rainfall, and in a few other low-lying parts irrigation is not practiced, but in these cases percolation takes place from the surrounding country. In some cases the crop is dependent on the flood waters of the rivers, and in others on the artificial application of moisture. Because of the fact that evaporation is high in regions where irrigation must be practiced, this factor is given considerable attention; in Egypt, cotton is produced at the time of greatest evaporation, and in the Sudan at the time of the least.

Mr. Williams makes the following comments on the number of hours of daylight under which cotton is grown in the two sections:

Recent investigations have shown that the number of hours of daylight to which a plant is exposed may have great influence on its periods of growth and maturity. Without wishing to make any statement as to whether or not cotton is so influenced, it may be of interest to put on record on the same form of diagram the actual number of hours of daylight in the different localities in the different stages of the crop.

The figure for any month is of course directly dependent on the latitude of the locality. And in view of the more or less proportional changes, the value for only two localities in Egypt and two in the Sudan have been shown.

They show that while the Sudan has the most hours of daylight in the close season, during the growing period the cotton here has two to three hours a day less than in Egypt. As the Sudan is probably the furthest locality from the Equator at which cotton is grown as a "winter" crop, it is probable that these figures represent the shortest hours of daylight under which cotton is cultivated.

The longest hours will probably be found in the few small localities in Bulgaria where cotton is grown as a summer crop in a atitude of 40° north.

The greatest similarity of conditions between Egypt and the Sudan is found at the time of planting and again at about the middle of picking.

USE OF THE BEAUFORT SCALE OF WIND BY THE UNITED STATES WEATHER BUREAU

The Beaufort Scale, with certain changes which have varied from time to time, has been in use by the Bureau since 1905 except for the years 1909–1914, during which a 7-point scale was used. Though this scale was based on the Beaufort Scale, its use nevertheless constituted a virtual abandonment of the Beaufort notation. When the fourth edition of the Smithsonian Meteorological Tables, published in 1918, was in preparation, under the supervision of the Weather Bureau, the table of the Beaufort Scale containing equivalents according to Scott, which appeared in the third edition, was replaced by a a table taken from the Observers' Handbook of the British Meteorological Office, containing the equivalents as determined by Simpson. This was done because the Simpson values appeared to rest upon a more satisfactory experimental basis than any others available.

Use of the Beaufort Scale had been resumed by this Bureau in 1914, but experience has since demonstrated that for purposes of forecast terminology in this country the Beaufort Scale numbers are too numerous and too restrictive in velocity ranges to be practicable. Therefore, to meet the needs of the forecaster and at the same time to retain for other purposes the advantages of the full Beaufort notation, the scale as given herewith was put into effect on January 1, 1925. This brings the scale as now used into harmony with that in the revised Smithsonian Meteorological Tables. As stated in the report of the committee of this Bureau on revision of the scale:

It appears that while the version of the Beaufort Scale now used by the British Meteorological Office, with anemometric equivalents determined by Simpson, has not been formally adopted by other countries, it has a certain degree of international authority on account of its incorporation in the English edition of the International Meteorological Codex, and, on account of the preponderance of British shipping, it is probably more widely used by mariners than any other. The increasing cooperation between the United States and England in the exchanging of vessel reports; the fact that England was the originator of the scale and has done more than any other nation in scientific correlation of the scale values to anemometry records were also considered as justifying the U. S. Weather Bureau in adopting the Beaufort Scale (Simpson) as used by England.

Beaufort scale of wind, with velocities and descriptive terms

Beaufort No. (a)	Explanatory titles (b)	Mode of estimating aboard sailing vessels (c)	Specifications for use on land (d)	Miles per hour (statute) (e)	Terms used in U. S. Weather Bureau forecasts (f)
0	Calm	----------	Calm; smoke rises vertically.	Less than 1	Light.
1	Light air	Sufficient wind for working ship.	Direction of wind shown by smoke drift, but not by wind vanes.	1–3	
2	Slight breeze		Wind felt on face; leaves rustle; ordinary vane moved by wind.	4–7	
3	Gentle breeze		Leaves and small twigs in constant motion; wind extends light flag.	8–12	Gentle.
4	Moderate breeze	Forces most advantageous for sailing with leading wind and all sail drawing.	Raises dust and loose paper; small branches are moved.	13–18	Moderate.
5	Fresh breeze		Small trees in leaf begin to sway; crested wavelets form on inland waters	19–24	Fresh.
6	Strong breeze	Reduction of sail necessary with leading wind.	Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty.	25–31	Strong.
7	High wind		Whole trees in motion; inconvenience felt in walking against wind.	32–38	
8	Gale	Considerable reduction of sail necessary even with wind quartering.	Breaks twigs off trees; generally impedes progress.	39–46	Gale.
9	Strong gale		Slight structural damage occurs (chimney pots and slate removed).	47–54	
10	Whole gale	Close reefed sail running, or hove to under storm sail.	Seldom experienced inland; trees uprooted; considerable structural damage occurs.	55–63	Whole gale.
11	Storm		Very rarely experienced; accompanied by widespread damage.	64–75	
12	Hurricane	No sail can stand even when running.	----------	Above 75	Hurricane.

