

conditions were almost unknown for Prussia. Some of the stations were inspected yearly by Dove, but strange to say, it is stated that not a single Report of these inspections is to be found in the archives of the Institute. Among the numerous treatises by Prof. Dove, that best known is his work on the "Law of Storms," which was translated and adopted in this country. After Dove's death, in 1879, the Institute introduced the French measures in its publications, and adopted generally the recommendations of the various International Congresses, to which innovations Dove himself had always been averse, and instruments with new scales were necessarily supplied to the stations. In 1882 Dr. Hellmann was intrusted with the *ad interim* direction of the Institute, and many additional stations, especially for rainfall, were added to those which already existed, and finally (in 1885) the Institute was placed under the able superintendence of Dr. W. von Bezold, formerly director of the Bavarian system, with Drs. Hellmann, Assmann (also Director of the Magdeburg Observatory), Kremser, and Wagner, as principal assistants. The first volume of the new office has just appeared, and contains the observations at 271 stations during the year 1885 (246 pages, 4to, and 6 litho. tables), and also lists of all observations made since 1847. The stations are still very unequally distributed over the Empire, and no doubt improvements will be made in this respect, from time to time. It is plainly shown from the tables that while an open country position is most suitable *meteorologically*, yet for *duration* of the observations the large towns are preferable. These observations formerly appeared in the "Preussische Statistik," and in the publication of the Deutsche Seewarte, but will henceforward form an independent work. It is proposed in future to issue the tabular portion in quarterly volumes, and to publish pamphlets at irregular intervals under the title of "Abtheilungen," containing papers and discussions of a general nature. The Deutsche Seewarte at Hamburg is an independent Institution, dealing chiefly with maritime meteorology and weather telegraphy.

J. S. HARDING.

THE HEIGHT OF SUMMER CLOUDS.

A KNOWLEDGE of the heights and movements of the clouds is of much interest to science, and of especial importance in the prediction of weather; the subject has therefore received much attention during recent years from meteorologists, chiefly in this country and in Sweden. In the last published Report of the Meteorological Council for 1885-86 will be found an account of the steps taken by that body to obtain cloud-photographs; and in the *Meteorologische Zeitschrift* for March last, M.M. Ekholm and Hagström have published an interesting summary of the results of observations made at Upsala during the summers of 1884-85. They determined the parallax of the clouds by angular measurements made from two stations at the extremities of a base of convenient length, and having telephonic connexion. The instruments used were altazimuths, constructed under the direction of Prof. Mohn, specially for measuring the parallax of the aurora borealis. A full description of these instruments and of the calculations will be found in the *Acta Reg. Soc. Sc. Ups.* 1884. The results now in question are based upon nearly 1500 measurements of *heights*; the *motions* will form the subject of a future paper. It was found that clouds are formed at all levels, but that they occur most frequently at certain elevations or stages. The following are, approximately, the mean heights, in feet, of the principal forms:—Stratus, 2000; nimbus, 5000; cumulus (base), 4500, (summit) 6000; cumulo-stratus (base), 4600; "false-cirrus" (a form which often accompanies the cumulo-stratus), 12,800; cirro-cumulus, 21,000; cirrus, 29,000 (the highest being 41,000). The maximum of

cloud-frequency was found to be at levels of 2300 and 5500 feet. Generally speaking, all the forms of cloud have a tendency to rise during the course of the day; the change, excepting for the cumulus-form, amounting to nearly 6500 feet. In the morning, when the cirrus clouds are at their lowest level, the frequency of their lowest forms—the cirro-cumulus—is greatest; and in the evening, when the height of the cirrus is greatest, the frequency of its highest forms—the cirro-stratus—is also greatest. With regard to the connexion between the character of the weather and the height of the clouds, the heights of the bases of the cumulus are nearly constant in all conditions. The summits, however, are lowest in the vicinity of a barometric maximum; they increase in the region of a depression, and attain their greatest height in thunderstorms, the thickness of the cumulo-stratus stretching sometimes for several miles. The highest forms of clouds appear to float at their lowest levels in the region of a depression. The forms of clouds are identical in all parts of the world, as has been shown in papers lately read by the Hon. R. Abercromby before the English and Scottish Meteorological Societies.

