METEOROLOGICAL NOTES

METEOROLOGICAL LUSTRUM OF 1871–75.—To the seventh Meteorological Report of the Grand Duchy of Baden, by H. Oscar Ruppel of Carlsruhe, just published, there is appended a paper giving the averages of the observations of pressure, temperature, humidity, rain, and snow, and thunderstorms made at the sixteen stations of the Grand Duchy during the Meteorological Lustrum ending with 1875. Considering the many physical and climatical inquiries of the highest importance which such averages, calculated for absolutely the same terms of years over considerable portions of the earth's surface, are certain greatly to elucidate, it is to be hoped that other meteorological institutes and societies will take the trouble to prepare and publish similar averages for their respective countries. In view of the more special inquiries which such averages are calculated to further, it will be necessary that anemometrical averages be included, and that all the averages be given for each of the different hours of observation.

DISTRIBUTION OF BAROMETERS IN FRANCE.—In virtue of the President's decree, signed by M. Thiers, for reorganising the French National Observatory, that establishment issues weather warnings for agricultural purposes. As it was impossible to send 40,000 telegrams daily (one to each parish) without gradually extending the institution, M. Leverrier decided that the daily telegrams should be sent only to those parishes which possessed an aneroid barometer and made arrangements for exposing it to public inspection at the same place where the official warnings were posted. Having obtained ready assistance from the Association Scientifique de France, of which he is the president, M. Leverrier was enabled to make the price of the aneroids as low as 20 francs (16*s.*). From the beginning of the year about 800 communes purchased the barometer, and now enjoy the free transmission of weather warnings. The number is increasing at the rate of about ten a day, and it is supposed that by the end of the present year 10,000 communes will be in constant communication with the national Observatory. The public barometer is to be used by local observers for interpreting, on their own responsibility, the weather-warnings issued by the Observatory. Special meteorological organisations have already issued general rules for this purpose partially based on Fitzroy's "Weather Manual," partly on special observations. The mean pressure for all these barometers, irrespective of the altitude of the stations is to be considered 760 mm., as it was supposed impossible to establish comparisons without thus displacing the variable. Isobaric curves are drawn daily on observatory maps after each observation has undergone correction by a constant number. M. Leverrier has established a rule for the determination of that constant. When he supposes the weather will be quite settled for a few days he sends to his correspondents a telegram stating *attention, réglage*. Each correspondent is ordered to observe the barometer at 6 P.M., and on the two following days at 9 A.M. and 6 P.M. The result of these three observations in millimetres is to be sent to the observatory for the determination of the value of the correction. When that number has been found it is sent to the station through the Minister of Public Instruction. The Mayor is informed officially how many divisions the indicating needle of his aneroid must be turned, left or right, in order that the correct reading may be read.

STORM IN THE SOUTHERN AND EASTERN COUNTIES.—A storm of unusual violence swept over this part of England on Wednesday last week, rising in Hertfordshire to a fearful hurricane. At Sacombe the whole of the farm buildings occupied by Mr. Mardell were destroyed, and one of his workmen killed. Large trees were broken across, hundreds of fruit-trees uprooted and carried away, and a large wall blown down. In a wood near Little Munden, one hundred fir trees were destroyed.

AURORAS IN CANADA DURING THE PAST WINTER.—We learn from a correspondent in Ontario that auroral phenomena have been unusually rare in that part of Canada during the four months preceding the middle of March. In that region, where auroras are usually very brilliant and frequent at that season of the year, only two have been noticed during these four months.

SOLAR RADIATION IN WINTER AND SUMMER.—M. A. Crova communicates to the *Bulletin International* of the Paris Observatory, March 20, a note on some observations he made near Montpellier on January 4 and July 11, 1876, with the view of ascertaining the calorific intensity of solar radiation received at the surface of the ground in winter and summer. These two days were selected as being characterised throughout by uninterrupted brilliant sunshine, and, there being no sea-breeze, uninterrupted calorific transparency of the air, and as being as near as possible to the winter and summer solstice respectively. The results arrived at are that the heat received normally on January 4 was 0·610 of that received on July 11, and the heat received over the surface of the ground on January 4 was 0·281 of that received on July 11. These results give a measure of the inequalities produced in winter and in summer by the obliquity of the sun's rays and by the duration of the sun above the horizon, between the absolute values of the intensity of solar radiation, and between the relations of the quantity of heat emitted directly to that which is received over the horizontal surface of the ground.

