again. We laid Dr. Kobelt's volume aside with the intention of referring to it whenever any thing is wanted concerning Algeria and Tunis. No doubt the Germans have a lack of perspective. To many of them a fact is a fact, to be investigated and recorded; and their books are therefore often wearying in the extreme. But, after all, they do the work. They accomplish results which never have been and never will be accomplished by the French method of grabbing at whatever is picturesque and entertaining, and flinging the rest contemptuously aside. In the present volume the author has done his work conscientiously and well. Portions of it are dreary reading; but there are many interesting chapters. Especially worthy of mention are three chapters on the ethnology of the countries visited, — the eighth, on Algeria and its inhabitants; the eleventh, dealing with the Kabyles; and the twenty-third, on the Tunisians. His route was *via* Marseilles; and the first chapter, describing that city, is one of the very best in the book. In short, American travellers who intend writing up their journeyings would do well to imitate in some measure the methods of Dr. Kobelt. The volume is well illustrated, both with photographs of scenery and of natives. It contains also an appendix of considerable value, by Dr. O. Boettger, describing the reptiles and amphibia collected by the author in North Africa. Besides the lack of an index, the volume is deficient in that it contains no map. This is the more to be regretted, as the learned doctor's route is by no means easy to follow on any but a recent German map of Algeria and Tunis, and recent German maps of those regions are to be found in this country only in our larger libraries.

Römische chronologie. Von L. HOLZAPFEL. Leipzig, *Teubner*, 1885. 8°.

IN his 'Roman chronology' Dr. Holzapfel aims at correcting Roman dates, as commonly given, by a minute process, which, at least as regards the earliest dates, is certainly its own best refutation. He deals also with the various Roman eras in current use among the ancients. Finally, he attempts to give a detailed account of "the course of the Roman calendar down to the time of Caesar's reform." In 1859, Theodor Mommsen, guided by a practical good sense, which Dr. Holzapfel hardly possesses, dealt with all these questions in his 'Roman chronology.' Though in many details Mommsen's conclusions can no longer be accepted, notably as regards the chronological significance of the appointment of a dictator *clavi figendi causa*, it is still true that Mommsen's book is the best upon the subject. The cardinal fault of Dr. Holzapfel's work is, that it is inextricably incomprehensible without the unremitting labor of constant reference to what has been written by others. The reader is distressed by a needless clatter of controversy, which seems to indicate that Dr. Holzapfel does not sufficiently trust his own conclusions. All who are not actually bearing the brunt of the chronological fray will find this book unrefreshing and confusing; and those who are well read in the whole subject may well pause before tormenting themselves with our author's argumentations. The book is conspicuously lacking in neatness of statement. There is no sense of proportion, no prospective. The 'peasants' calendar' and the business year of ten months are practically ignored. And yet what could be of more importance than the former, in any account of the conditions which made Caesar's reformed calendar a possibility as well as a necessity? It is to be lamented that Dr. Holzapfel could not find time to make his book both shorter and more complete. This 'Roman chronology,' with its tediously paraded controversies and its sophomoric list of emendations, ostentatiously placed at the end, is an overgrown 'doctor's dissertation' rather than a desirable book of reference.

A text-book of inorganic chemistry. By VICTOR VON RICHTER. Authorized translation by Edgar F. Smith. 2d American from the 4th German ed. Philadelphia, *Blakiston*, 1885. 16°.

THAT Professor Smith's translation of Richter's useful text-book of inorganic chemistry has passed to a second edition, is perhaps sufficient testimony to its value. Much has been rewritten, and some new matter incorporated; but the work would have gained in clearness and smoothness if more attention had been paid to the rendering of the sense, rather than the phraseology, of the original.

Spectrum analysis. By Sir HENRY E. ROSCOE. 4th ed. by the author and by Arthur Schuster, Ph.D., F.R.S. New York, *Macmillan*, 1886. 8°.

THE fourth edition of Roscoe's 'Lectures on spectrum analysis,' wholly revised, almost wholly rewritten, and including concise accounts of such recent advances of importance in spectroscopy as lend themselves to popular treatment, follows closely the plan and arrangement of its predecessors, and appears in the same elegant guise. The character and scope of the work are too well known to need extended comment.

ST. PETERSBURG LETTER.

