

forced and diminished by the progression of the storm. But on lands in the temperate zone these terms have had little application; for there cyclones proper are seldom destructive, and, as a general thing, do less harm by their winds than they do good by their rains. There will, however, soon be need, at least in our western and southern states, of a corresponding expression, such as the 'dangerous octant,' to denote the sector between south and east of the broad storm where local tornadoes may be developed; for the surmise that tornadoes were thus definitely related to cyclones, suggested by the signal-service studies of a year or two ago, is rapidly becoming a well-proved fact by the investigations of this season. It is the most interesting discovery in meteorology that has been made of late years, in its theoretical as well as in its practical bearings.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

Radiant heat.

In his letter to *Science* of the 15th of February, Professor Eddy states, that, in his opinion, the direction of the rays entering the region *B* is immaterial. As I am sure no other American or other scientific man agrees with him, I do not think it worth while, now that the issue has been reduced to this question, for me to continue a correspondence of the kind across the Atlantic, especially as Professor Eddy's mistakes have already been pointed out by Professor De Volson Wood.

As I am writing, I may, however, as well point out Professor Eddy's mistake in the arrangement he proposes as a substitute for mine. I agree that fig. 1 and fig. 2 represent what would happen; but fig. 3 does not represent all that would happen, as evidently, if heat can go into *B* in the direction $y'z$, as in fig. 2, there would be an escape of heat from *B* in the direction zy' , as well as that in the direction zy represented in fig. 3; and so, to the two quantities of heat coming into *B* in fig. 2, there would escape two equal quantities, which should have both been represented on fig. 3; and then, evidently, *B* is no better off than before.

Professor Eddy, I hope, will recollect that a pencil of rays of infinitesimal angle can only contain an infinitesimal quantity of heat. I make the remark because an omission to notice this fact is the only excuse I can see for the curious remark in the penultimate paragraph of his letter.

GEO. FRAS. FITZGERALD.

Trinity college, Dublin.

Another 'yellow day'

On the afternoon of May 2 a strong wind from the south-west brought to our position (seven miles

due west of West Point) thick clouds of smoke from the forest-fires in Pennsylvania and northern New Jersey. At 4.15 P.M. the sun had become completely obscured, and occasionally cinders and bits of charred leaves were borne past by the wind. The increasing density of the smoke was accompanied by a strange brassy, yellow light, which grew more vivid as the sun disappeared, and was most brilliant from five to six o'clock. It pervaded the whole sky with a diffused brassy glow, which was reflected into interiors so that an object placed before a window cast a perceptible shadow, yet the actual amount of light was less than in ordinary foggy or cloudy weather. The flame of a student-lamp had a white, dazzling appearance, not unlike the electric light. The green color of grass and foliage became of a most vivid quality, and the various shades of red seemed unusually prominent. This was attended by a high wind of from thirty to forty miles per hour, the highest temperature of the season, falling barometer, and a remarkably low percentage of relative humidity, as the following records show in part:—

Hour.	Temperature.	Relative humidity.
1 P.M.	81.0°	44%
2 "	82.0	38
3 "	81.5	33
4 "	81.0	22
5 "	80.0	15
6 "	67.0	42
7 "	61.0	45

The noteworthy feature of the phenomenon was its similarity to that of the well-remembered 'yellow day,' Sept. 6, 1881, the explanation of which was the subject of so much discussion. But, since the cause of the later occurrence was so unmistakably the presence of smoke in the air, persons who witnessed both can have little doubt that the same cause operated in the former case.

WINTHROP E. STONE.

Houghton Farm, Orange co., N.Y.

Cretaceous phosphates in Alabama.

I send you by mail some specimens of phosphatic nodules recently discovered in Perry county, in this state. Their true character was first suspected by Mr. William Spencer, on whose land they are found in abundance. Specimens were sent by him to Dr. C. U. Shepard, jun., of Charleston, S.C., and to myself, for examination, with the result of showing that they were nearly pure phosphate of lime. The geological position of this occurrence is different from that of the South-Carolina phosphates, as they are found at the base of the cretaceous rotten limestone; but the mode of occurrence is quite similar, as may be seen below.

A section (descending) of the strata at Hamburg, in Perry county, is about as follows:—

1. Rotten limestone, only the lowermost beds of which are here present.

2. Greensand beds from one to four or five feet in thickness. These beds appear to be impregnated with phosphoric acid; analyses of several specimens, selected from different spots, showing an average of about twenty per cent.

3. Sandy, calcareous beds about six feet in thickness. Where these beds outcrop in the fields, the surface of the ground is covered with nodules similar to the specimens sent herewith. These nodules