

the scales adopted to be reduced to a common system. This seems to give sufficient latitude, but, nevertheless, at the eleventh hour, no less than five different papers are presented on this vexed question of magnitude. Among other papers forming the annexe is a short but interesting note from the Astronomer Royal on the number of stars found on each of the plates devoted to photographing the Polar Cap, with a comparison with the numbers comprised in the Durchmusterung and the accurate catalogues of the Astronomische Gesellschaft. The totals are as follows:—

Number of stars measured on the plates ...	58,176
Number of stars to the square degree ...	70.0
Number of stars in Argelander's Durchmusterung	9979
Ratio of photographed stars to Bonn D.M. ...	5.83
Number of stars in A.G.C. Catalogues ...	4966
Ratio of photographed stars to A.G.C. ...	11.7

If the number of stars approximately increases as the magnitude diminishes, the ratio here given would point to the faintest stars on the plate being 1.9 mag. fainter than Argelander's faintest stars, or well covering the eleventh magnitude, originally assigned as the limit to which the catalogue should extend.

Since writing the above, M. Lœwy has published very complete details showing the approximate times of observation of the planet Eros at no less than forty-six observatories where the work has been undertaken. The energy displayed is of the most gratifying character, and the final result will no doubt demand a degree of confidence commensurate with the labour that has been bestowed on the undertaking. The work is shown to be one of gigantic magnitude, and M. Lœwy displays considerable hopefulness in suggesting that two years may see it completed. Several other papers, all devoted to securing accuracy and homogeneity in the final reductions, also appear in this brochure. We may especially call attention to a paper by the Director of the Paris Observatory on the degree of precision that the photographic measures possess, and of the success that is likely to attend the adoption of the scheme for driving the equatorial at various rates depending on the amount of geocentric motion of the planet itself. The additional matter supplied by the Paris authorities is of a highly interesting character to which we hope to do justice later, when complete details from the various authorities are published.

THE COLORADO POTATO BEETLE.

THE official announcement by the Board of Agriculture of the appearance of the Colorado potato beetle swarming in a potato field at Tilbury is a very serious matter, for we have no wish to see another insect pest added to those with which our agriculturists already have to contend. It is satisfactory to know that the Board took instant measures to cause the destruction of all the crops within the infested area; and as the surrounding neighbourhood has since been searched in vain for any further traces of the insect, it is confidently hoped that the measures taken for its timely extirpation have proved successful.

The beetle is about half an inch long, and slightly oval in form. The wing-cases are longitudinally and alternately striped with black and yellow, and the wings are red. The grubs, which feed on a great number of other wild and cultivated plants besides the potato, are orange or reddish, with a row of black spots on each side. The oval yellow eggs are laid in clusters.

The insect was so destructive in North America some years ago that great fears were entertained of its spreading to Europe; and at that time was passed the Destructive Insects Act, according to which every person meeting with the insect is bound, under a penalty of 10*l.*, at once

to inform the police, who in their turn must notify the local authorities, who must communicate by telegraph with the Board of Agriculture.

It must be remembered that, if there is danger of an injurious insect establishing itself in a country, instant action is as necessary as in the case of a threatened epidemic.

W. F. KIRBY.

PROF. BARON ADOLF ERIK VON NORDENSKJÖLD

WHEN a man who has spent an earnest and useful life reaches the mature age of threescore years and ten, it must be a relief to those near and dear to him when his last days are not spent in suffering. The great Swedish explorer's end was in this wise. "His death," writes his nephew, Dr. Otto Nordenskjöld, "was absolutely sudden; the same day he was working in his laboratory, occupied with great plans in his mineralogical and chemical work."

Baron Adolf Erik von Nordenskjöld was born at Helsingfors, the capital of Finland, on November 18, 1832, the third in order of seven children. His father, Nils Gustav Nordenskjöld, descended from a scientific family, and, himself an ardent naturalist, was chief of the Mining Department of Finland. Nils Gustav was a most distinguished mineralogist, and his work brought him into communication with the most eminent mineralogists and chemists of his time in France, Germany, and Britain. He travelled as far as the Urals, and on many of his journeys he was accompanied by his son, Adolf Erik von Nordenskjöld, who as a boy became an industrious collector of minerals and insects. He acquired great skill in collecting minerals and in the use of the blow-pipe, which his father handled with a masterly skill, unknown to most of the chemists of the present day. Thus, both by inheritance and by the influence of environment, Nordenskjöld had opportunities allotted only to the few, but which were taken the greatest possible advantage of. His early education was from private tuition, after which he was sent to "gymnasium" at Borgo, a connecting-link between school and university. Here he distinguished himself, as the rector expressed it, "only by absolute idleness." He was marked in his certificate "unsatisfactory" in nearly the whole of the subjects. His parents were judicious enough not to attach any importance to this well-deserved mishap. His private tutor was removed; and with five silver roubles Nordenskjöld had to seek modest board and lodging, and got full liberty to manage his studies in his own way. "Self-respect," he says, "was thus awakened. I became exceedingly industrious, and was soon one of those then attending the gymnasium who obtained the best reports."

