derous. M. Vulpian stated that out of 136 cases of bites inflicted in the face by animals known to be rabid, treated by the ordinary method, there were 10 deaths; out of 50 similar cases treated by the intensive method, *no deaths*. As to the charge that the method is useless, that is refuted by statistics already familiar to those interested in the subject.

M. Vulpian spoke at some length on the possibility of encountering the paralytic form of hydrophobia in man under ordinary conditions, mentioning some cases which prove that it does sometimes exist where the person bitten by rabid animals has not been subjected to preventive inoculation.

The discussion is ended for the present, but it will doubtless begin again at some future time. Though M. Peter was somewhat moderate in his remarks at the last meeting of the academy, he does not seem to possess the spirit of scientific criticism, perceiving neither the weight of the arguments advanced in opposition to his assertions nor the fallacy of some of his own.

As M. Pasteur has been accused, though wrongfully, of concealing the results of his treatment, it has been decided to publish statistics monthly, instead of quarterly as heretofore. They will appear in the *Annales de l'institut Pasteur*, which will be published under the direction of M. Duclaux.

ST. PETERSBURG LETTER.

THE geographical event of the season is the return of Potanin, who is expected here in time to attend the annual meeting of the Russian geographical society this month. A large map of the route travelled by him is being prepared by Colonel Bolschew, the military cartographer. The previous travels of Potanin were especially noteworthy on account of his ethnological and anthropological studies; but the chief importance of the expedition from which he now returns lies in the geographical studies made by him in the higher parts of Asia, not only because he has visited regions heretofore untrodden by civilized man, but also because of the accuracy of his observations in those regions. The latitude and longitude of sixty different points have been ascertained, and the barometrical observations of the expedition will permit of a tolerably accurate determination of heights. There were 4,500 versts of accurate survey made, and this in the parts least known, while in the more thickly settled regions approximate surveys only were found possible. The co-operation as topographer of Skassi, who accompanied Severtzow on many of his travels, contributed much to these results. The travellers were exceedingly well received by the Chinese authorities, who furnished them with guides and all necessary information. The most important work was done on the journey from Koko-Nor directly north to Kiachta by way of the Gobi desert. The river Ersin-Göl was followed over a great part of its course to the point where it falls into Lake Soyok-Norinto. Farther northward four ranges of mountains were found.

The second in importance of the Russian scientific expeditions of the past year was the so-called Chan-Tengri expedition, headed by Ignatiew, who visited the glaciers of that mountain. The results of the expedition are not yet made public. He travelled through the Muzart pass, and found it to be as difficult of access as it was generally believed to be. The botanist Krasnow took a more easterly road, and, traversing the Bedel pass, went to Utsch-Turfan. Much is to be expected from the latest work of this young naturalist, if we may judge by what he has already accomplished.

The secretary of the Geographical society, A. W. Grigoriew, recently attempted to visit the Solovetz Islands in the White Sea, desiring to make observations on the depth and temperature of the waters there, but, as he could find no ship to transport him thither, did not succeed in reaching the islands. He made an excursion, however, to the waterfalls of Kiwatsch and Por-Porog, from Petrozavodsk on Lake Onega. The position of the latter waterfall, as well as of its river, is not shown on any map as yet. There is a great lack of astronomically determined points and of accurate surveys in that part of Russia, and there is but little hope of any thing being accomplished there at present by the military surveyors. It would be a good field for private enterprise, as the region may be easily reached from St. Petersburg by means of the steamers plying on Lakes Ladoga and Onega. It is a picturesque country, with numerous lakes and waterfalls, and affords excellent salmon and trout fishing.

Some new data on the topography of the country between Vologda and Archangel were obtained during the past summer by Kusnezow. The greatest elevation on the watershed between the Volga and the Dwina was found to be 756 feet. Thus the topographical work of Russia is slowly advancing.

The Geographical society has under consideration some short practical instructions to explorers, the main point aimed at being to draw their attention to the alleged gradual drying-up of the inland waters of the Asiatic continent. It has already been mentioned that Jadrinzew, on comparing last-century maps with those of recent years, finds that the lakes of the Baraba steppe,

such as Tschany, for instance, have shrunk to half their former dimensions. On personal examination of those lakes, he found many traces of a recent decrease in their waters. Russia has so many lakes, that the study of their physical geography is especially important.

