there is a low humidity, which is in advance of, or coincident with, the fall in temperature.

2. The lower the humidity falls and the more violent its fluctuations, the greater will be the fall in temperature.

3. The earlier the low humidity reaches the station in advance of the fall in temperature, the longer will the period of cold last.

4. Coincident with, or shortly before the lowest temperature, the humidity usually attains a value above normal and begins to fall as the temperature begins to rise.

EVERY MAN HIS OWN WEATHER PROPHET.

By J. HOWARD HOPKINS, Ruxton, Md. (dated July 25, 1899).

The rules laid down under the above title by the Baltimore Trade have been examined by me with the following results:

The assertion that the extreme cold spells of the winter are just six months after the hottest spells of summer does not, except in one or two instances, at all agree with my own observations. I have been keeping private records for the past four or five years, making temperature my principal observation. The warmest periods of weather for June, July, and August, 1895, were certainly not followed in six months by the coldest weather for December, January, and February, respectively. To be sure it was moderately cool for the season during the first few days of December, 1895, but it was by no means the complement of the corresponding days of June, when the temperature was remarkably high for the season. The warmest period of September of that year, it is true was followed by a severe cold spell in March, but might not this have happened by mere chance? In 1896, only the cold wave of the following January corresponds to the warm period of July; June, August, and September had no cold waves during the next winter to follow their warmest periods.

In 1897 I can find nothing at all that confirms the truth of the Baltimore Trade rule.

As for 1898, December shows no cold waves that correspond to the hot weather which prevailed from June 24 to 28. January, 1898, had a severe cold wave, corresponding with the extreme heat of July 1–4 preceding, but the great cold spell of February 9–15, 1898, had no complementary hot period in August, 1897. September, 1898, had a hot spell, which was followed in March, 1899, by a period of rather cool weather but the coolness was not to be compared with the preceding excessive heat.

As regards the statements that the last week in March determines the character of the last week in September, and, that if the weather from March 22 to the end of the month is warm, there will be great danger of frosts during the last week in September, or vice versa—I find my records agree no better with this than in the previous cases, and my records are kept quite as accurately as is practicable.

A STUDY OF TEMPERATURES AT BALTIMORE, MD.

By F. J. WALZ, Local Forecast Official and Section Director.

In the Baltimore Sun of February 2, 1899, there appeared an editorial article stating that the Baltimore Trade had deduced a general rule for temperature forecasting, based on a study of the tables of temperature printed in the Sun Almanac for a number of years past. This rule, it is claimed, is based on statistics which show that from the record of spring and summer anomalies in temperature an inference may be had as to the fall and winter temperature anomalies which will follow just six months later in the same locality; in other words, the extremes in fall and winter conditions are the complement of the extremes in the spring and summer conditions immediately preceding, and the interval of time is almost invariably a period of six months. The statement was also made that the rule could be put to practical use, which would result in much benefit in cases where business interests were likely to be affected by temperature extremes. March 22 is given as the epoch or initial date from which calculations are to be reckoned.

The temperature tables in the Sun Almanac are furnished by the Weather Bureau office in Baltimore, and are consequently official and reliable, so that no exception can be taken to the material used in the studies made by the Trade. Acting on the suggestion of the Editor of the REVIEW, whose attention to the article had been called by Mr. Howard Hopkins, of Ruxton, Md., I have carefully examined and compared the temperature records of this station for the past seven years, beginning with March 22, 1892, with a view of proving or disproving the value of the system of long-range temperature forecasting evolved by the Baltimore Trade.

In the tables which follow the facts thus obtained are presented (1) in a summary of results secured by comparing the warm and cold periods of each month with the conditions prevailing six months later; (2) by a statement of results obtained through a comparison of the warmest and coldest days of each month with the data recorded six months later; and (3) by a table showing the absolute highest and lowest temperatures for each year and the dates of their occurrence.

An exact verification is one in which an extreme of spring or summer heat or cold during a given month is followed six months later by an extreme of the opposite nature. A partial verification is one in which the extreme is followed by its opposite to a mild degree only. A nonverification, or failure, is an instance in which the Trade rule does not hold good. And an opposite result, as given in the tables, is an instance in which an extreme thermal condition has been followed six months later by an extreme of the same order.

