plays with the electric light and the fountains, under Col. Sir Francis Bolton, still attract large crowds.

At a recent 'Gilchrist trust' lecture in Greenock, by Mr. William Lant Carpenter on the telephone, transmitters were placed on the lecture-table, and a party of ladies in the office of the *Glasgow herald*, twenty-five miles away, heard nearly the whole of the lecture.

In a district of London known as the Borough, and inhabited by a similar population to that in the Bowery, New York, a large theatre has recently been taken, mainly at the cost of the Duke of Westminster and Mr. Samuel Morley, and has been converted into a temperance music hall. For three or four years, on one night a week, for seven or eight months in the year, popular lectures on science are delivered, in which many very eminent men take an interest. Sir John Lubbock will lecture there on Nov. 3, upon ants. Temperance meetings, ballad concerts, and 'variety entertainments' occupy other nights in the week, and the managers are constantly receiving remarkable testimony to the good done by 'the Vic,' or Royal Victoria coffee-hall. W.

London, Oct. 31.

ST. PETERSBURG LETTER.

The meteorological conditions of the last summer have attracted general attention in Russia. It is but too common to hear of the coldest or hottest season remembered by the oldest inhabitant; but the heat of the end of June, and of the whole of July, in the greater part of European Russia, was truly exceptional. In St. Petersburg the mean temperature of July was 21°.2 C.,—the highest since the observations began (1743), with the exception of July, 1757. In Moscow the mean temperature of July was 22°.5 C. — the highest in the seventy-five years' observations, except July, 1826, when it was 0°.1 higher. But as the mean of the present July is from observations outside the city, while in 1826 the observations were made in the city, it is probable this July was hotter. The heat was especially remarkable for its unabated continuance. It seems that long-continued anticyclones existed in the north and north-east of Russia, and thus warm and dry south and south-east winds were prevailing. A very great scarcity of water followed, especially in the south, where already the spring months had been dry. Lakes, ponds, and wells dried up, and some villages were obliged to sell all their cattle for want of water; and that for drinking purposes had to be brought from many miles away. In the north and centre of Russia many swamps dried up entirely, and, in July and August, forest and peat fires occurred in many parts of the country. The large rivers were exceedingly low, and navigation seriously impeded; so that on the Volga there was low water as far down as Stavropol, below Simbirsk, while formerly it was not observed lower down than the mouth of the Kama.

From the beginning of August in some parts of the south, and later on in other parts of Russia, heavy and protracted rains followed, seriously damaging the harvest, and interrupting the building of the railroad from Ekaterinburg to Tjumen, in Siberia.

The first general meeting of the geographical society this season was held on the 14th of October, and the following news was communicated by the secretary: two additional government grants had been received by the society; five thousand rubles for the classification of the collection and publication of the travels of the deceased zoölogist, Sjevertzof, and two thousand rubles for the collection of the music of the songs of the people. The first expedition, to start in 1886, will consist of the musician, Dutsch, and the secretary of the ethnographical section, and will visit the northern part of Russia, where the old folk-lore has been better preserved, owing to the absence of railroads and great cities. A thousand rubles have been bequeathed by the deceased member, Prince N. M. Galitzin, for geographical exploration. The proposed expedition to the glaciers of the Chang-Tengri, in the Thian-Shan, for which the society had granted an allowance, was postponed till 1886.

Besides the Iswestia (transactions), the following volumes of the memoirs have been issued, or are in preparation: vol. xiv., on general geography, containing Dr. Sperck's 'Russia of the far east.' This is a general description of the Amur country, including topography, climate, fauna, flora, ethnography, etc. The most interesting part is that on the colonization. The author has long resided in the country. Vol. xv., part i., will also soon be issued. It will contain the results of the Siberian levelling. This is certaily the most important levelling yet made, from its extent as well as from the importance of the results arrived at, bearing on the geography of Asia, the climate, etc. Part ii. of the same volume is issued. It contains A. Woeikof's paper, 'On a covering of snow, its influence on climate and weather.' Vol. xvi. is in print, and consists of a description of Lapland by Dr. Bucharow, formerly Russian consul at Hammerfest, the fruit of extensive travels in the country.