December, 1924.

The following historical note by Prof. C. F. Talman on the origin and evolution of the Beaufort Scale, and on the extent to which progress has been made toward giving it international official sanction, is here reprinted from the report of the same committee:

The Beaufort Scale of wind force was introduced by Sir F. Beaufort in 1805 for use on shipboard, and has been more extensively employed than any of the several other scales devised for the noninstrumental observation of wind force. In 1874, it was adopted for international use in weather telegraphy by the Permanent Committee of the First International Meteorological Congress (the predecessor of the present International Meteorological Committee).

The first actual comparisons between anemometer readings and estimates made according to the Beaufort Scale appear to have been those carried out by R. H. Scott on the English coast, beginning in 1869, though several lists of equivalents of the Beaufort numbers in miles per hour or meters per second had been published previously to that time; viz, by Sir Snow Harris, Sir H. James, FitzRoy, Schott, Symons, Jelinek, Neumeyer, and Laughton. The values obtained by Scott were published in the Quarterly Journal of the Royal Meteorological Society, vol. 2, 1874, pp. 109–123. They were adopted by the British Meteorological Office, which used them until 1909, and were also incorporated in many reference books, including the Smithsonian Meteorological Tables. Scott's values are now known to have been seriously in error, on account of his use of the reduction factor 3 in connection with the anemometer reading, as well as for other reasons.

Several later series of comparisons have been made, viz, by Mohn, Chatterton, Curtis, Sprung, and Köppen, and finally by Doctor Simpson, the present director of the British Meteorological Office, whose results were published by that office in 1906 and are now used officially in England.

At the London, 1912, meeting of the International Committee for Weather Telegraphy, Professor Palazzo raised the question of international agreement on the anemometric equivalents of this scale, with reference to its use in weather telegraphy, and a committee was appointed to prepare a report on the subject. This committee reported at the Rome, 1913, meeting of the International Meteorological Committee. A report of this meeting (Appendix 7) contains a résumé of the various wind scales in use and the anemometric equivalents recognized by various countries. The wind-scale committee recommended that the International Committee should adopt a set of equivalents in meters per second and in miles per hour (published on p. 36 of the appendix above mentioned), approximating the Simpson scale, though not agreeing with it exactly. The International Committee decided, however, that it was not yet practicable to adopt an international set of equivalents, and referred the subject back to the special committee for further consideration. In 1915 the Russian Meteorological Service announced that it had adopted a set of equivalents based on the English table, in conformity with the decisions of the Rome meeting of the International Committee (Monthly Weather Review, April, 1915, p. 183), but the announced equivalents do not exactly agree either with those of Simpson or with those proposed at the Rome meeting for international use. This subject was revived at the London, 1921, meeting of the International Committee, and Doctor Simpson was asked to undertake further investigation of the subject, which he agreed to do. This action is briefly mentioned in the report of the International Meteorological Conference held at Utrecht in 1923, but there is no record of further progress in the matter.

It would appear to be most desirable that the question of international adoption of the Beaufort Scale should form a subject for definitive action at the next meeting of the International Meteorological Committee. The extent to which the scale is recognized unofficially will, it is believed, constitute an important step toward such international adoption.—*B. M. V.*

FREQUENCIES OF SELECTED RELATIONS BETWEEN TEMPERATURE AND RELATIVE HUMIDITY

Dr. Moriz Topolansky presents in *Das Wetter* for January, 1925, pp. 21–23, an interesting method of setting forth certain relations between these two important climatic elements.

He plots for Vienna (years 1919–1923) the frequencies of simultaneous occurrence of selected 2 p. m. temperature and relative humidity values. Temperatures are grouped in successive 5 degree ranges and relative humidities in successive 5 per cent ranges.

