clouded on the average, from the western part of the totality to Lake Baikal, the region on both sides of the Ural Mountains excepted, where it is above 6. Probably the conditions will be a little better than those indicated, as the eclipse will take place in the later morning hours, when cloudiness is somewhat less than in early morning and the afternoon. In southern Transbaikalia the cloudiness is even less. There is no doubt, according to Woeikof, that, if the observing parties are well distributed on the path of the eclipse, some of them will certainly have good atmospherical conditions, it being impossible that the sky be everywhere overcast on so extensive a territory. The great interest of barometric observations during the eclipse was then dwelt on, and the subject illustrated by the results of the American expedition to the Caroline Islands. The results would be especially important as bearing on the theory of the daily variation of air pressure.

At the annual meeting of the Academy of sciences, Jan. 10, the most interesting feature was a report on the progress and future prospects of the expedition to the New Siberian Islands under Dr. Bunge. It was to begin with an exploration of the Yana Basin. Among other matters, some results of last year's observations at Werkhojansk were mentioned. The mean temperature of January, 1885, was — 52°.7 C. (— 62°.9 F.) and the minimum — 68° C. (— 90°.4 F.). Thus the low mean winter temperature at this place is more than confirmed by new and reliable observations, and it has the coldest winter weather yet known on our globe.

Colonel Prejevalsky has not yet arrived at St. Petersburg. He is to lecture at Moscow to-day on his last travels.

The annual meeting of the geographical society was held to-day. It was principally devoted to a review of the year's work of the society by the secretary. The annual awards followed. The highest, the Constantine medal, was awarded to N. D. Jurgens, the chief of the Russian Lena expedition. The Lütke medal was awarded to Colonel Pewtsow for his extensive travels and explorations in Mongolia; the great medal of the section of statistics, to Terestchenko, for his statistical description of several districts of the government of Poltava; the great medal of the ethnographical section, to Dmitrowsky, for his translation, with numerous additions of Otono Kigoro's Japanese account of Korea. The small gold medals were awarded to W. N. Maïnow, for his anthropological and ethnographical description of the Mordwa (a Finnish tribe of eastern European Russia); to W. Fuss, for the calculation of the results of the Siberian levelling; to Prof. R. E. Lenz, for his useful work as president of the section of physical geography for seven years; and to Mielberg, for magnetical observation at Tiflis in connection with the polar stations.

The next number of the Iswestia of the society will contain an important work of Gen. A. A. Tillo on the level of Lakes Ladoga, Husen, and Onega. In round numbers, the first was found to be five metres, the second eighteen, the last thirty-five metres, above the mean level of the Gulf of Finland. This is considerably less than admitted till now. For the altitude of Lake Ladoga, a height of about twenty metres was generally received; and for Onega, seventy metres.

When the results of the levelling of Lake Ladoga were first calculated, they were received with distrust, and a levelling on another road was made; but the result was confirmed. Other levellings are begun by the Ministry of public works, under the direction of General Tillo, among others, on the upper Volga. The general result is to make the level of the waters lower than they were admitted to be till now.

A movement is under way for establishing a female medical school at St. Petersburg. A few years ago, ladies received instruction at one of the military hospitals, and some of the graduates are practising with honor. Later this instruction ceased, as the minister of war would not continue the subsidy given before, nor allow the use of the buildings. Now the matter is under discussion in the duma (city assembly) of St. Petersburg. There are also private subscriptions for this end, and lately the great importance of female physicans is especially insisted upon for central Asia and eastern Transcaucasia; that is, provinces where the great mass of the people are Mohammedans. O. E.

St. Petersburg, Jan. 17.

NOTES AND NEWS.

THE subject of bird-protection is receiving increased attention in England. A 'bird-protection league' has been organized through the instrumentality of Mr. G. A. Musgreave, F.R.G.S., the members of which pledge themselves neither to purchase birds of beautiful plumage nor to shoot rare birds.

— The council of the Practical naturalists' society of England have appointed Dr. J. W. Williams to make a survey of British bird-migration, and prepare a list of migratory species, including those rare and extinct.

— In connection with some letters which have recently appeared in these columns, the following sentences from Mr. Keltie's report will be of inter-

est: "Good large reliefs of limited areas, in which the two scales are as nearly as possible the same, are, in my opinion, of great service in geographical teaching; but relief-maps of large areas, constructed and colored as I have seen some of those much advertised in this country [England] by unskilled mechanics, in which the scale of altitude is indefinitely magnified, are exceedingly mischievous."