TABLE 1.—*Summary of results in testing Baltimore Trade long-range temperature forecast rule when applied to warm and cold spells of two or three days or more duration.*

	Exact.	Partial.	Failure.	Opposite.
March 22-31 with September 22-31	1	4	7	8
April with October	3	6	22	4
May with November	3	10	21	9
June with December	2	10	21	3
July with January	2	12	16	3
August with February	1	3	27	2
September 1-21 with March 1-21	3	6	15	6
Total	15	51	139	35

TABLE 2.—*Summary of results in testing Baltimore Trade long-range temperature forecast rule when applied to the warmest and coldest days in each month.*

	Exact.	Partial.	Failure.	Opposite.
March 22-31 with September 22-31	1	3	9	1
April with October	2	5	6	1
May with November	0	5	5	4
June with December	1	7	4	1
July with January	1	5	4	4
August with February	1	4	4	3
September 1-21 with March 1-21	2	5	3	4
Total	8	34	35	18

TABLE 3.—*Highest summer and lowest winter temperatures for each season, with dates of occurrence, since* 1892.

Highest.	°	Lowest.	°
1892, July 26	99	1893, January 16	1
1893, June 20	98	1894, February 25	8
1894, June 24	98	1895, February 6	1
1895, June 1 and 3	97	1896, February 17	5
1896, August 7	98	1897, January 26	8
1897, June 30	95	1898, February 2	10
1898, July 3	104	1899, February 10	−7

In attributing verifying or nonverifying values in the tables above given, I have allowed a margin of one or two days, instead of limiting the possibility of a verification to the exact date six months later.

An examination of the tables readily discloses the fact that the rule laid down by the Trade affords a very unsatisfactory basis for long-range temperature forecasting, for not only does the number of failures far exceed the exact verifications, but the opposite of the rule has been found to have occurred more often than the rule for which so much is claimed.

In the article in question a number of examples were given to prove the truth of the rule. These examples were all taken from a comparison of the summer temperatures of 1898, with the winter temperatures of 1899, and at first glance might, without further examination, seem to comply with the rule and prove its accuracy to a fair degree. I therefore give a few details of the conditions obtaining during that period with reference to an application of the Trade temperature rule.

The first four days of July were excessively hot, and the third marked the highest temperature (104°) that has ever been recorded at the Baltimore station; the first three days of January were cold, especially the 2d, when the minimum temperature was 6°, which is about an average lowest temperature for winter. This, however, was far from being the coldest during the winter of 1899, for in February, from the 7th to the 16th, occurred the most severe cold spell on authentic record, when the temperature was as low as 7° below zero. No corresponding warm period occurred in August preceding, during which time, in fact, the temperature did not vary much from the normal, and was below normal on several of the days. The 29th–31st of July was very warm, as stated in the article quoted, and January 28–31 was quite cold, especially the 28th and 31st, which were 12° to 15° below normal, but did not compare in severity with the February cold period. September 1–4, 1898, was an intensely hot period, but the following March, up to the 6th, was either normal or above in temperature, though a fairly cool spell followed from the 7th to the 11th. September 18–19 was again very warm, but March, at a corresponding period, was also warm, though a very cold spell followed on the 20th and 21st.

The whole matter merits attention only from the fact that suggestions or statements of this character are easily disseminated and as easily secure a hold on the public mind. The efforts to trace a relationship between the abnormal weather conditions that have been recorded at a place are worthy of commendation, but, as is well known, the most systematic and prolonged research of skilled meteorologists has thus far failed to give other than negative results. Knowing further, as we do, that the transient pressure systems, whose formation and development certainly can not be premised months ahead, are the governing factors in the production of temperature extremes for this section of the United States at least; it becomes necessary to first define a rule to foretell the dates of their occurrence in a given locality for four, five, or six months in advance. If this could be done, the temperature prediction would accurately follow.

RECENT PAPERS BEARING ON METEOROLOGY.

W. F. R. PHILLIPS, in charge of Library, etc.

The subjoined list of titles has been selected from the contents of the periodicals and serials recently received in the library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau:

Naturwissenschaftliche Rundschau. Braunschweig. 14 *Jahr.*

Bezold, Wilhelm von. Ueber Erdmagnetismus. P. 349.

Science. New York. Vol. 10.

Fergusson, S. P. Formation of Cumulus Clouds over a Fire. P. 86.

Zeitschrift für Luftschiffahrt und Physik der Atmosphäre. Berlin. 18 *Jahrg.*

Ritter, F. Die hebende Kraft des Windes. P. 153.