HAILSTONES IN INDIA.—Dr. Bonavia, of Lucknow, sends us the following:—On April 12, 1876, at 8.30 P.M., after a great deal of lightning and thunder in the north-west, a hail-storm occurred in Lucknow. We evidently only got the edge of the storm, as it was passing towards the north-east. The fall of hail was not plentiful, but the generality of the stones were enormous. The hailstones were of all sizes, from that of peas and marbles to that of oranges, two inches and more in diameter. The largest I measured, about half-an-hour after the fall, was a flat oval, resembling a paper-weight, with a depression in the centre above and below. Its circumference measured eight inches, its long diameter 2¾ inches, its short diameter 2¼ inches, its thickness 1¼ inches. Two others I measured had a circumference of 7¼ inches and 6¼ inches respectively. Some were of the above shape; others almost spherical; others might have readily served as models of the large flat China peach, with a depression above and below. Most of them had curious mammillary projections all over the surface, which strongly reminded one of some kind of Echinus. Their internal structure can best be described by stating that it resembled exactly that of agates. It consisted of concentric layers, with a more or less wavy outline, commencing from a small nucleus. The layers varied in thickness. Some were transparent; others opaque. One large oval stone, instead of having, like others, its nucleus in the centre of its oval, had it quite at one end. The nucleus was the size of a small marble; it was spherical, but the sphere was not complete. It appeared as if a small round hailstone had first been formed, then a bit of it chipped off, and afterwards a large oval hailstone agglomerated round it, leaving it at one end of the oval. I have been informed that one hailstone, weighed some time after it fell, was four ounces in weight; another weighed 2¼ ounces.

THE WEATHER OF EUROPE.—We have received the *Monthly Weather Reports* of the *Deutsche Seewarte* for March and April, 1876, in which the main features of the weather of Europe during these months are briefly detailed by various well-known meteorologists, particular attention being given to the remarkable storm of March 12 in its progress over the Continent. The tracks of all the storms of Europe during each month are shown by maps, and tables of figures are given of the means of the various meteorological elements for Germany and parts of the continent adjoining, from which the meteorology of a

large portion of Europe could be graphically presented. We are much gratified to receive an intimation from the *Seewarte* that in future the *Monthly Reports* will be published regularly at the end of the second month after the one to which the Report relates. It would be a great boon if small maps accompanied the Report, showing the mean pressure, temperature, rainfall, and direction of wind, in a manner similar to what is so well done by the United States of America.

BALL LIGHTNING.—A very fine display of this interesting meteor was witnessed at Vence, in the south-east of France, on the night of March 21–22, by M. Ed. Blanc, of which an interesting detailed account has just appeared in the *Comptes Rendus* of the French Academy, p. 666. Toward midnight there was observed, about eleven miles north-east of Vence, a large black thundery cloud, in a state of extreme agitation, and continually raising and lowering its position. At the upper part of this cloud three or four balls of fire issued every two minutes, as if from the invisible centre of the cloud, diverging in all directions, and after running a course of from six to eight degrees, broke silently with effulgent brightness. Their apparent diameter, as seen at a distance of eleven miles, was about a degree. They were mostly of a reddish colour, a few, however, being of a yellowish tinge, but all of them assumed a white colour in the act of bursting. Their course, which was horizontal and parallel to the plane of the cloud, was relatively slow, not exceeding two degrees per second, and they bore a strong resemblance to immense soap-bubbles, both as regards apparent lightness and general appearance. From time to time a discharge of lightning passed through the cloud from above downwards, followed some seconds after by a dull rumbling sound. The cloud, with its fine display of fire-balls, took a course from east to west, passing about a league to the north of Vence. The glimmering of the lightning with its low dull thunderous sound continued for more than an hour, after which the sky became darker and darker; rain mixed with hailstones fell, and lightning, accompanied with thunder, furrowed the sky in all directions.

