While the velocity of flow of water in an open channel is greater the higher the stage and is greater in a rising than in a falling river, yet the movement of crest stages—not being dependent wholly upon the velocity of flow—appears to be more rapid at comparatively low stages when the water is well within the banks of the stream than when the banks are overstopped as at very high stages. The reasons are fairly obvious although local conditions and the tributary effect may be the dominating influence as at Cairo, Ill., where, at times, the balance between inflow and outflow is disturbed by the channel capacity below Cairo. Overflow of lowlands on the left bank opposite and immediately below Cairo at stages above 40 feet results in more or less retardation in the velocity of the outflow and crest stages on the Cairo gage may be due to that cause alone.

The average rate of flood flow in the upper Ohio is about 5 miles per hour and on the Mississippi below Cairo very close to 4 miles per hour, although crest stages move at a slower rate.—*Author's synopsis.*]

This paper is followed by a short one on Rules for forecasting the crest stages at Vicksburg, Miss., based upon the stages at Cairo, Ill., by H. W. Smith. Then there are abstracts concerning, Flood prevention in the Minnesota Valley, by A. F. Meyer, and on, The influence of forest areas in non-forested regions upon evaporation, soil moisture, and movement of ground water, by L. T. Bode, with discussion by R. E. Horton.

The section of the *Review* on "Notes, Abstracts, and Reviews," contains the following: Sir Joseph Norman Lockyer, astronomer and meteorologist [obituary], Dr. George C. Simpson succeeds Sir Napier Shaw as head of the Meteorological Office, The unification of the meteorological services of Britain, Meteorology at the British Association meeting at Cardiff, The spectrum and the theory of the green flash, A study of the residual ionization in a gas with reference to temperature effects, On the variations of the radioactivity of the springs of Bagnoles-de-L'Orne and their relation to rainfall, Can we extend our annual temperature record back for 30,000 years? Seasonal deposition in aqueo-glacial sediments.

December, 1920.

(Issued March 8, 1921.)

The December issue of the *Review* contains 15 contributions and 18 notes, abstracts or reviews. The contributions and some of the abstracts are noted below:

Atmospheric environment and health.[1] Leonard Hill. (Pp. 687–690.)

[The experience of open-air schools and sanatoria shows that life spent largely in the open benefits the health of those subject to catarrhs, those with over-nervous temperament, those with heart weakness, etc. Nevertheless, Europeans and Americans, dwelling in the colder climates, endeavor to build draftless houses and to secure inside these, by artificial heating, a climate similar to that on a quiet, dry day in summer. The low cooling power of the warm stagnant air indoors depresses the metabolism to a low level.

Out of doors the skin is cooled (and dried by the wind) and water is evaporated from it—the wind freely ventilating the clothes. The air on the most calm and oppressive day out of doors is never as still as it is in a shut-up room. The skin is also warmed by the radiant energy of the sun. The wind and the sun affect the flow of water from lymph and blood through the skin, the wind cools the blood in one part, the sun warms it in another; the sun's rays of shorter wave-length act chemically on the white skin. Cool winds insure the removal of the body heat by convection, as well as by conduction and evaporation.

What matters to the skin and respiratory membrane is not the relative humidity, but the actual vapor-pressure of the air which comes in contact with it. Cold, saturated air is excessively dry when warmed up to body temperature, and takes

[1] Prepared for the American Meteorological Society meeting at Chicago, but received too late for presentation.

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up much moisture from the body; warm saturated air (or only even half-saturated) far less.—(*Excerpts.*)]

Note in regard to the primary cause of colds. J. R. Weeks. (P. 690.)
It may be suggested in explanation of the observed greater prevalence of colds with cyclonic weather, that previous dry weather has made dust which the winds have carried from the streets to our nostrils and throats, causing mechanical irritation and bacterial implantation and growth.—*Excerpt.*]

Comparison of temperature and humidity during 1920 with the mean, and their relation to comfort, at Anaconda, Mont. C. D. Demond. (Diagram). (P. 691.)
[The author, who is the Weather Bureau coöperative observer at Anaconda, finds "a very logical relation between our temperature-humidity figures during this year's mild-weather season and the comfort of the season."]

Relation of malaria to temperature. *Reprinted.* (Pp. 691–692.)
[The author, Maj. Angus Macdonald, has examined English temperature records from 1763 to 1919 in conjunction with malaria prevalence, and estimated the probabilities of continuous endemicity of the disease or recurrence in the present. He says further: "Elevation of temperature does not occur in England with regularity and continuity necessary to maintain endemic malaria. When the necessary coincidence of carrier importation and high mean temperature occurs, both epidemic and endemic malaria may break out for a limited time in limited areas. Many other factors affect the disease, and the living conditions in England over 100 years ago may have been more favorable to its incidence, but the temperature factor is essential."]

All of the above group was reprinted as a separate.

The rate of ascent of pilot balloons. B. J. Sherry. (Fig.). (Pp. 692–694.)
[In approaching this question the writer divides the factors that control the rate of ascent of pilot balloons into two classes: (1) Those that relate to the kind and purity of the gas used, also to the shape, free-lift, material and surface of the balloons, and (2) those that relate to the atmospheric conditions prevailing at the time of the ascension, with particular reference to temperature distribution and air movement. The air density, viscosity, etc., are considered only indirectly. Numerous experiments were made with pilot balloons. The author expresses his conviction, however, that "it is probable that no entirely satisfactory formula for the rate of ascent of pilot balloons will be produced." Corrections to the formula now in use, especially to provide for the usual effect of turbulence near the ground, are presented.]