Temperature-relative humidity relations at Vienna (2 p. m. values, years 1919–1923)

(Frequencies of simultaneous individual values)

Relative humidity (per cent)	Temperature, °C.											Sums
		—10	—5	0	5	10	15	20	25	30	35	
100	------	------	13	29	6	4	------	------	------	------	------	52
95	------	------	13	36	18	11	5	------	------	------	------	83
90	------	2	20	33	26	19	13	------	------	------	------	113
85	------	4	15	35	34	14	14	2	------	------	------	118
80	------	3	19	33	32	22	25	4	------	------	------	138
75	------	3	11	30	29	30	26	10	------	------	------	139
70	------	4	8	24	39	28	25	17	2	------	------	147
65	------	1	8	33	30	29	36	38	4	------	------	179
60	------	2	9	22	26	31	38	44	8	------	------	180
55	------	4	4	8	36	32	44	55	13	------	------	196
50	------	------	5	8	20	25	37	50	19	------	------	164
45	------	------	5	5	15	26	35	35	16	1	------	138
40	------	------	------	4	7	19	18	25	17	4	------	94
35	------	------	------	------	5	9	8	15	13	5	------	55
30	------	------	------	------	4	2	7	3	7	4	------	27
25	------	------	------	------	------	2	1	------	------	------	------	3
20												
Sums	------	23	130	300	327	303	332	298	99	14	------	------

Though this general method of depicting climate necessarily omits important climatic elements—perhaps wind movement is in this case the most important—nevertheless it would doubtless prove of value to many of those concerned with the physiological relations of climate.

One finds concentrated in a table of this sort many facts otherwise to be presented only at considerable length. Thus it is at once clear that at Vienna cool to moderate early afternoon temperatures are accompanied by nearly every possible relative humidity; temperatures near freezing have a tendency to be accompanied by considerable dampness; high temperatures are almost never accompanied by high humidity. Other relations are equally patent from the table.—*B. M. V.*

THE MARCH, 1925, POSITION OF THE GULF STREAM AND THE LABRADOR CURRENT

The following note, taken from the Coast Guard Weekly Bulletin No. 16–25, dated April 18, 1925, is of especial interest in connection with the note in this REVIEW for February, 1925, on the extraordinarily mild winter of 1924–25 in northwestern Europe.

The scientific observations made during the first cruise of the *Tampa* on the international ice patrol divulged some interesting facts. One of the most striking was the decided movement upward [northward] of the "cold wall" and another is the disappearance of the 32° line on the southern part of the Grand Banks with only a slight touch of cold water along the 44th parallel. It is very evident that the Labrador current is very weak, and that the influence of the Gulf Stream is felt farther north even to the extent of overlapping on the Banks. The absence of Arctic water, the weakness of the Labrador current, the overwhelming effect of the Gulf Stream, and the mild winter conditions off the coast of Labrador, etc., have no doubt been responsible for the total absence of bergs below latitude 46° to date. From March 26 to 31 the patrol vessel encountered about 50 per cent fog.

AMUNDSEN'S SHIPS REACH SPITZBERGEN

Press reports under date of April 25, 1925, indicate that the two supporting ships of Amundsen's airplane expedition to the North Pole have reached King Bay, Spitzbergen, thus giving evidence of an exceptionally open season in that sector of the Arctic. Usually that region can not be reached before the latter part of May at the earliest.—*A. J. H.*

NEW CHIEF OF THE SERVICIO METEOROLOGICO ESPAÑOL

Word has been received at the U. S. Weather Bureau, under date of March 20, 1925, announcing the withdrawal of Señor J. Cruz-Conde from his position as Chief of the Spanish Meteorological Service, a step made necessary by his appointment to an important Government post not connected with meteorology. His successor as head of the Meteorological Service is Señor Enrique Meseguer.

METEOROLOGICAL SUMMARY FOR FEBRUARY AND MARCH, 1925: CHILE, ARGENTINA, BOLIVIA, PERU, URUGUAY, AND PARAGUAY.

[Reported by Señor Julio Bustos Navarrete, Director, El Salto Observatory, Santiago, Chile. Translated by W. W. Reed, U. S. Weather Bureau, Washington]

February.—The first 15 days of the month were characterized in Chile by the establishment of an important center of high pressure opposite the coast of Arauco Province. The pressure remained low southward to Magellanes Province, frequent depressions being observed.