ON the 11th of February there was a special meeting of the Geographical society, in honor of N. M. Prjevalsky. The large hall of the Michael palace, where the meeting was held, was crowded by a distinguished audience. In a short preliminary address, the vice-president, P. P. Semenow, spoke of the merits of the traveller, and reminded

his hearers that in his absence this time, Prjevalsky had received two of the highest honors conferred on travellers, — the Vega medal of Sweden, and the gold medal of the Italian geographical society.

It is impossible to see and hear the celebrated traveller without being struck with his fitness to do so difficult and extraordinary a work. With an iron constitution, a rare force of will, the still rarer faculty to command, and communicate his enthusiasm to the picked men who followed him, it was possible for the small band of twenty Russians to explore thousands of miles in the heart of Asia, on the highest plateaus of our globe, amid the greatest hardships and often dangers.

In going to so distant a country and one so difficult to explore, the personal comforts of the travellers had to be sacrificed, their stock of food consisting of *dzamba* (wheat or barley flour roasted) and brick-tea, animal food being furnished by the chase. Their principal baggage consisted of arms and ammunition, as their safety, as well as the success of their zoölogical collections, was dependent upon them. Perhaps the greatest hardship encountered by the expedition was the want of good fuel with which to warm themselves, cook their food, and make tea. The greater part of the countries traversed is treeless, and dried dung the only fuel. This is tolerable in winter, spring, and autumn, when the wind is from the north. Then Thibet is generally dry ; but in summer it rains nearly every day, and snows sometimes, and the air is rather humid.

The principal results of this fourth expedition of Prjevalsky consist in an extension of the surveys westward from north-eastern Thibet to countries absolutely unknown. Now they are connected by lines of surveys eastward to Prjevalsky's former road-surveys, northward to Lake Lop-Nor, and westward to the existing Russian and English surveys in Chinese Turkestan. This expedition has proved that very high chains of mountains, with peaks over twenty thousand feet high, rise southward from the lower northern plateaus of high Asia (as Zaïdam, the basin of the Tarim, etc.), and that these mountains trend from west to east, there being no meridional chains. There are no large glaciers in the greater part of these mountains, but there are enormous ones on the northern slope of the Kiria chain (so named from the city and oasis at their foot, in Chinese Turkestan).

The annual commencement of the St. Petersburg university was held Feb. 20, in the large university hall. The report was read by Professor Wassiliewsky, and began, as usual, with necrological notes on deceased professors or honorary members of the university. The chief remarks were devoted to the celebrated historian of Russia, Professor Kostomarow, and to N. W. Kalatschow, an eminent archeologist. Statistical notices followed. The number of students by faculties, was, compared with the last two years —

Year.	Physico-mathematical.		Historico-philological.	Oriental languages.	Law.	Totals.
	Mathematical.	Natural sciences.				
1884	534	568	253	57	834	2,246
1885	485	552	263	76	906	2,282
1886	531	437	252	79	981	2,280

It is seen from this table that the university has a large number of students ; and this is the more remarkable, since it has no medical faculty, and this faculty in other Russian universities has more than one-third of all the students. The most notable feature of the changes in the last two years is the increase in the number of law students. By far the larger number of Russian students, after passing their examinations, enter the state service ; and law studies are preferred, as giving a better opening than the other faculties. The decrease of the students in natural science is caused by the easier admission into the Medico-chirurgical academy and higher technical schools. A few years ago this academy abolished its first two 'courses,' which gave a general preparation in natural sciences, retaining only the last three special courses. Thus the medical students were compelled first to enter one of the Russian universities ; and the medical faculty at Moscow, and the section of natural sciences at St. Petersburg, were crowded far beyond their available room and means of their existing museums and laboratories. The return to the old system at the Medico-chirurgical academy, and the somewhat easier admission at some of the technical schools, have freed the university of a great number of such students, to the profit of the others.

Then followed a lecture by Professor Woeikof, "On the cooling of the globe in connection with the distribution of temperatures in the solid crust of the globe and the ocean ;" after which the rector, Professor Andreïewsky, mentioned the medals and other marks of distinction received by the students. Besides these, the university awarded one of the Tljenkow premiums of five hundred rubles to P. T. Brounow, for his works on cyclones and anticyclones in Russia, one of which has been printed in the Proceedings of the Geographical society.