Nordenskjöld entered the University of Helsingfors in 1849, devoting himself chiefly to the study of chemistry, natural history, mathematics, physics, and, above all, of mineralogy and geology. He took charge of the rich mineral collection of Feugard, and made many excursions. In 1853 he accompanied his father on a mineralogical tour to Ural, when he planned an expedition to Siberia, which the Crimean War prevented him from carrying out. On his return he wrote, as his dissertation for the degree of licentiate, a paper "On the Crystalline Forms of Graphite and Chondrodite," which was discussed under the presidency of Prof. Arppe on February 28, 1855. At this time he published "A Description of Minerals found in Finland," "The Mollusca of Finland" with Dr. E. Nylander, and shorter papers in the "Acta Societatis Scientiarum Fennicæ." During this time he was appointed Curator of the Mathematico-Physical Faculty and to a post at the Mining Office with inconsiderable pay. Before he received his second

quarter's salary he was removed from these offices at the instigation of the Governor-General, Count von Berg. This was done on account of some political speeches of a frolicsome nature made at a tavern in Thölö. Some of the students were rusticated for a term, and Nordenskjöld got double dismissal without further ceremony. He bore his misfortune with philosophic calmness, and betaking himself to Berlin worked in Rose's laboratory at mineral analysis.

Next year he returned to Finland, and received the Alexander stipend for a tour of study through Europe, and obtained his degree of master and doctor. At this "graduation" ceremony the Universities of Upsala and Lund had a deputation that was received in a most cordial manner, and Nordenskjöld proposed a toast "to our memories all, and to the time that has been and the time that shall come, if only it does not bring Finland's fall, a toast to the days of memory that have fled and the hope that still remains." This speech the tyrannical von Berg regarded practically as high treason. Nordenskjöld treated the whole affair with contempt, but had to leave Finland and go to Sweden. The Russian Government, moreover, deprived him of the right of ever holding office in Helsingfors University. Further persecution followed, and von Berg actually urged in the Senate, Nordenskjöld's exile for having entered foreign service without asking permission of the Russian Government. After 1862, however, when von Berg's term of office had expired, he was allowed to go to Finland whenever he pleased.

Nordenskjöld's first visit to the Polar regions was with Torell to Spitsbergen in 1858, with whom he went as geologist. At Belle Sound he found Tertiary fossil plants which formed the first of the extensive geological collections brought home by subsequent Swedish expeditions; besides these he also obtained fossils from the Carboniferous and Jurassic formations, as well as fine minerals from the limestone veins on the Norways, Cloven Cliff, &c. On the death of Mosander, after his return, he was appointed professor and director of the Riks-Museum, Stockholm. It was because he held this post that von Berg wished to have him declared an exile. By means of energetically purchasing and collecting, and in consequence of the extraordinary richness of the Scandinavian peninsula in rare and remarkable minerals, the Mineralogical Museum at Stockholm, with help of the collections, valuable in certain directions, which have existed from Mosander's time, has in this way become one of the most considerable in Europe. In 1860 his old friend J. J. Chydenius, afterwards professor of chemistry at Helsingfors, joined him as collaborateur, and they made many excursions together. In 1860 his mother died, but he was not permitted to visit Finland even to bid her a last farewell. In 1861 he again visited Spitsbergen with Torell, on which occasion he had an opportunity of surveying the northern part of that archipelago, clearing up the main points of the geognosy of the country. This expedition was the first foundation of a true knowledge of the natural history of the Polar countries. In July 1863 he married Anna Mannerheim, a Finnish lady, and abandoned all thoughts of further Arctic journeys. "Circumstances, however," he says, "so arranged themselves that just from this time they were resumed by me, and on a greater scale than before." In 1863 he was asked by the Royal Academy of Sciences of Sweden to lead an expedition to Spitsbergen in the place of K. Chydenius, who was ill. He asked Docent Duner and Dr. Malmgren, of Lund, to join him. Starting in the spring of 1864, he completed the preliminary part of the survey for the arc of meridian, mapped the southern part of Spitsbergen, and collected new data as to fauna and flora. The sea was very free of ice; but an attempt at a high latitude was frustrated by meeting with seven

boats with the crews of three wrecked walrus sloops, which compelled immediate return to Norway. In 1867 he visited Paris, having been commissioned, along with Prof. A. P. Ångström, to compare a normal metre and a normal kilogram, which had been made for the Swedish Government, with the prototypes preserved in the Conservatoire des Arts et Métiers.