— The valuable collections of mesozoic and czenozoic invertebrate paleontology, in the possession of the national museum, have been arranged for reference and study. They consist of the material obtained by all of the earlier explorations of the west, and the various geological surveys, as well as the numerous contributions to the Smithsonian institution. Heretofore these collections have been practically inaccessible, owing to their deranged condition. Over fifteen hundred figured types are included in this material; and a preliminary catalogue has already been issued.

— Bulletin 31 of the national museum, Monograph of the Syrphidae, by Dr. Williston of New Haven, will shortly be issued.

— The recent purchase of new quarters for the Cosmos club of Washington has had a marked effect on the number of applicants for membership. The quota of members composing the club (250) will be speedily filled.

— Of the three colleges — Columbia, Harvard, and University of Pennsylvania — that received the benefit of the Tyndall fund, Columbia has been the first to act. Her trustees have recently drawn up a series of regulations in regard to the John Tyndall fellowship. The fellow, who is to be appointed on the recommendation of the president and professors in the scientific department, must pursue a course of study and research in experimental physics for the term of one year, and he may be re-appointed. The first incumbent of the fellowship is Michael Pupin, who graduated at Columbia in 1883 with honors, and has since his graduation been studying mathematics and physics at Cambridge, England.

— The fish commission will publish a census of the fisheries of the great lakes; and a corps of clerks is now busily engaged in preparing the tabulated statements of the results of the investigations made last year. The commission is also trying to institute a more systematic method of recording the statistics of the sea-fisheries, and, in co-operation with the treasury department, has issued circulars to collectors of customs at various ports, requesting them to obtain from the masters of fishing-vessels facts and figures concerning the sea-fisheries in which they are engaged.

— Mr. Charles A. Ashburner, geologist in charge of the Pennsylvania survey, has been invited to deliver a lecture on the geology and mining of petroleum and natural gas before the engineering society at Columbia School of mines, Friday, Feb. 26. The lecture will be illustrated by maps, charts, and lantern-slides, and will embody the results of the state survey up to date.

— The U. S. hydrographic office issues a weekly supplement to the monthly pilot chart of the North Atlantic ocean, which will be of special value to coasters. It contains accounts of every obstruction and danger along the coast, and other matters of interest to seamen, relating to navigation, such as changes in lights or buoys. These bulletins are posted in all the seaport cities; and the maritime community is invited to send any information of value to the central office at Washington, or to any of the branch offices at Boston, New York, Philadelphia, Baltimore, New Orleans, and San Francisco. The object of the hydrographic office is to place within reach of sailors, at no expense to them, such information as cannot be collected profitably by an individual, but which the government can readily gather, at no additional cost, through agencies already established.

— The preparation and preservation of anatomical specimens have always been more or less unsatisfactory in museum collections. The U. S. army and medical museum has recently, under the supervision of Dr. J. S. Billings, instituted a number of important improvements in these respects. Frozen sections, made of bodies with the organs in natural relation — a method practised in Europe for a number of years — are placed in special dishes or bowls, resembling ordinary wash-bowls with the top ground off, attached to a colored background of plaster-of-Paris. A glass cover is then cemented over the bowl, and through a small aperture the space is filled quite full with the preservative fluid. The colors of the tissues are preserved nearly as in life, by special means, and the whole preparation gives a naturalness not possible of attainment by any other method. Another feature, which has been devised at the museum, is a series of sections of the typical crania of the vertebrated animals. The object of this collection is to show the relationship of the bones which enter into the formation of the skull. These sections are made in a longitudinal-vertical direction, and the corresponding bones are painted the same color. Thus, in the series presented, the student can determine at a glance the relative state of development of any particular bone, from

that of a fish to that of a human being. The sections are then mounted, one set displaying the structure of the internal part of the cranium, the other representing the bones as they appear from the outside.

— The 'Geological railway guide' that was in course of revision for an enlarged second edition by the late James Macfarlane at the time of his death, is now in the hands of his son, James R. Macfarlane, 100 Diamond Street, Pittsburgh, Penn., who will edit and publish the work at an early date. Judging by the sample sheet, from which extracts were given in *Science* some months ago, the new edition will give a large amount of information directly useful to the travelling geologist, and will be a fitting memorial of its projector.