IVAN POLYAKOFF

RUSSIA has lost one of her most promising men of science in Ivan Polyakoff, who died lately at St. Petersburg, from hepatic disease, at the age of about forty. He was born in the small village of Transbaikalia, on the Argun, of Cossack parents, descendants from the earlier settlers of Siberia, and received his first education in a military school for sons of soldiers and Cossacks at Irkutsk—a very limited education indeed. As his parents were poor, and life in his native village offered no attractions, he accepted the position of teacher at the same school where he had been educated. Zoology and botany became the sciences of his choice. A large park belonging to the Governor, close by the military school, peopled with a variety of birds and insects, became the first field of his researches. As the spring came, he would spend the day in the garden, sometimes extending his excursions to the neighbourhood of Irkutsk, where so much is to be learned. He wrote down his observations, and published them in the *Irkutsk Gazette*. From the very first lines of his description one is struck by a remarkable feature of Polyakoff's mind—a feature which is to be found in all his later writings, and which cannot but be highly appreciated by a true naturalist: it is the simplicity of his conception of the animal world; I should say his intimacy, his familiarity, with every bird or animal he describes. He *understood* them. One must be born in a lonely Siberian village on the confines of the civilized world, at the border of the uninhabited Gobi steppe—the Argun is such a border—to be always in so close a contact with Nature.

Early in 1866 I was going to make a great journey to find out the long-searched-for route from the Lena gold-washings to the steppes of Transbaikalia. A topographer accompanied the Expedition; I undertook the geological exploration; for the botanical and zoological I invited Polyakoff to join us. We crossed the region from the Lena to Tchita, and thus Polyakoff and I were able to make a section of the backbone of the Asiatic continent, with its high and lower plateaus, their border-ridges, and the Alpine regions which fringe them. A zoologist like Polyakoff was thus enabled to obtain an insight into the whole of the Siberian fauna, as dependent upon orographical features. His descriptions of the fauna and flora of the region, especially with regard to the dependence of animals and plants upon their surroundings and their mutual interdependence—he excelled in that kind of research—are a most valuable contribution to the geographical zoology and botany of a wide region. His

collection of plants was described by our friend the late Dr. Glehn.

Next year, Polyakoff made another little journey to the upper Irkut valley, from which he returned with something quite new—namely, a rich collection of stone implements. There he studied the actual position of the encampments of our Stone-Age ancestors, and the general surroundings of their life. Afterwards, wherever Polyakoff went—to Olonetz, on the Volga, on the Ural, or to Saghalien—he had only to take a short walk in the region he proposed to explore to have a general idea of it. Then he took a shovel, or invited somebody with a shovel, and indicated the place where some digging ought to be done, and stone implements (Neolithic) never failed to be found. His collections are as numerous as invaluable.

In 1868, he entered the St. Petersburg University—not without some difficulties on account of the Latin examinations—and the late Dean of the University, the much-regretted Prof. Kessler, at once perceived that he would have in Polyakoff a first-rate naturalist, and showed him much attention. Polyakoff's thesis for the degree of Doctor of Sciences—a monograph on the cartilaginous fishes—received high praise, and as soon as he was out of the University, he was appointed Conservator of the Zoological Museum of the Academy of Sciences at St. Petersburg.

After that time Polyakoff was almost always out on some expedition sent either by the Academy or by the Geographical Society. He explored the Olonetz region, the middle Volga, the lower Obi region, and recently he was sent by the Academy of Sciences on a long exploring journey to Saghalien and the Pacific littoral. It was on his return from this last journey that he fell ill at St. Petersburg, where he died in a hospital. A friend who learned of his illness, and went to visit him at the hospital, came too late.