The branches of the geographical society are generally late with their reports, so that they have but just sent in those for 1884. From the East

Siberian branch (Irkutsk) it is learned that Sannikow travelled on the upper Man River, following it five hundred versts, to its confluence with the Yenisei. He met with numerous and interesting pictured rocks, all on hard, nearly vertical surfaces. Later he visited the Minussinsk district, and described many tumuli, statues, and peculiarly disposed stones, probably having a signification in the burial ceremonies of the former inhabitants. The Caucasian branch (Tiflis) reports generally on the geographical work in the Caucasus. As before, the Caucasian military topographical section has done good work, especially east of the Caspian. The telegraphic determination of longitude between Batum and Nikolaiew has been made. General Stebnitzky has prepared a large work on the orography of the Caucasus. The hydrographical work on the east coast of the Black Sea, under Admiral Zarudny, continues. Four new meteorological stations have begun work, and it is hoped soon to have two stations on the road across the Caucasian chain, and one at Kars. These reports also contain a large amount of information in regard to the other geological and ethnological explorations going on. O. E.

St. Petersburg, Oct. 15.

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.*

Flood Rock explosion.

THE articles upon the Flood Rock explosion contained in your issue of October 16, to which my attention has just been called, though evidently the utterances of men who are more familiar with the quiet work of the study than with the varied and complicated requirements of engineering practice, demand an answer through your columns, in order that the fair-minded portion of your readers may not be misled into erroneous judgments through the unjust and unfriendly remarks concerning the delay in firing the mine that have been placed before them.

The story of the Flood Rock explosion may be told in a very few words. For ten years a great work of engineering, costing a large amount of money, had been going on, the successful accomplishment of which depended upon the successful explosion, by electrical action, of 290,000 pounds of high explosives. The whole work required the most careful study and forethought, to avoid accident to life or limb, and to eliminate, as far as possible, the chances of damage to any part of the system, upon whose good order, at the critical moment, the success of the undertaking depended.

It was essential that, as soon as the mine should be ready, it should be fired, for at any moment there was a possibility of accident to the apparatus, which would delay, if not ruin, the work of years; but at what time precisely we should be ready for the explosion could not be certainly predicted, though from the way in which the work was progressing, we hoped to be ready to fire at high water, 11 A.M., on Saturday, October 10. Work on the mine had been going on night and day under the personal direction of Lieutenant Derby, who spared himself no inconvenience and avoided no danger connected with it, in order to get the thing through in time; and yet, as it happened, the preparations could not be quite completed until a few minutes after 11 o'clock on the day appointed, when the mine was fired. I hardly need say that this delay was unavoidable.

General Abbot, who had been requested by General Newton to take charge of the photographic and the seismoscopic arrangements for the explosion, had by personal application to the superintendent of the Western union telegraph company, secured the use of a wire for a short time, from the firing point at Astoria to Patchogue in one direction, and to West Point in the other; and when the representative of the geological survey applied to him for information in regard to the explosion he offered to send chronometer ticks to the Western union office in New York, so that they might be transmitted to the observers who were not under his (Gen. Abbot's) orders. No advantage was, however, taken of this offer, though the Western union company would doubtless have been as willing to grant the use of their wires to these gentlemen as to General Abbot.

One of our engineer points of observation, that at Willet's Point on Long Island Sound, was not connected electrically with the firing point; the nearest telegraph station being three miles distant, at Whitestone. Yet the young officers who were detailed to watch the seismoscope there, watched until they got their observations, and would have watched for an hour if necessary, or until notified to stop. Observations, it is stated, were also successfully made at Columbia college, Yonkers, Princeton, and Cambridge, though none of the observers at these places were in electric connection with the firing point.

The same degree of intelligence which secured successful results in these instances would doubtless have prevented Professor Paul from losing his observations at Staten Island, and would have saved him the discredit of having written a very ill-tempered letter; and an intelligent study on his part, of the results of the explosion at Hallet's Point in 1876, would have prevented him from mistaking the slight disturbance which he observed, for that which would necessarily be produced by the explosion of nearly 150 tons of high explosives.

If, then, there was, as has been charged, any blundering or want of intelligent co-operation in this matter, it is evident that it was on the part of those who failed to take the necessary precautions to insure the success of their observations, and not on the part of the corps of engineers of the army, whose long and honorable service has been uniformly marked by an intelligent and faithful performance of its duties, and by freedom from mean and degrading jealousies.

WALTER MCFARLAND,
Lieutenant-Colonel of Engineers.

New York, Oct. 28.

I fully acknowledge that the time observations upon the explosive waves from Flood Rock were a matter of secondary importance, mostly of scientific interest, and, even in the 'quiet of the study,' think I can appreciate, perhaps not fully, but in a high degree, the complicated difficulties in the way of