens employed by her husband, the late Dr. Henry Draper, at his observatory on the Hudson, and has provided means for its new mounting, as well as for the prosecution of the researches to which it is to be devoted. We regret to note the resignation of Professor Rogers, the first assistant for the past fifteen years, and the observatory suffers a second loss in the resignation from its staff off Mr. S. C. Chandler, jun.

— During the past week the U. S. fish commission made the following distribution of California trout in the localities given: 300 yearling trout were placed in Swinks Lake, near Scottsboro, Ala.; 175 yearling in Sauters Creek, Ala.; 175 two-year-old in Paint Creek, Ala.; 175 yearling in Bear Creek, near Benton, Ala.; 75 yearling and 100 two-year-old in Flint River, near Brownsboro, Ala.; 175 one-year-old in Crow Creek, Ala.; 175 two-year-old in Lookout Creek, near Rising Fawn, Ga.; 178 two-year-old in the South Fork of the Chickamauga River, near Chattanooga, Tenn. The next distribution of trout will be made during the coming week, and will cover the states of Ohio, Indiana, and Michigan.

— It has been settled that the gift of President White's valuable historical library to Cornell university is to be followed by the erection of a large library building by the college authorities.

## 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.*

### Sources of nitrogen assimilated by growing plants.

IN my address before section C at Buffalo last August, I gave a *résumé* of the investigations made up to that time in respect of the sources of nitrogen consumed by plants. The general conclusions of this paper were given in the abstract of the address, which appeared in *Science*. Since that time two important investigations have been published, and I feel that I ought to add an abstract of these as a supplement to the one you made.

Atwater (*Amer. chem. journ.*, viii. Nos. 5 and 6) has shown, in two papers recently published, that in many cases there is a loss of nitrogen in germinating plants: in other words, nitrogen that may be present in a nitrified form, or in a form easily nitrified, may escape assimilation by being set free by the denitrifying ferment described by Gayon and Dupetit and Springer. The importance of this fact seems to have been overlooked by most investigators, and the intimate relation it has to all studies of nitrogen-assimilation will not be denied by any one. Generally it has been assumed, that, if plants show an amount of assimilated nitrogen equal to that in the seed and food supplied, it is a proof that no free nitrogen has been consumed, either directly or indirectly. But if it should be established that much assimilable nitrogen in the seed or food may be lost, then the above assumption cannot be true. As a contribution to the study of this interesting problem, Atwater's papers are worthy of careful consideration.

Hellriegel (*Zeit. d. Ver. f. d. Rübenzucker-Industrie*, November, 1886) has lately published a paper in which he shows that an active nitrifying ferment may prepare unassimilable nitrogen for plant-food. While the Gramineae appear to possess little capability of being nourished by the nitrogen that can be derived from the atmosphere, the Papillionaceae possess this power to a remarkable extent. To a sterilized earth free of nitrogen was added a few cubic centimetres of an aqueous extract of earth taken from a field where peas were in active growth. Peas were sprouted in pots of nitrogen-free and sterilized earth, and continued to grow until the nitrogen-supply of the seed was exhausted. They all then passed into a state of starvation. To some