His death is the more a loss for science, as he was going to work out in detail the exceedingly rich zoological and anthropological materials which he had collected during his last journeys. Only preliminary reports of these journeys have been published. Part of his researches on the Stone Age have been embodied in Count Uvaroff's work; others have appeared in the publications of the Academy of Sciences, the Russian Geographical Society, and the St. Petersburg University Society. His preliminary report on the Obi journey (containing an admirable description of the Ostiaks, whom he thoroughly understood) has been translated into German; and there is also a German rendering of his preliminary report, or rather letters, on Saghalien. But most of his observations remain unpublished. It is even doubtful whether his field note-books contain all his observations and generalizations, and whether they were kept in such a state as to render publication possible.

In zoology, Polyakoff's name will remain associated with the description of the *Equus prjevalski*, a separate species established by him, which is the real ancestor of our common horse, discovered by Prjevalski in the Alashan Mountains of Central Asia.

NOTES.

THE dinner given to Prof. Tyndall is going on at Willis's Rooms as we go to press. The hosts number more than two hundred, and many of the most eminent men in the country are present.

ON April 12, 1886, the Local Government Board appointed a Committee to inquire into the efficacy of M. Pasteur's treatment of hydrophobia, and into any dangers which might be connected with its employment. The Committee consisted of Sir James

Paget, Dr. Lauder Brunton, Dr. Fleming, Sir Joseph Lister, Dr. Quain, Sir Henry Roscoe, and Prof. Burdon Sanderson, with Prof. Victor Horsley as Secretary. Dr. Lauder Brunton, Sir Henry Roscoe, and Dr. Burdon Sanderson, with the Secretary, visited Paris in order to study M. Pasteur's methods; and after their return Prof. Horsley conducted a series of experiments with a view to the settlement of certain points about which he and his coadjutors had felt some doubt. A copy of the Report of the Committee has been sent to the *Times*, and it appears that the Committee unanimously express confidence in M. Pasteur's system.

THE sixteenth meeting of the French Association for the Advancement of Science will be held at Toulouse from Thursday, September 22, to Thursday, September 29 next. Notice of intention to be present at the meeting should be given to the Secretary of the Association, 4 Rue Antoine-Dubois, Paris, before July 15.

THE *Evening Standard* of Tuesday is our authority for the statement that addresses from the Church of Ireland, the Metropolitan Board of Works, the *Royal Society*, and the Ancient Order of Foresters, were presented to the Queen on Monday last. Let us hope that this is not true.

THE third annual general meeting of the Marine Biological Association took place on Friday last in the rooms of the Linnean Society, Burlington House. Prof. Flower presided, and among those present were Mr. Thiselton Dyer, Mr. Crisp, Prof. Bell, Prof. Charles Stewart, Prof. Ray Lankester, and Sir John Staples. The report for the past year stated that the Council had devoted attention chiefly to the superintendence and fitting of the laboratory at Plymouth, and to preparations for the work of the Association in connexion with that laboratory. It is expected that the laboratory will be ready for partial occupation in the present summer, but the tanks and circulation of seawater cannot be completed for some months to come. The Council had decided to issue a journal, which might serve not only for the circulation of the official publications of the Association, but also as a means of inquiry and exchange of information among those who are interested in marine biology in its relation to the sea fisheries of the United Kingdom. A first-rate biological library was one of the most important appliances which the Marine Biological Association must possess in its Plymouth laboratory. The Council trusted that the members and friends of the Association would assist in the formation of such a library by gifts of books. The Association was willing and anxious to co-operate with individuals or associations in any part of the British Islands who were engaged in the study of the natural history of marine fishes or in researches in marine biology. The Council had to record with deep regret the death of one of the vice-presidents of the Society, Mr. George Busk. Some formal business having been despatched after the adoption of the report, the meeting concluded with a vote of thanks to the chairman for presiding.

A SPECIAL general meeting of the Fellows of the Royal Horticultural Society was held on Tuesday "to consider the results of the negotiations and inquiries which have been made by the Council as to the future maintenance and housing of the Society." Sir T. Lawrence, who presided, said the Council thought it would be wise as soon as possible to carry on their operations at Chiswick; and this view met with general approval. The meeting adopted a resolution requesting the Council to take such steps for the housing and maintenance of the Society as might appear best calculated to preserve its character and utility and promote the horticultural interests committed to its charge, and insisting upon the importance of