Some recent papers on the rate of ascent of pilot balloons. W. R. Gregg. (Pp. 694–696). *Abstract and discussion.*
[After citing theories set forth by Van Bemmelen and by R. P. Batty, the reviewer states: "The results given by the authors of the papers thus briefly reviewed are really not contradictory at all. They all show that the rate of ascent is higher than the average when the air through which the balloons rise is in a state of turbulence. This turbulence may be due to unequal heating of adjacent masses of air, to topographic irregularities, to high wind speeds or to different wind directions or speeds, or both, of adjoining layers.]

A report on two pilot-balloon ascents made at Shoeburyness. N. K. Johnson. (P. 696.) (Review reprinted).
[The author points out the extreme caution required in interpreting the upper-air data derived solely from the single-theodolite method. The two balloons here cited developed defects and ceased their uniform rate of ascent after reaching 25,000 or 30,000 feet. He therefore lays considerable emphasis on how much more may be learned of the atmosphere where the two-theodolite method is employed.]

Visibility of pilot balloons. M. K. Johnson. *Abstract.* (P. 696.)

Vertical current detected by comparing cloud motion with apparent speed of pilot balloon. Joseph Leshan. (Fig.) (Pp. 696—697.)
[The pilot balloon ascension made at Washington, D. C., on the afternoon of November 23, 1920, showed a rapid rise in velocity up to the 800-meter level, and an almost equally rapid decline thereafter to the 1,800-meter level, when the balloon entered a roll of stratocumulus cloud. The appearance of the clouds

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and a nephoscope observation made at that time seem to show that the balloon gained about 100 meters during the last minute of ascension over the assumed rate of ascent, and that the velocity during the last minute should be corrected from 6.2 to 13.3 meters per second.—*Author's synopsis.*

A contribution to the meteorology of the English channel. H. G. Grant. *Abstract.* (P. 697.)
[An attempt to analyze the barometric disturbances which give rise to the Channel weather, and the relation of the topography to the sudden changes which occur.]

Pilot-balloon work in Canada.[1] J. Patterson. (P. 697.)

The making of upper-air pressure maps from observed wind velocities.[1] C. L. Meisinger. (7 figs.) (Pp. 697–701.)

The weather factor in aeronautics.[1] C. L. Meisinger. (5 figs.). (Pp. 701–708).

Certain relative insolation values. W. J. Humphreys. (P. 708.)
[Correction of table on page 20 in Davis' *Elementary Meteorology* and on page 80 in Humphreys' *Physics of the Air.*]

Influence of exposure on temperature observations. F. D. Young. (3 figs.) (Pp. 709–711.)
[Although the daily temperature observations of the Weather Bureau are designed to indicate as nearly as possible the temperature of the free air surrounding the thermometers, it is not practicable to accomplish this exactly, on account of the influence of the character of the exposure of the thermometers on the readings. Both maximum and minimum temperatures are affected.

The fruit-region instrument shelter, designed to allow a freer circulation of air and lessen the disturbing effects of exposure, is described in this paper and compared with the cotton-region shelter in general use.

Data are given to show differences between current temperatures inside the region shelter and current readings of the dry bulb of the whirled psychrometer outside the shelter, at different locations and at different hours. After sundown radiation of heat from the roof and sides of the shelter reduces the temperature of the air in its interior below that of the outside air. Within certain limits, the stronger the radiation and the more quiescent the surrounding air, the greater will be the depression of the temperature inside the shelter below that outside. Minimum temperatures recorded in different portions of the foliage of two lemon trees did not differ materially from those recorded inside a fruit-region instrument shelter, located between the two trees, all the thermometers being at the same height above the ground.—*Author's synopsis.*]

Differences between the readings of sheltered and unsheltered thermometers in field work.[2] H. J. Cox. (Pp. 711–712.)

The comparison of the indications of some house thermometers in winter. H. I. Baldwin. (Fig.). (Pp. 712–713.)
[See BULLETIN, Apr., 1920, p. 39.]

Temperature and relative humidity in cold-storage plants for eggs and candy. O. T. Lay. (Pp. 713–714.)
[An account of the writer's experience in an investigation of aqueous vapor in its relation to certain cold storage problems. Following are some of the points discussed.

1. The temperature should be kept low for eggs and moderate for most kinds of candy.
2. The relative humidity should be comparatively high for eggs and low for candy.
3. The sling psychrometer was found to be the most practicable method of finding the relative humidity in different parts of the storage rooms.
4. The demand for such work has steadily increased in Chicago.
5. The probability that there is a latent field for such specialized work in other commercial centers.—*Author's synopsis.*]

The distribution of climatological stations.[2] C. J. Root. (Pp. 714.)

A comparison of two types of evaporation pans.[2] G. A. Loveland. (P. 715.)

[1] See Feb., 1921, BULLETIN, p. 21.
[2] See Mar., 1921, BULLETIN, pp. 38–39.

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