Stentzel, Arthur. Der Weg zum Ziel. P. 125.

Popper, Josef. Flugtechnische Studien. II. P. 133.

Meteorologische Zeitschrift. Wien. Band 16.

Kassner, Dr. C. Bewölkung in Europa an Cyklonen und Anticyklonen-Tagen. P. 241.

Maurer, J. Erscheinungen des Erdlichts, 1895–1899. P. 257.

Hazen, H. A. Das Problem des Psychrometers. P. 261.

—— Resultate der meteorologischen Beobachtungen in Kamerun (Gouvernement) in den Jahren 1896 und 1897. P. 264.

Supan. Vertikale temperaturabnahme in der freien Atmosphäre. P. 266.

Prohaska, K. Die tägliche Periode der Gewitter und Hagelfälle im Jahre 1897 in Steiermark und Kärnten. P. 267.

Prohaska, K. Bemerkenswerthe Entladungsformen der atmosphärischen Elektricität im Jahre 1897 in Steiermark und Kärnten. P. 268.

Polis. Die Niederschlagsverhältnisse der Rheinprovinz. P. 269.

Brucker. Wettercyklus. P. 273.

—— Resultate der meteorologischen Beobachtungen zu Port Nollath, Süd-Afrika. P. 274.

—— Klima von Puira, Peru. P. 275.

Hann, J. Review of A. Angot: Traité Élémentaire de Météorologie. P. 286.

—— Wragge's Australasian Almanac and Weather Guide for Land and Sea (Review). P. 237.

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Notes on Air Resistance. Letters from W. F. Cleveland and Robert Manchlin and editorial. P. 66 and 70.

Symon's Monthly Meteorological Magazine. London. Vol. 34.

—— Meteorological extremes. P. 81.

Hazen, H. A. Effect of the Moon on the Temperature. P. 86.

Miller, Sam'l H. Ozone. P. 90.

Brook, Chas. S. Lunar halo. P. 88.

Western Electrician. Chicago. Vol. 25.

McAdie, Alexander G. Lightning Conductors. (Extract from Weather Bureau Bulletin 26). P. 60.

Archive des Sciences Physiques et Naturelles. Genève. Tome 8.

Wartman, Dr. Aug. Coup de foudre en boule. P. 96.

Gautier, Raoul. Violent coup de foudre. P. 101.

La Nature. Paris 27me Année.

Jullien, O. Ciel vert émeraud. P. 114.

Plumadon, J. R. La propagation des orages. P. 138.

Comptes Rendus des Séances de l'Académie des Sciences. Paris. Tome 129.

Teisserenc de Bort, Leon. Sur les ascensions dans l'atmosphère d'enregistreurs météorologiques portés par des cerfs-volants. P. 131.

Bouty, E. Les gaz raréfiés possèdent-ils la conductivité électrolytique? P. 152.

Thierry, M. de. Dosage des gaz carbonique au mont Blanc. P. 31.

Aeronautical Journal. London. Vol 3.

Fitz-Gerald, M. F. Flapping flight of Aeroplanes. (From Proc of Royal Society). P. 59.

Merrill, J. R. Some simple Experiments with Aero-Curves. P. 65.

Das Wetter. Berlin. 16 *Jahrgang.*

Less, E. Die Wissenschaftlichen Grundlagen von Wetterprognosen für kurze und solchen für etwas längere Zeiträume. P. 145.

Polis, P. Die Niederschlags und Temperaturverhältnisse des südlichen Roergebietes im Jahre 1898. P. 153.

Clayton, H., Elias, H. Ergebnisse der Drachen-Aufstiege vom 24 und 25 November 1898 am Blue Hill Observatorium. P. 162.

Elias, H. Drachen-Experimente. P. 167.

Annales de Chemie et de Physique. Paris. 7me séries. Tome 14.

Leduc, A. Les chaleurs spécifiques des gaz et l'équivalent méca nique de la calorie. P. 484.

Ciel et Terre. Bruxelles. 20me Année.

Artowski, H. Résultats préliminaires des observations météorologiques faites pendant l'hivernage de la *Belgica*: I. Température de l'air. P. 245.

Ventosa, V. La direction du vent et la scintillation. (*Suite*) P. 248.

Chauvereau. La variation diurne de l'électricité atmosphérique. P. 246.

Philosophical Magazine. London. Vol. 48.

Wood, R. W. Photography of Sound-Waves by the "Schlieren-Methode." P. 218.