at one time, on account of the comparative safety attending its storage and the necessary manipulation of it. Moreover, it has been well established by experiments of many kinds carried out on a considerable scale, as well as by accurate scientific observations, that the detonation of wet gun-cotton is decidedly sharper or more violent than that of the dry material; a circumstance which affords an interesting illustration of the influence exerted by the physical condition of the mass upon the facility with which detonation is transmitted from particle to particle. In the determinations made by means of the Nobel chronoscope, of the velocity with which detonation is transmitted along layers or trains of gun-cotton and nitro-glycerine, the lecturer has included experiments with gun-cotton containing different proportions of water. When the material contained 15 per cent. of the liquid, some indications were obtained that the rate of transmission of detonation was a little higher than with dry gun-cotton; the difference was very decidedly in favour of wet gun-cotton, when the latter was thoroughly *saturated* with water. The air in the masses of compressed gun-cotton being replaced entirely by the comparatively incompressible body, water, the particles of explosive are in a much more favourable condition to resist displacement by the force of the detonation, and hence they are more readily susceptible of sudden chemical disintegration. Moreover, the variations in the rate of travel of detonation in dry gun-cotton, resulting from differences in the compactness or rigidity of different masses of the material, are very greatly reduced, if not entirely eliminated, by saturating the disks with water, and thus equalising their power of resisting motion by a sudden blow.

Another striking illustration of the influence which the physical character of an explosive substance exercises over its susceptibility to detonation and the degree of facility with which its full explosive force is developed, is furnished by one of the most recently devised, and one of the most interesting of existing, explosive agents.

Twelve years ago, soon after the process of producing compressed and granulated gun-cotton had been elaborated by the lecturer, it occurred to him to employ these forms of gun-cotton as vehicles for the application of nitro-glycerine. A considerable proportion of the liquid was absorbed by the porous masses of gun-cotton, and a nitro-glycerine preparation analogous in character to dynamite was thus obtained. The absorbent was in this case a violently explosive body instead of an inert solid as in dynamite, but the quantity of nitro-glycerine in a given weight of the preparation (to which the name of glyoxilin was given), was considerably less than in the kieselguhr-preparation; hence the latter was nearly on a point of equality with it, in regard to power, as an explosive agent.

(*To be continued.*)

NOTES FROM RUSSIA

GEOGRAPHY AND ANTHROPOLOGY.—At the last meeting, April 23, of the Imperial Russian Geographical Society, M. Sreznefsky, the Secretary, communicated his monthly report on the work of the Society. This consisted in equipping three expeditions in which the Society intends to take part, and its participation in the Anthropological Exhibition of Moscow. The first expedition is the cruise of the steamer *Nordenskjöld*, equipped by the well-known merchant of Siberia M. Sibiriakoff, for the relief of Prof. Nordenskjöld in the *Vega*. It will proceed from Malmö direct to Yokohama, Behring Strait, and beyond. According to the request of M. Sibiriakoff the Society appointed to accompany the expedition M. A. W. Grigorieff, an accomplished botanist, known for his dredging work in the White Sea, where he collected very interesting specimens of marine fauna with deep soundings and temperature observations, by means of a Negretti and Zambra deep-sea thermometer. He proceeds to Malmö to join the expedition, with a Dent chronometer from the Society, and a complete provision for zoological collections, and a sufficient provision of alcohol.

The second expedition is sent out by the Ministry of Public Works, for the exploration of the old bed of the Amu-daria (Usboi), and to investigate the possibility of turning the river to the Caspian; it will be under the direction of Major-General A. T. Gloukhofskoi, an experienced traveller in Central Asia. The Society sends two Fellows with the expedition, a geologist, Prince Sedroiz, and the economist, N. A. Majef, the manager of the *Turkestan News*, a collector of varied statistical materials in Turkestan. The third expedition, of a private character, is to explore for a railroad from Orenburg to Tashkent, and the possibility of navigating with steamers the Sir and Amu-daria. By order of the Emperor a sum of 5,000 roubles is placed at the disposal of the Society.

The Anthropological Exhibition was opened in Moscow on April 15, under the superintendance of the Society, which has sent a great number of valuable objects of an ethnological character, with craniological collections and prehistorical specimens, tumuli excavations, and a valuable collection belonging to the Czarevich. All these collections were arranged by M. Sreznefsky, the Secretary of the Society, who was sent as its representative to the opening of the exhibition. The aim of this exhibition is: (1) To contribute to the development of anthropology as a science. (2) The foundation of an anthropological museum for the teaching of anthropology in the University of Moscow. (3) To popularise the science.

The exhibition is divided into sections—prehistorical, anthropological, medico-anthropological, photographical, ethnographical, the history of Russian types.

At the end of the meeting of the Society M. Alenitzin communicated his paper on the history of the Amu-daria question; he criticised the different opinions on the possibility of turning the Amu-daria into the Caspian, and doubted whether this question could be resolved practically and in a positive manner.

A. LOMONOSSOFF

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

THE Council of the Society of Arts having received an application from the City and Guilds of London Institute for the Advancement of Technical Education, offering to take charge of the technological examinations established by this Society in 1873, and carried on to the present time, have resolved to transfer these examinations to the charge of the Institute. The Council have also ascertained that the Science and Art Department will assist the City Institute in conducting the examinations, in the same way as it has hitherto assisted the Society of Arts. The technological examinations for the present year will, therefore, be carried on under the direction of the Institute, and all communications on the subject should be addressed to the Hon. Secretaries, City and Guilds of London Institute, Mercer's Hall, E.C.

THE following is the result of the recent examination for the Public Schools Prize Medals of the Royal Geographical Society: Physical Geography (examiner John Ball, F.R.S.), gold medal, Matthew George Grant; silver medal Frank Taylor Sharpe, both of Liverpool College. Honourably mentioned: E. G. Harmer, University College School; H. Ll. Smith, Bristol Grammar School; F. S. Carey, Bristol Grammar School; A. T. MacConkey, Liverpool College. Political Geography (examiner Canon Tristram, F.R.S.), gold medal, David Bowie, Dulwich College. Silver medal, Claude L. Bickwell, Harrow School. Honourably mentioned, J. F. Naylor, Dulwich College; W. H. D. Boyle, Eton; A. D. Rigby, Liverpool College; Theod. Brooks, London International College; R. A. Fawcett and A. C. Painter, of Clifton College.

ON May 1 an interesting ceremony took place at St. Barbe, the principal free institution at Paris. Two bodies of pupils were marched under the direction of teachers; the first was going to the Gare du Nord in order to come to London and spend six months in a corresponding English institution to learn the English language; the other went to the Gare de l'Est to proceed to Germany. These pupils have already learned foreign languages in Paris. They are placed under the supervision of professors, so that the usual routine of their studies for French honours should not be interrupted in any way.

SCIENTIFIC SERIALS

Annalen der Physik und Chemie, No. 3.—In view of contradictory results got by Sir W. Thomson and M. Le Roux, with regard to the thermo-electric behaviour of stretched wires, Herr Cohn has made a number of experiments, here described in an inaugural dissertation. He finds that the intensity of the thermo-current between stretched and unstretched wire of the same metal, depends (apart from all *permanent* properties), not only on the present tension of the former, but also, in very different