It is interesting to mention a feature of Russian

university life which is developed nowhere so much as at St. Petersburg: it is the large number of students who receive 'stipends' (scholarships). About one-fourth of the students (in all, 577) receive regular scholarships; and, as those of the first year are excluded from them, the percentage is much higher in the three later years. The yearly expenses of the university in 1885 were four hundred and thirty-five thousand rubles.

O. E.

St. Petersburg, Feb. 26.

NOTES AND NEWS.

THE Rev. W. C. Winslow, 429 Beacon Street, Boston, treasurer and vice-president of the Egypt exploration fund for America, writes as follows: "The invaluable labors of our society in the Delta were successfully resumed in December. The splendid results of 1883–84 and 1884–85, for classical, historical, and biblical elucidation and illustration, are familiar to scholars and to a large portion of the reading public. The work is in the hands of masters; but these labors cannot go on without continued support. To those who contribute so small a sum as five dollars the elaborate memoir of the season, annual reports, etc., are sent. The book 'Naucratis' (forty plates and plans) is in preparation; 'Tanis II.' (Zoan) will follow. The officers and the committee all give their services gratuitously. To all interested a circular and other information will be gladly furnished by the treasurer."

— The winter habitat of the mackerel is not yet definitely ascertained. It is interesting, therefore, to place upon record the fact, noted in the circular of the Boston fish bureau of March 5, that the schooner Fitz J. Babson of Gloucester was struck by a heavy sea on the 27th of February, when about twenty miles north of Georges Banks. When the water had disappeared, eight mackerel were found flipping about the deck. The spring mackerel fleet is being fitted out somewhat earlier than has been usual in former years, on account of this indication of the proximity of the mackerel schools to the coast.

— A committee of geologists and naturalists invite subscriptions to a monument to Oswald Heer, whose death two years and a half ago closed the work of one of the most eminent naturalists of this century. It will take the form of a marble bust on a stone pedestal, to be placed under cover in the Botanic garden at Zurich. One thousand dollars are desired, and those willing to contribute are invited to send their contributions to Dr. C. Schröter, Professor, Hottingen, Zurich, before the first of May next, or to the editor of *Science*, 47 Lafayette Place, New York, who will see that they are forwarded.

— Dr. Austin Flint, the most celebrated of American physicians, died in New York, March 13, aged seventy-four. Probably no one person has ever exerted so great an influence in medical education, and in the medical profession of America, as has Dr. Flint through his text-books and teachings.

— Professor Ward's 'Sketch of paleobotany' (Fifth annual report, U.S. geol. surv.) is an excellent work, and one to which the title does not do justice. The work comprises biographical sketches of twenty-two of the most eminent leaders of the science, followed by a 'sketch' of the early history and subsequent progress of paleobotany, which must have involved a large amount of labor. After this follows a discussion of the classification of fossil botany. Between eight and nine thousand species of fossil plants are now known, two of which are from the Cambrian, nearly fifteen hundred from the carboniferous, and over three thousand from the miocene, with only sixty-nine from the trias, and less than four hundred older than the carboniferous. In his introductory remarks upon the inter-relation of geology, paleobotany, and botany, the author expresses surprise that the mutual dependence of botany and paleobotany has received so little recognition among scientific men, and presents the importance of studying fossil and living plants together. Certainly with this view every naturalist ought heartily to concur. What he complains of in fossil botany has been unfortunately too true in other branches of paleontology.

— Mr. Gilbert's report on the 'Topographic features of lake shores,' in the 'Fifth annual report of the geological survey,' is of especial interest from the author's wide experience on the 'fossil' shore-lines of the evaporated lakes of the Great Basin, and from his studies of the former expansion of Lake Ontario, now in progress. The several topographic forms are well defined, and illustrated by maps and views. The plates of the Cup Butte and other portions of the old Bonneville shore-line in Utah are particularly valuable. A large share of shore-work is attributed to the waves and littoral currents of great storms, just as the greater part of river-channel topography is determined by the heavy and exceptional floods. The bars at the western end of Lake Superior are adduced in illustration of the statement that the greatest waves, and not the prevailing winds, of a shore, will define its topography.

— Mr. Westwood Oliver, with the assistance of a number of astronomers, has in preparation a