

NOTES AND EXTRACTS.

JAMES GLAISHER.

From Nature, February 12, 1903, page 348.

We regret to see the announcement that Mr. James Glaisher died on Saturday, February 7. Born April 7, 1809, he had nearly attained the great age of 94 years, the major portion of which was devoted to unceasing work of a varied nature, mainly, however, directed to practical meteorology.

At the age of 20 he was appointed as assistant on the principal triangulation of the ordnance survey of Ireland, and from 1833 to 1836 was an assistant at Cambridge University, whence he proceeded in the latter year to the Royal Observatory, Greenwich, and having been, in 1840, promoted to the position of superintendent of the magnetical and meteorological department, he remained there until his retirement from official life in 1874.

His contributions on subjects bearing on meteorology and astronomy were too numerous to allow of our giving more than a passing notice. His Hygrometrical Tables, published in 1847, which have reached their eighth edition, are still the standard work on the subject for the British Islands. Travels in the Air (1871 and 1880). Diurnal Range Tables (1867), Mean Temperature of Every Day for Greenwich, 1814-1873, Report on the Meteorology of India, and Meteorology of Palestine are among his chief writings.

From 1862 to 1866 he made twenty-nine balloon ascents in the interests of meteorological science, and the results were given in reports to the British Association at their annual meetings of those years. The ascent on September 5, 1862, is particularly memorable from the fact that he and the late Mr. Coxwell attained the highest distance from the earth (37,000 feet) ever reached, and formed the subjects of a most thrilling experience, which nearly had a tragic termination for both of the intrepid aerial explorers.

As the pioneer of systematic organization of meteorological observations, the results of Glaisher's endeavors may be seen in his weekly, quarterly, and annual reports on the meteorology of England, contained in the periodical returns of the registrar-general of births, deaths, and marriages for England and Wales during the long period of sixty-one years (1841-1902). He was a juror in the class of scientific and philosophical instruments at the exhibitions of 1851 and 1862, and, apart from his scientific work, was actively engaged in other useful spheres of labor.

He was a fellow of several of the learned societies. For upwards of half a century he was on the roll of membership of the Royal Society, to which he was elected on June 7, 1849, and from time to time he contributed papers to the Philosophical Transactions. In 1850 he was one of the founders of the British Meteorological Society, now the Royal Meteorological Society, and for many years took a leading part in the conduct of its affairs, being its original secretary. "who nursed it through its infancy and youth, and left it to other hands only when it was old enough and strong enough to walk alone." (President's address in the jubilee year.) He was also a past president of the Royal Meteorological Society, the Royal Microscopical Society, the Royal Photographic Society, and the Aeronautical Society of Great Britain, a fellow of the Royal Astronomical Society, and for many years was on the executive committee of the Palestine Exploration Fund, of which he was for twelve years the chairman. He had also been honored with the honorary fellowship of several foreign scientific bodies.

SNOW FROM A CLEAR SKY.

The Gazette of February 18, Galena, Ill., contains the following:

A peculiar weather condition prevailed here for a short time last night. Between the hours of 10 and 11 p. m. there was a fall of snow to the depth of one-eighth of an inch and yet the stars were shining all the time. Inasmuch as the snowfall preceded the arrival of the high gale that blew during the latter part of the night, it was probable that the snow had been carried in the air for a long distance and precipitated here.

The rather plausible explanation here given requires special confirmation before it can be accepted. It is equally plausible and more probable that the snow which fell from the clear sky actually formed near the place where it fell. In perfectly still cold weather the Editor has seen snow crystals continue falling during the night until more than one-eighth of an inch had accumulated. In such cases it was evident that the air had cooled to a temperature very near saturation, so that the particles of dust floating in the lower air became the nuclei for the formation of snow crystals. The latter being heavy, slowly descend and doubtless grow as they fall; in fact, there is no known reason why they should not continue growing after they reach the ground, since the crystal is undoubtedly

colder than the average temperature of the air. Very large snow crystals, sometimes one-half inch in diameter, have been recorded on some occasions.

This deposit of snow from a clear sky, like the fall of rain from a clear sky, may also be due to the cooling of the air at a considerable altitude rather than near the earth's surface, and the cooling may be due to a mixture of cold and warm currents. Such mixtures, as is well known, can not form heavy rainfalls, but may produce the slight amount of precipitation implied in this snowfall from a clear sky at Galena, where a few hours later in the night the temperature fell to -17° and to -23° , with a heavy gale.

SUNSHINE RECORDS AT HAMBURG, GERMANY.