— In a discussion of the temperature of Munich by Erk, in the annual volume containing the observations of the Bavarian meteorological stations, the corrections are computed to reduce the mean of certain ordinary hours of observation to the true mean of the day. For the mean of 7.2 and twice 9, the reduction is −0°.02 C., varying from +0°.14 in October, to −0°.16 in May and July; for 8.2 and twice 10, it is −0°.06, varying from +0°.04 in October, to −0°.17 in April and May; for the mean of maximum and minimum it is −0°.08, varying from 0°.00 in December, to −0°.30 in October. Similar corrections have been made for a few places in this country. Additional ones are needed for many more stations, on account of the considerable diversity of hours of observation still prevailing among amateur meteorologists, on whom much of the knowledge of our climatology depends.

— Mr. Alfred Russel Wallace, the eminent naturalist, says the Boston *Beacon*, is quietly planning an early visit to this country. He intends to pass some time in California, but may possibly accept a few invitations to lecture.

— The *Geographisches jahrbuch* has just published interesting statistics in regard to the societies and publications devoted to geographical research. Those who have not been especially interested in these studies will be surprised to learn that there now exist, throughout the world, ninety-four active geographical societies, with a membership of nearly fifty thousand. This does not include fifty-eight societies in which geographical researches are subordinated to others. The entire income of these societies amounts to more than a quarter of million dollars annually, most of which is spent in the publication of transactions or in the furtherance of explorations. Of these ninety-four societies, France has twenty-six, with a membership of eighteen thousand; Germany, twenty-four, with nine thousand members; Italy and Switzerland, six each, with three thousand members; Great Britain and her colonies, five, with five thousand members and an income of nearly seventy-five thousand dollars; the United States, two, with fifteen hundred members. A hundred and twenty-six periodicals are devoted to geography, of which forty-two are published in French: thirty-eight in German; eight in Russian; seven in Italian; six each in English, Spanish, and Portuguese; and one each in Danish, Hungarian, Swedish, Roumanian, and Japanese.

— The French academy, says the *Révue botanique*, has recently announced the discovery of the entire efficacy of sulphate of copper in the destruction of Peronospora viticola, the American fungus or mildew of vines, the great scourge of vineyards over large areas of the United States.

— The Manchester philosophical and literary society possesses, says the *Chemical news*, a microscopic slide containing the Lord's prayer, written within the space of the four-hundred-and-five-thousandth part of an inch. To find this minute speck requires the exercise of much patience, as it is not only necessary to have just the right kind of illumination, but the focus of the lens must be on the true surface of the glass on which the object is written. When once seen with a low power, it is not difficult to find with the same power; but with the half-inch and higher powers it is always a trial of patience, even when the position of the object has been carefully registered with a lower power, and you are sure that the object is central in the field. Perhaps with the achromatic condenser some of the difficulty may be removed. This wonderfully minute object was written, or rather engraved, by Mr. Webb, years ago, by the aid of an instrument now in the possession of the society. Webb was accustomed to write the Lord's prayer in spaces of the five-hundredth to the ten-thousandth of an inch, and, as has been seen, to the four-hundred-and-five-thousandth.

— A writer in a late number of *Ciel et terre* states, that under the most favorable conditions, from the summit of the Dôle (altitude, 1,678 metres), all the summits of the Alps are easily visible, from that of Pelvoux (4,000 metres), seventy-eight miles to the south, to the peak of Säntis (2,504 metres), clearly outlined in white against the deep blue of the horizon, one hundred and three miles distant. The view thus embraces all the peaks of the chain of the Alps for an extent of more than one hundred and fifty miles. Contrary to that which has been observed in

lower altitudes, the writer asserts that the time is generally more favorable for vision in the afternoon, and that it is at sunset that one obtains the best views in the Alps.

—The geographical society of Lisbon has recently published a list of the journals in the Portuguese provinces, printed in that language. This list includes the names of nineteen in Angola, six at Cape Verde, seven in China, two in Guinea, fifteen in English India, seventy-two in Portuguese India, seventeen in Macao and Timor, ten in Mozambique, and three in the island of St. Thomas. In addition, seventeen are published in Portugal, which are devoted to the interests of the foreign Portuguese provinces.

