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that charts showing the results thence deduced are nearly ready for publication. Professor Henry also explained the steps which he was taking (by the issue of identical instruments to be placed uniformly) to ensure improved accuracy in future observations.

*On Barometric Predictions of Weather.* By Mr. GALTON.—The barometer corresponds, not with the tumultuous changes of the weather, but with those of its average quality. Numerous trials showed the period of time for which the averages should be taken to be about twelve hours; and the correspondence of a curve drawn on that principle with the barogram was fairly satisfactory. The flexures of the two curves are, on the whole, simultaneous, since neither curve habitually anticipates the other, but seldom absolutely simultaneous. They correspond in extreme positions as closely as in near ones, proving that it is not the absolute height of the barometer, but the variation in its successive heights, which indicates change of weather. The superior influence of the wind upon the barometer over both temperature and damp was remarkably apparent by the help of these curves. Lastly, the influences of temperature and damp were shown to conform to the already described period of twelve-hour averages. A simple formula for the prediction of weather for the next six hours was constructed upon these data. It included (1) the difference between the first and second of two barometric readings taken six hours apart; (2) that between the average wind velocity during two periods (which we may call  $c$  and  $a$ ) of six hours each,  $c$  succeeding the last barometric reading, and  $a$  preceding the first reading, the intermediate period  $b$  necessarily disappearing from the formula; (3) half the difference between the average temperatures during  $c$  and  $a$ ; (4) the same as regards vapour tensions. Then, it was shown that (1) was equal to the term of the remainder when the barometer and vapour tension are reckoned in hundredths of an inch, the velocity in miles per hour, and the temperature in degrees Fahrenheit. A calculation was made with the above formula to determine the average velocity of the wind for a large number of six-hour periods, and the predictions were compared with the facts. It was found that the average error of the predictions was one-third larger than if the observer had simply guessed that the average wind velocity would continue unaltered for the next six hours. The reason why the errors are so large is, first, that correctness in the result depends on the correctness of all the elements of the formula, but the values of these are only true on the average, while in each particular and in each case there will be more or less deviation from that average; secondly, any error in the expectation of the twelve-hour average is, on the whole, doubled in the six-hour prediction, because the difference between what is expected of the whole and what was fulfilled in the first half of it, is heaped on to the second half, which has therefore to bear an additional error, equal to what rightly belongs to it. The fame of the barometer is due to its success in predicting a type of storm very rarely met with in the British Isles, but frequently in hurricane latitudes, when the fall of the mercury far outstrips the increasing severity of the weather. In ordinary gales, and much more in ordinary weather, the author considered the barometer to be useless as a guide, when consulted without a knowledge of what is occurring at adjacent stations; in short, without such information as is supplied by the "Daily Weather Report."

*On Atmospheric Currents.* By Mr. J. K. LAUGHTON.—In examining into the geographical distribution of winds, we must bear in mind that well-attested and careful observation is the only satisfactory basis, and that descriptions founded on theoretical opinions are of no value whatever. If we refer Hadley's Theory of the Trade Winds to this test, we find, in the first place, that the effect of heat in producing wind is not quite such as has been represented. Experimentally, heat does not produce a blast, unless the space between the heat and cold air be very confined, as is roughly shown by holding a newspaper before the fire. Geographically, heat does not cause a wind towards any of the principal areas of greatest temperature; either towards the Great African Desert, the Desert of Arabia, or of Australia, towards the Red Sea or the Persian Gulf, or even, when carefully traced, towards the Great Prairie of North America. In the second place, we