NOTES

THE President of the Royal Astronomical Society has announced that the Council of that Society have determined to advance the requisite funds to enable Mr. Gill to carry out his projected expedition to the island of Ascension to measure the parallax of Mars at the approaching opposition, in the expectation that they will be aided by Government or out of the Government grant to the Royal Society. At all events the Royal Astronomical Society will not allow the opportunity of making this important observation to be lost. Its duty in the matter was evident, and it has not hesitated for a moment in doing it. Mr. Gill will embark for the island of Ascension towards the end of next month.

SIR ROBERT CHRISTISON, who has been in failing health for some time, has resigned the Chair of Materia Medica in the University of Edinburgh, which he has held with such distinction since the year 1832. Sir Robert, before being appointed to the Chair he has now relinquished, had filled for ten years that of Medical Jurisprudence.

LAST Sunday evening the first of a course of eight lectures to working men on science and literature was delivered at the St. Alban's Schools, Holborn. The lecture was by Mr. R. Bowdler Sharpe, of the British Museum; the subject, "Birds of Prey and their Geographical Distribution." Mr. Mackonochie deserves the hearty thanks of all interested in the welfare of the working classes for having undertaken so liberal an enterprise.

THE Annual Meeting of the Yorkshire College of Science was held at Leeds on the 16th inst. A highly satisfactory report was presented, in which it was urged that the college should now apply for a charter of incorporation. The great desirability of establishing a classical side in the college was recognised in the report and by the president, Lord F. Cavendish, and other speakers, and there is every reason to hope that in no long time the Yorkshire College will be a flourishing rival of Owens College. The munificence of the Clothworkers' Company deserves all praise and imitation; its last gift to the College is one of 10,000*l*.

DR. JANSSEN has removed his photographic apparatus from the Boulevard Ornano to Meudon, where he is establishing, in barracks given by the French War Office, a permanent physical observatory at the expense of the Government.

ON April 23 next the Paris Academy of Sciences will hold its anniversary meeting for the distribution of prizes. M. Dumas will deliver a lecture on the two brothers Alexander and Adolphe Brogniard, both of them members of the Academy of Sciences. Admiral Paris will be in the chair.

THE Paris Physical Society held its anniversary meeting on April 5. Various apparatus were exhibited, including a number of radiometers, M. Bischoff's gas engine without refrigerator, and a Mouchat reflector for utilising the heat from the sun.

IT has been decided by the Committee of the French Sociétés Savants that special warnings should be sent to the coal pits when large depressions are foreseen, in order to suggest precautions against an escape of fire-damp. Many mining engineers believe that the system will be efficacious. Experience will soon settle the question.

THE U.S. Congress having appropriated 18,000 dollars for a Commission to report on the depredations of the Rocky Mountain locusts, the Secretary of the Interior has appointed as members of the Commission Prof. C. V. Riley, Dr. Cyrus Thomas, and Dr. A. S. Packard. The Commissioners have already mapped out their work for the season, and will direct their attention to insect enemies and parasites, mechanical means for the destruction of the pests, geographical distribution, agricultural bearings of the subject, anatomy and embryology, remedial measures and migrations, &c. Bulletins giving the results of the Commission's inquiries will be issued at intervals.

THE opening meeting of the Yorkshire Naturalists' Union (formerly known as the West Riding Consolidated Naturalists' Society) was held at Pontefract on Easter Monday, April 2, and proved a great success in every way. The Union is a confederation of twenty-four Natural History and Scientific Societies in Yorkshire, banded together for the purpose of holding each summer a combined series of excursions and meetings, of investigating the fauna and flora of the country, and of publishing the results. The union is divided into five sections, viz., vertebrate zoology, conchology, entomology, botany, and geology, which work on the principle of the British Association. This plan was tried for the first time at Pontefract, and so far as it went proved a decided success. The towns represented in the Union are Huddersfield (three societies), Heckmondwike, Clayton West, Barnsley, Wakefield, Ovenden, Stainland, Ripponden, Holmfirth, Liversedge, Rastrick, Mirfield, Honley, Middlestown, Paddock, Bradford, Leeds (two societies), Goole, York, Selby, and Sheffield, numbering in the aggregate nearly 1,200 members. The next meeting will be held at Wetherly, on Whit Monday, May 21.

AT the last meeting of the French Anthropological Society, a long report was read which showed that Druidism was not quite extinct in Britanny, some country people still adhering to Pagan practices in spite of the priests' exertions. It was noticed that the clergy were anxious to destroy menhirs and