—Interesting experiments have lately been made by Dr. Parsons, we learn from *Health*, on disinfection of clothes and bedding by heat. These experiments, among other points, have shown what degree of heat, and duration of exposure, are necessary under different conditions (e.g., of moisture and dryness) in order to destroy with certainty the germs of infectious disease. The net results of Dr. Parsons's experiments on this head are as follows: with the exception of spore-bearing cultivations of the bacillus of splenic-fever, all the infective materials reported on were destroyed by an hour's exposure to dry heat of 220° F., or five minutes' exposure to steam at 212° F. Spores (or the reproductive particles) of this bacillus required for destruction four hours' exposure to dry heat of 220° F., or one hour's exposure to dry heat of 245° F., but were destroyed by five minutes' exposure to a heat of 212° F. in steam or boiling water. It may therefore be assumed that the germs of the ordinary infectious diseases cannot withstand an exposure of an hour to dry heat of 220° F., or an exposure of five minutes to boiling water or steam of 212° F.

LETTERS TO THE EDITOR.

**** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

Did Dr. Hayes reach Cape Lieber in his arctic exploration of 1861?

THIS question has given rise to much controversy of late years; and, for the sake of truth, it is highly desirable that it should be satisfactorily answered, although this could only be definitely done by the discovery of the cairn, with its enclosed statement, deposited by Dr. Hayes at the highest latitude reached by him.

The writer believes he can throw some little light on the question, from the fact that he had the original records before him, worked up the astronomical observations (Smithsonian Contributions to knowledge, No. 196, February, 1865), and constructed the chart of the expedition, under the doctor's immediate direction, from the materials prepared by him. A tracing of this chart, upon which Dr. Hayes first assigned and wrote the geographical names, and with his signature attached, is still in my possession. It is reproduced in the work quoted above.

The west coast of Kennedy Channel was first seen and remarkably well outlined by Morton, of the Kane expedition, in June, 1854, and has since been passed and repassed by many explorers: we may therefore take, for the purpose of comparison and reference, the latest excellent delineation as given on the chart (No. 962) issued by the hydrographic office of the navy, in February, 1885, and which is supposed to embody our best geographical knowledge within its region.

We shall first collate Dr. Hayes's narrative ('The open polar sea,' New York, 1867) with this chart, and see where this will land us. The dates of this part of the narrative are unfortunately very scanty, and need identification in order to trace the progress and position of the party from day to day. Dr. Hayes reached the western coast of the Kane basin May 6, 1854, while a member of the Kane expedition, at or near Cape Frazer, in latitude 79° 45′. Page 336 (of the narrative) he says, "Our camp was made near the farthest point reached by me in 1854." This was on May 14, 1861, as identified by me by means of the astronomical latitude recorded for that day (p. 20 of the 'Physical observations,' etc., of the Smithsonian publication). The resulting latitude, 80° 06′, appears, therefore, too high in comparison with our chart. Dr. Hayes there found his old flagstaff still standing, and remarks, 'We were now within Kennedy Channel,' and is struck with the circumstance (p. 339) that no land was visible to the eastward, as he could easily have seen fifty or sixty miles in the clear atmosphere; here he concludes that Kennedy Channel must be much wider, and assigns to it a width of over thirty miles, when in reality it is but twenty nautical miles. He was then fully forty nautical miles south of the entrance of the channel (which is at Cape Lawrence), and looked out on the Kane basin, instead, as he supposed, toward the eastern shore of the channel.

Here, then, at the very outset, we meet with what we must now regard a mistake, the influence of which may have injuriously biassed his judgment as to the extent of his further progress. The next day (May 15) his strongest man, Jensen, broke completely down, and was left at Jensen's camp. This is south of Scoresby Bay, since this deep bay (p. 343) was passed on May 16. On this day he believed himself to be in a higher latitude than Morton had reached, which was about 80° 30′. On May 18 he appears to have been in the vicinity of Cape Collinson. Apparently no mention is made, in the narrative, of the crossing of Richardson Bay; but on May 18 he was finally arrested by a large bay, twenty miles in length (pp. 346–348). This, according to our chart, could have been no other than Rawlings Bay: here its southern cape, known as Cape Good, in latitude 80° 16′, would consequently mark his highest point reached. Between Rawlings and Lady Franklin bays there is no other long bay. That named after Carl Ritter is apparently not over two or three miles in length; and Lady Franklin Bay does not fit the description of his highest bay, inasmuch as its head could not be seen from Cape Lieber, not even the point where the bay divides into two long fiords. This comparison, then, would lead to the conclusion that he never