WE have received the annual report for 1885 of the Russian Geographical Society, which contains short accounts of the expeditions of M. Prjevalsky to Central Asia, M. Potanin to China, M. Grum-Grzimailo in the sub-Pamir region, MM. Wolter and Trusman; and the usual notices on works for which the medals of the Society were awarded. Geographers surely will be sorry not to find in this report any notice of the work done by the Caucasian and Siberian branches of the Society, which usually so greatly increases the value of the annual report of the Russian Geographical Society.

WE are glad to learn from the last Annual Report of the Russian Geographical Society that the Appendix to the *Russian Gazetteer*, by P. P. Semenoff, is in course of preparation. The full edition of the observations at the Polar Stations on Novaya Zemlya and on the Lena; the remarkable collection of maps dealing with the delta of the Amu-daria, Baron Kaulbars; and a geological map of the shores of Lake Baikal, are also in preparation.

AT the last meeting of the Paris Geographical Society, Dr. Maurel read a paper on his travels in Cochin China and Cambodia, on a mission from the Minister of Public Instruction. By means of a series of maps representing the Indo-Chinese peninsula in the seventh, eleventh, eighteenth, and nineteenth centuries, he showed the relative importance at different epochs of each of the peoples inhabiting this region. He then gave a general account of the country, its geography, climate, population, &c. A large collection of ethnographical objects which he had with him added much interest to that part of his paper. The young Cambodians at present being educated in Paris were present, clothed in the national costume.

THE DETERMINATION OF THE INDEX OF REFRACTION OF A FLUID BY MEANS OF THE MICROSCOPE

OF the various means adopted hitherto for the determination of the refractive index of a fluid, the most usually adopted has been that of the hollow prism, telescope, and collimator.

This method involves (α) the determination of the angle of the prism; (β) the position of minimum deviation; (γ) the use of monochromatic light, if errors arising from the different dispersive qualities of the substances are to be avoided. These preliminaries render the labour of determining the index a very difficult task, and the observer will scarcely expect to accomplish more than one observation at a sitting.

Cleaning the prism is not the least of the troubles, and when we add to them the fact that many liquids are so opaque that sufficient light can scarcely be passed through them for the observation, it is not surprising that so few have been found to possess the courage necessary for attacking the problem. The writer having had occasion for frequent determination of the index of refraction, has found the use of the microscope far surpasses the usual method in giving results of the greatest delicacy combined with a minimum of cost and of time.

Starting with the well-known fact, that an object viewed through a medium whose refractive index is different from that of air will occupy a different position from its image, or in the language of the text-books, $v = u + \frac{t}{\mu}$, where v determines the position of the geometrical focus of a pencil after direct refraction through a plate whose thickness is t, the writer was led to adopt the following plan.

On an ordinary "slip" as used for mounting preparations for the microscope a delicate mark is made with a writing diamond. A large but very thin "cover-glass" is cut in half, and its pieces cemented to the "slip" on either side of the mark, leaving a space of about one-eighth of an inch; then, resting on these supports, and bridging over the intervening space, is placed a small but very thin "cover-glass," and a drop of the fluid to be examined is run under this.

The fine mark made on the "slip" is now viewed through this with the microscope, using as high a power as possible, for the higher the objective the more delicate will be its focal adjustment; when the object is in focus the position of the "fine adjustment" must be read off. The microscope must then be left, and the slip removed for the examination of any other fluid. The top cover-glass is lifted off, the slip cleaned, the *same* cover-glass replaced, and a drop of a different fluid run under. Replacing now the slip upon the stage, and looking for the mark which was previously in focus, it will be found that an alteration of the fine adjustment is necessary to bring it into focus.

If the medium is of lower refractive index, the objective will have to be lowered, and conversely. Thus a rapid comparison of the relative refractive indexes of two media may easily be made.

But not only can the relative refractive powers of different bodies be thus obtained; the absolute numerical values may with the greatest accuracy be determined. For this it is essential that the fine adjustment screw should have accurate micrometer divisions, and this is usually the case now that immersion objectives are in common use. Two fluids must be selected whose refractive indexes present a wide difference, say oil of cassia and water; focus the mark, first viewed through water, secondly viewed through oil of cassia, and read off the number of divisions the screw has been turned through in the alteration of the focus. The refractive indexes of oil of cassia and water being known from the tables, a numerical value will by the formula be obtained for each division of the screw-head, and thus the absolute numerical index of any medium easily be determined.

By this simple and inexpensive method the writer has obtained from fifteen to twenty absolute indexes in a sitting of an hour's duration.

The importance of obtaining suitable media of high refractive index for mounting objects to be viewed with very high powers cannot be overestimated, for not only is a wider cone of light thus brought to bear upon the object, but its image is advanced, so that a greater working distance is obtained between the front lens of the objective and the cover-glass.

GORDON THOMPSON

St. Charles's College, Notting Hill

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

CAMBRIDGE.—The twentieth annual report of the Museums and Lecture-Rooms Syndicate, lately issued, recounts continuous progress in many scientific departments. The number of students attending demonstrations in the Cavendish Laboratory reached 100 last winter, and during the year twelve persons have done original work in the Laboratory.

The Plumian Professor (Mr. G. H. Darwin) introduced a new feature last summer by giving a course of lectures in the Long Vacation, and the attendance (thirteen) was encouraging. Few students attend the Plumian Professor's advanced lectures on the orbits and perturbations of planets.

In mechanism Prof. Stuart reports that the temporary museum and lecture-room has become very insufficient.

In chemistry there has been a considerable increase of students in advanced classes and special departments. The new laboratory is now being vigorously advanced. The classes in mineralogy maintain an average of sixteen students. The acquisition of 250 specimens from Mr. Field's collection has added some minerals previously unrepresented, and has improved the collection considerably for students' use.

In geology Prof. Hughes regrets the disadvantages of his present accommodation for teaching and lecturing, and finds the specimens of value are lost to the Museum because of its inadequate means of displaying them. A valuable collection of Cretaceous Cambridge fossils, many of them type-specimens, has been presented by Mr. James Carter of Cambridge.

Mr. Marr, Fellow of St. John's College, is engaged upon the arrangemext of the Foreign and British Cambrian fossils, of which it will be desirable soon to publish a new catalogue. The petrological series has been rearranged, and also the collection of microscope slides. The Upper Jurassic fossils have been largely added to and rearranged. Many interesting additions to the museum are chronicled in the report. It shows how largely the Museum gains from the interest of present and former students at Cambridge.

Prof. Babington has been chiefly occupied with the study of different parts of the Herbarium—especially the magnificent collection of European Rubi—and the identification of plants sent by botanists from a distance. Dr. Vines's students have numbered nearly sixty, and the Botanical Laboratory is inconveniently crowded. The commencement of a botanical museum has been made by Messrs. Potter and Gardiner, with the object