The German meteorological observations for 1901, at stations reporting to the Deutsche Seewarte for the year 1901, has lately been published. In addition to the monthly summary for each station and the hourly readings from self-registers at four normal stations, this volume gives complete statistics of the weather on stormy days on the German coast. The appendices give the details of the duration of sunshine at Hamburg and the tables of contents of the annual volumes published by the official meteorological services of Baden, Bavaria, Prussia, Saxony, Wurtemberg and Alsace-Lorraine, and by the private services at Magdeburg, Bremen, Wiesbaden, Frankfort on Main, Aix-la-Chappelle. From the sunshine table for Hamburg, computed by H. Koenig, we take the following abstract:

Months.	Total number of hours.	Percentage of possible sunshine.	Number of days without sunshine.
January.....	67.5	27.1	9
February.....	56.4	20.7	10
March.....	46.0	12.6	12
April.....	160.0	38.4	5
May.....	196.9	40.0	2
June.....	126.3	25.0	2
July.....	190.3	37.5	4
August.....	177.9	39.0	2
September.....	164.4	43.2	7
October.....	62.7	19.2	13
November.....	41.0	16.0	15
December.....	13.2	5.7	22
Total annual.....	1302.6	29.1	103

The hourly distribution of sunshine is given in hours only, without the corresponding percentage of total possible, and is as follows:

Local time.	Total annual duration.	Local time.	Total annual duration.
	<i>Hours.</i>		<i>Hours.</i>
5 a. m. to 6 a. m.....	2.9	2 p. m. to 3 p. m.....	139.7
6 a. m. to 7 a. m.....	16.9	3 p. m. to 4 p. m.....	123.5
7 a. m. to 8 a. m.....	35.8	4 p. m. to 5 p. m.....	100.8
8 a. m. to 9 a. m.....	73.8	5 p. m. to 6 p. m.....	78.2
9 a. m. to 10 a. m.....	102.7	6 p. m. to 7 p. m.....	43.7
10 a. m. to 11 a. m.....	127.4	7 p. m. to 8 p. m.....	3.4
11 a. m. to 12 noon.....	137.8		
12 noon to 1 p. m.....	155.2	Total 5 a. m. to 8 p. m.....	1302.6
1 p. m. to 2 p. m.....	160.8		

The month of greatest total amount of sunshine is May and the month of the greatest percentage of total possible sunshine is September. The hour of the greatest absolute amount of sunshine is from 1 to 2 p. m. for the annual total, but varies between 10 a. m. and 4 p. m. in the different months.

AERIAL RESEARCH IN DENMARK.

M. Leon Teisserenc de Bort presented a communication upon the use of kites and sounding balloons as practised at Viborg (Denmark) by the Franco-Scandinavian committee.

The object of this enterprise is to study, in as continuous a manner as possible, during a certain number of months, the variations of the meteorological elements in the middle strata of the atmosphere. The loca-

tion of the station has been carefully chosen; it is situated upon an extensive and desert plateau, near Hald, 11 kilometers south-southwest from Viborg, sufficiently distant from the sea and on one of the three routes ordinarily followed by the barometric depressions in this part of Europe. An extensive Danish landed proprietor, Jagdmeister Krabbe, has kindly cooperated with this scientific undertaking by placing the ground at the disposal of the committee and by directing the construction of the wooden buildings.

The regular observations began at the beginning of August, 1902; they will probably terminate during the month of April, 1903. During the fine season, strong winds below and relatively feeble winds above were frequently observed, a condition not very favorable to the sending up of kites. This regimen which is a characteristic of high pressures prevails for all directions of wind. From observations made in Berlin Berson had believed that this is a characteristic peculiar to east winds, and that west winds on the contrary show a rapid increase in velocity with altitude, but, as he himself recognized later, this is only because the east winds in Germany generally coincide with high pressures and the west winds with low pressures.

At the end of September and during October there was observed at Viborg the passage of several depressions of small diameter and rapid movement, which did not probably reach to any very considerable height, but showed all the characteristics of the cyclone, properly so-called, such as the reversal of the wind from the front to the rear, the central calm and even the momentary clearing of the sky, known as the "eye of the storm."

Later on came the great winter depressions accompanied with extremely strong winds. On Christmas day there even occurred a violent tempest which came near destroying the revolving shelter used for sending up the balloons and kites. The anemometer became useless after having registered a velocity of 35 meters, which velocity was certainly exceeded afterwards. According to the inhabitants this tempest was the most violent that has occurred in Denmark, except that of 1872 which inundated several islands.

Certain kite ascensions were distinguished by interesting occurrences; the 15th of August, after a breakage in the line, the string of kites dragged for about 120 kilometers, 80 of which were at sea. Another time, November 11, the kites escaped in a northwesterly direction and were found in Norway.