Through Count Ehrensvar, Governor of Gothenburg, funds were raised, after several unsuccessful attempts, from Dickson, Ekman, Carnegie, &c., for another Polar expedition. State-Counsellor Count Platen, head of the Marine Department, took a special interest in the plan, and the iron steamer *Sofia* was placed at Nordenskjöld's disposal by the Government. On September 19, 1868, the *Sofia* attained the highest northern latitude which any vessel can be proved to have attained in the old hemisphere—namely, 81° 42' N. The name of Mr. Oscar Dickson is always associated with that of Nordenskjöld; it was he who had contributed most liberally to the expedition of 1868, and Nordenskjöld was overjoyed when he voluntarily offered to equip another expedition to the same region. It was determined that the new expedition should have for its object to winter on the north-east coast of Spitsbergen, in order thence to push northwards in sledges on the ice. After a long set of inquiries as to whether dogs or reindeer should be used for draught purposes, Nordenskjöld decided upon reindeer. It was also decided, with Mr. Dickson's consent, that Nordenskjöld should go to Greenland to investigate the question of dogs, and this expedition was extended into a scientific one, three young Swedish men of science accompanying him. On this occasion he made a long journey into the interior of Greenland, almost equal in distance to that of Nansen undertaken some years later. Of this journey Nordenskjöld says: "I had here an opportunity of clearing up the nature of a formation which, during one of the latest geological ages, covered a great part of the civilised countries of Europe, and which, though it has given occasion to an exceedingly comprehensive literature in all cultivated languages, had never before been examined by any geologist." The same year, with some others, Nordenskjöld petitioned the Swedish Government to form a colony in Spitsbergen to work its mineral resources. This petition gave occasion for the Foreign Minister of Sweden to inquire of the Powers of Europe as to the annexation of Spitsbergen by Sweden. Russia alone objected, and Spitsbergen remains to the present day "No Man's Land."

The long-prepared new Polar expedition finally started in 1872. "The state of ice," says Nordenskjöld, "on the north coast of Spitsbergen was more unfavourable in 1872 than it had been at any time since the coast was frequented by the Norwegians." The reindeer escaped on the third day. The ship got frozen in on September 29, and the crews of six walrus sloops, which had also been frozen in, depended on Nordenskjöld for subsistence. Thus Nordenskjöld, instead of having twenty-four mouths to feed, was confronted with the almost insuperable problem of feeding 125. Seventeen of the walrus hunters, therefore, under the veteran Mathias, reached Cape Thorsdem by boat, 200 miles distant, where they found all necessities at the quarters of the Swedish colony. Fortunately, two vessels escaped in November and took the crews of four vessels with them; but two men who remained died that winter. Notwithstanding all this, the expedition yielded important scientific results, not the least important being the discovery of cosmic dust on the Polar ice. Extensive journeys along the north coast and across the inland ice of North-east Land were also made. In spite of the heavy expenses incurred in this voyage, Mr. Oscar Dickson declared that he was willing to "go on."

During the next few years, with his help, Nordenskjöld

worked at the opening up of the Yenisei and the Siberian seas, which culminated in his ever-memorable voyage, accomplishing the North-east Passage in 1878-79. The voyage of the *Vega* is still fresh in the minds of all. Leaving Tromsø on July 21, she rounded East Cape on July 18, 1879, less than twelve months afterwards. The *Vega* found the Kara Sea free; and since that sea was so favourable, a considerable time was spent on dredging, sounding, and other scientific observations, including the re-mapping of the coast-line between Yenisei and Cape Sterlegof. Ice and bad weather detained him at Tainia Bay, but on August 19, the *Vega* rounded the northernmost point of Asia, Cape Chelyuskin. Next day the *Vega* was further north, namely, $77^{\circ} 45' N.$, which proved to be the most northerly point reached. At the Lena Delta, the *Lena*, which accompanied the *Vega* so far, turned southward up the river, and Nordenskjöld continued his voyage toward Bering Strait. On September 12, progress was stopped at the "North Cape" of Cook, where he turned back to Bering Straits in 1778, and Nordenskjöld was forced to winter off Pitlekai in $67^{\circ} 07' N.$, $123^{\circ} E.$ Systematic scientific observations were carried on during the whole winter, spring, and following summer, till on July 19 they were released, and two days later rounded the eastern extremity of Asia with flying colours. On September 2, 1879, Nordenskjöld dropped anchor at Yokohama, whence the whole civilised world received the news that this man had accomplished what had so often been attempted during three centuries. For this brilliant exploit, Nordenskjöld was awarded a magnificent reception throughout Europe, and many honours were showered upon him, including his elevation to the rank of Baron in the Swedish Peerage. It is from the complete and striking success of this expedition that Nordenskjöld became popularly world-renowned.