The pendulum ordered last year has been brought from Hamburg to St. Petersburg by Professor Lenz. It has been carefully tested, and Professor Bredichin, the astronomer, will make determinations of gravity with it next summer in the vicinity of Moscow.

Among the recent changes in the *personnel* of the Geographical society, the following may be mentioned: General Stebnitzky has been chosen president of the mathematical section, and Prof. W. Lamansky of the ethnographical section. The former is known by his excellent geodetical work in the Caucasus and the eastern part of Asia Minor, and also by his works on local attraction. The latter gentleman is one of our most eminent Slavists.

The eclipse of Aug. 19 will be visible over a great extent of Russian territory. The question as to the best methods of its observation, which was discussed last spring by the Physico-chemical society, is now being considered by the Meteorological commission of the Geographical society, which will occupy itself mainly with observations on pressure and temperature during the eclipse. It has not been decided what expeditions will be equipped for the purpose, and only two points of observation have as yet been determined upon. One or two astronomers will be stationed on the estate of General Maiewsky, in the district of Tver, where an astronomical observatory is established; and Professor Bredichin, with two English friends, will take observations on his estate in the government of Kostroma. It is not as yet known whether or not the Pulkowa observatory will send out a party. The visibility of the eclipse on land will be unusually great; and the country west of Lake Baikal, where the totality will be seen, is tolerably well settled; and to Tomsk, at least, the railroad and steamboat communications are good. The time of the year is favorable, and the hour, 7 A.M., is such that the morning fogs will have been dissipated.

The question as to the new chair of geography in the Russian universities is under discussion. The universities of Moscow, Kharkow, Kasan, and Odessa have already sent their opinions to the ministry of public instruction, that of St. Petersburg is still considering the subject, while Prof. A. Woeikof has been sent to different countries of Europe on a scientific mission in connection with the matter.

The Academy of sciences has recently elected to membership two chemists and a mathematician. The former, Professor Beketow, of Khartow, and Professor Beilstein of the Technological institute of St. Petersburg, are well known abroad; the latter, Dr. Marcow, of St. Petersburg, is a young man of great talent, who occupied the chair of Professor Tschebischew after the latter left the university.

Among recent scientific publications may be mentioned that of M. A. Rykatschew on the freezing and opening of rivers and lakes in Russia. The author, with the assistance of three naval officers, — Kowalsky, Maliarewsky, and Filenius, — has collected a great quantity of material which he has used in a very able manner. For the dates of opening of the rivers, lakes, etc., he has availed himself of observations at 907 different points, and, for those of their freezing, 890 points. Some of these observations extended over long periods, those relating to the Neva at St. Petersburg, Vistula at Warsaw, Dwina at Archangel, Angara at Irkutsk, Düna at Riga, and Küro at Storküro, reaching back over a hundred years; the Onega at Onega, Bielaya at Ufa, Volga at Saratov, Obi at Barnaul, Sookhona at Ustiug-Weliki, Sysola at Ust-Sysolsk, and Yenisei at Yeniseisk, more than eighty years. The following table shows the number of available observations as to time of opening and freezing at the points mentioned during the number of years given in the first column: —

	Opening.	Freezing.
80 years or more	13	11
50 to 79 years.	14	10
30 " 49 "	39	30
20 " 29 "	136	119
10 " 19 "	241	239
Less than 10 years.	464	408

In the book under consideration the observations for each year are given separately. The results are also graphically shown by three charts or diagrams, — one for the date of opening, one for that of freezing, and one for the number of days the rivers are frozen. As might be expected, there is nearly always a retardation; that is, the rivers do not freeze over until some days after the temperature has fallen below 0°, and do not open until some days after it has risen above 0°. This retardation is greater for large rivers than for small ones. The explanation of this difference is, that a longer time is required to chill a large body of water than a smaller one; and, on the other hand, the melting of the snow, and the consequent snow-water, sooner affects the ice of a small river than that of a larger one. But

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-