In regard to the sounding balloons, the proximity of the sea renders special precautions necessary; they are regulated so that the ascension shall not last more than, at most, 15 or 20 minutes, and the altitude attained under these conditions is only from 5000 to 6000 meters.

The meteorographic tracings are made by engraving on copper, by a process that has been made practicable by a new system of metallic pen due to M. Raymond. It suffices to fill the pens with sulphuric acid and to use sheets of copper which are covered with lamp black, in order, as much as possible, to avoid seams. The curves thus obtained are much less delicate than by the ordinary lamp black process, but they have the advantage of being ineffaceable. All reductions and computations are made promptly, and the publication of the results can therefore follow very closely on the termination of the work.—*Annuaire de la Société Mé-téorologique de France, Février, 1903. Pp. 32-34.*

COURSES OF INSTRUCTION.

Among the recent courses of instruction in meteorology and climatology we notice those offered by Dr. J. Paul Goode, Ph.D., instructor in geography in the Wharton School of Economics in the University of Pennsylvania. There is a short course of four hours a week during the first term of the year entitled "Climatology and applications in economic geography." It covers the following subjects:

Principles of meteorology; general atmospheric circulation; laws of storms with special attention to the cyclonic storm; charting of weather elements. Application of principles of meteorology to the interpretation of regional climates. Climate as a factor in economic and social development.

There is also in the course for teachers a series of lectures, occupying one hour, given each Saturday throughout the college year, about forty in all, entitled "The atmosphere and the ocean."

Part 1. Meteorology; the general atmospheric circulation, the laws of storms, the charting of weather elements, and the interpretation of weather maps. Scientific weather forecasting.

Part 2. Oceanography; the principles of oceanic circulation, action of waves and tides, harbors, sailing routes.

Part 3. Climatology; the regional application of the principles of climate to the world at large.

Doctor Goode has recently accepted a position in the depart-

ment of geology of the University of Chicago, and will probably give these same courses at that place next year. It is most important that all teachers should profit by such lectures so that the general public may be educated up to a better appreciation of the difference between the daily weather map with the forecasts of the Weather Bureau and the farmers' almanacs with the forecasts of these astrological editors.

HANN'S CLIMATOLOGY IN ENGLISH.

As we go to press we have the pleasure of being able to announce that the famous *Handbuch der Klimatologie* of Prof. Julius Hann is now accessible to the English-speaking world, in a beautiful edition published by the Macmillan Company of New York and London at the very reasonable price of \$3.

American meteorologists will be proud to accept this epoch-making treatise from the hands of their colleague, Prof. R. DeC. Ward, of Harvard University. He gives us not merely a translation of this admirable work, but a volume that contains so many additions and improvements that, with the consent of the author, it may well be known as a joint work by Ward and Hann. Professor Ward has long been known as the successor of Prof. Wm. M. Davis in building up a most influential school of meteorology at Harvard. From this school many teachers have gone forth to battle for the cause of higher education in this science. A number of these have even published elementary text-books on physical geography, including climatology, and these subjects are now studied in thousands of schools throughout the United States, instead of being totally neglected as was the case when the Weather Bureau began its work over thirty years ago.

By teaching the elements of climatology to the youth of our land, these schools and enthusiastic teachers are laying the sure foundation for the development, here and there, of an interest in the fundamental problems of meteorology which is sure to culminate in the education of many future American investigators and promoters of this science. As the efficiency of the British Navy is said to lie in the fact that the British marine can always furnish trained sailors, so the strength of American science will depend upon the proportion in which all American youths are taught the elementary truths of science. Not every student of physical geography will become a meteorologist, but the probability that many may do so is increased by the diffusion of just such books as this admirable treatise and translation.

It is certainly not too much to say that there is no work on this subject in the English language to be compared with the present volume. Not only are the older treatises by Buchan in England and Loomis in America already quite out of date, but the more recent treatises, about twenty of which are mentioned in the *MONTHLY WEATHER REVIEW* for August, 1902, entirely fail to take the comprehensive view of the subject presented to us in this treatise by Hann. Nearly all of these treatises have a didactic style, oftentimes interesting, but leading the reader to the conclusion that the author's statement must embrace pretty much all that is known on the subject, whereas the present work stimulates the student to further inquiry, and, in fact, by means of numerous references on nearly every page tells him just where he may go for further information. A brief review of these references must impress one with the fact that the great mass of important material in meteorology has been published in French and German, while those who use the English language, although they are indefatigable in observing and publishing, yet fail to apply to nature those methods of study that are necessary in order to secure real advance in knowledge. It must be considered as a very important characteristic of the present work that it brings home to the English reader the results of so much that is published in foreign languages.