In 1883 he undertook a second expedition to Greenland, penetrating further into the interior than any other explorer.

His success rested on the solid basis of his scientific instinct and training, and of his indomitable will and courage. It is to him that we owe the first real efforts at undertaking scientific research in the Polar regions, especially from the geological and mineralogical aspects.

His researches outside the Polar regions were also important. He discovered uranium in many varieties of coal, and he showed that fresh water could be obtained anywhere in Scandinavia at a depth of 100 feet through the Archæan rocks. This has been proved in 400 cases to be correct, and has been of great advantage to pilots, fishermen, lighthouse keepers, &c., living on small islands without water, and also for many factories. He remained a politician all his life. On account of refusing to suppress his opinions in this direction, he was rejected in 1867 as a candidate for the chair of mineralogy and geology in Helsingfors University, although he was unanimously recommended. As the son of a Swedish nobleman, he sat and voted in the Swedish House of Nobles; but, although so intimately associated with Sweden for the greater part of his life, he always referred to Finland as his "dear Fatherland." In his latter days he interested himself in South Polar exploration, and it must have been pleasing to him to know that his nephew was about to lead an expedition to the Antarctic regions.

W. S. BRUCE.

NOTES.

THE appointment of the Royal Commission on Tuberculosis was announced in Tuesday's *Gazette*. The Commission is composed of Sir Michael Foster, K.C.B., F.R.S., Prof. G. S. Woodhead, Prof. S. H. C. Martin, Prof. J. McFadyean, and Prof. R. W. Boyce. It is appointed to inquire and report with respect to tuberculosis:—(1) Whether the disease in animals

and man is one and the same; (2) whether animals and man can be reciprocally infected with it; and (3) under what conditions, if at all, the transmission of the disease from animals to man takes place, and what are the circumstances favourable or unfavourable to such transmission.

THE International Engineering Congress was opened at Glasgow on Tuesday with an address by the president, Mr. James Mansergh, F.R.S. Referring to the value of the work of settling standard sections of important constructive materials, Mr. Mansergh remarked that this matter had been taken in hand by a joint committee of the Institution of Civil Engineers, the Institution of Mechanical Engineers, the Institution of Naval Architects, and the Iron and Steel Institute. Sir Benjamin Baker, with a specially-selected sub-committee, had charge of bridge and general building construction; Sir John Barry, with similar assistance, of railways; Mr. Denny, of shipbuilding; and Sir Douglas Fox, of rolling-stock. In the hands of these eminent engineers the work would be well handled. The address concluded with brief references to some of the chief subjects to be brought before the various sections of the congress. After the address members of the congress dispersed to the meeting rooms of their sections, where addresses were delivered by the sectional presidents, and papers were read.

THE forty-sixth general meeting of the German Geological Society will be held at Halle on October 4-7.

WE regret to announce that Dr. Charles Meldrum, C.M.G., F.R.S., late Director of the Royal Alfred Observatory, Mauritius, died on August 28 in his 80th year.

IT is stated that the exhibits of the German chemical industry at the Paris Exposition valued at 30,000*l.* have been presented to the Technological Institute of the University of Berlin.

THE Vienna correspondent of the *Times* states that the Emperor Francis Joseph has addressed an exceptionally cordial autograph letter to Prof. Edward Suess, the eminent Austrian geologist and politician, on his retirement from the Vienna University. The Emperor expresses his high appreciation of the work done by Prof. Suess in science, as an academic teacher, and as a public man, especially in the promotion of sanitary reform.

A TELEGRAM received by the American Consul at Christiania from the secretary of Mr. Baldwin's American Polar Expedition at Hammerfest, states that the Norwegian steamship *Frithjof*, which is one of the vessels employed by Mr. Baldwin, has returned to Hammerfest after fitting out and provisioning the expedition in Franz Josef Land. The expedition was landed at Cape Ziegler; when the *Frithjof* sailed from that point the conditions were favourable for pressing northwards, and Mr. Baldwin intended to begin his advance the next day.

THE Australasian Ornithologists' Union has been successfully inaugurated, and the first general meeting will be held at Adelaide in October or November. The objects of the Society are "the advancement and popularisation of the science of ornithology, the protection of useful and ornamental avifauna, and the editing and publication of a magazine or periodical, to be called *The Emu*, or such magazine or periodical as the Society may from time to time determine upon." Colonel W. V. Legge is the president-elect, and Mr. D. Le Souëf, Zoological Gardens, Melbourne, is the honorary secretary.

IN connection with the proposed Pasteur statue for Paris, the Paris correspondent of the *Chemist and Druggist* states that an attempt is being made to make it a national monument. The idea is that every Frenchman and resident in France should become a subscriber, and amounts from a halfpenny upwards