Thus, in case of the Föhn wind, for this air to arrive in the valley at a temperature 60° F. above the temperature normally found there, it must have been heated 60° above the temperature normally found at the summit of the mountains from where it started, and it then remains with Dr. Hann to explain how this air acquired the abnormally high temperature before it commenced to descend, and until he has done this he can have no right to claim that he has added one particle towards the explanation of the phenomena of the Föhn; and, even if he was able to get over this difficulty, it still remains for him to explain the phenomenon of the sand-dust, before it can be recognized that the birthplace of the Föhn is anywhere but in the Desert of Sahara.

The phenomenon of cool night wind from the mountain and the accompanying higher temperature on the mountains than in the valleys find a ready explanation from the same premises. During clear nights the air nearest the earth's surface gets abnormally cooled through radiation, and the radiation is more intense on the mountains than on the plains. The cool contracted air will run off the slope of the mountain and accumulate in the valleys, while its place on the mountain-side is immediately taken up by air which has not as yet been cooled down by radiation. In the valleys the temperature gets lower than on the mountains, or the plains, because the cooling effect of radiation is there acting upon air which has previously been cooled considerably down by radiation on the mountain, and it is clear that the temperature must sink lower when radiation is acting upon air already cooled down, than when the temperature of the air was higher to start with.

The present writer has, on several occasions, tried to induce so able and prolific writer as Professor Hazen to attack his views for the sake of an argument, but the professor seems to decline to enter upon a discussion with any body who does not belong to the "meteorological camp," as he calls it. Now, be it said, in all kindness, that in our advanced age every body seems to be entitled to express his opinions on any scientific subject when he feels himself convinced of having found something new which may add to the progress of science, and also be entitled to a fair hearing; but be it said, as my impression when I accidentally arrived in the meteorological camp, all the inmates seemed to have decamped previously, leaving no one behind to shake hands with me; and this I thought a little discouraging. Dr. Hann may be a most excellent director of the Hohe Warte, and it may seem not a little reckless for an outsider to attack his theories; but it should be remembered that even a blind man may sometimes find a seed, — although a civil engineer of high training may not be entirely blindfolded, — and if there be any truth in the maxim of Dr. Hann's countryman, Feuerbach, "that no philosopher ever yet occupied a professorial chair in philosophy," so it might possibly be equally true that no philosopher in meteorology ever yet sat on Hohe Warte, however great his attainments as director or weather forecaster might have been.

FRANZ A. VELSCHOW, C.E.

Brooklyn, Nov. 9.

Auroral Phenomena.

As Dr. Veeder has mentioned in his description of the aurora of Sept. 9, in *Science* for Nov. 6, some phenomena not ordinarily accompanying auroral displays that were also visible here, some notes made at the time may be of interest.

The aurora on that evening was unusually fine, probably the most brilliant observed in four years. It began about 7 40 P.M. as a faint arch five degrees above the northern horizon, which gradually became higher until a maximum height of eight degrees was reached at 8.15 P.M. Shortly before this time two smaller arches appeared beneath the principal arch, and soon afterward the ends of the three joined together, forming a serpentine band. This band at 8.20 P.M. broke up into brilliant streamers, which were constantly changing in appearance and length, alternately fading and becoming bright again.

This continued until 8.50 P.M , when the display reached its maximum brightness and the streamers their greatest length. The elevations of the ends of the streamers above the horizon were measured with a theodolite at times, the highest being at a height of 56°, though many exceeded 45°.

Between 9.15 and 9.30 P.M. the aurora diminished greatly in brightness, and at 9.25 two bands extended toward the zenith from the east and west respectively, joining together at 9.27, forming the narrow band that Dr. Veeder saw. This band was apparently of a uniform brightness, approximating that of the Milky Way, and continued, through the period of minimum brightness of the aurora, from 9.25 to 9.35 P.M. After 9.35 P.M. the aurora became brighter, and was visible at 11.40 P.M.

This band of light was seen at Nashua, N.H., and in this vicinity, while the aurora has been reported as visible at several places in Europe as well as America.

A similar band of light, extending through the zenith from opposite sides of the horizon, was observed during the aurora of May 20, 1888, which was described in *Science* by several observers during the succeeding month.

Five auroras were visible during September four of which occurred on the 7th, 8th, 9th, and 10th, respectively, — an unusually large number for such a short period of time.

S. P. FERGUSSON.

Blue Hill Observatory, Readville, Mass., Nov. 20.

AMONG THE PUBLISHERS.

D. C. HEATH & Co., Boston, will soon publish *Business Law*, prepared by Alonzo P. Weed. This is not only a text-book for business colleges and the business courses of schools and academies, but it is desirable for the desk of the business man.

— Charles F. Lummis, a Harvard man, who has lived for many years in New Mexico, begins in the Christmas *Scribner* a group of articles on that little-known territory, with its population of Pueblos, Mexicans, Navajos, and Americans. The articles will be illustrated from the author's own photographs, which are unusual in subject and variety.

— The October number of the "Papers of the American Historical Association" contains six articles. The first is a brief account of "Slavery in New York" under the colonial government. Then follow two papers on certain aspects of our national Constitution, the one on "Congressional Demands upon the Executive for Information" being the most suggestive. The next is "A Plea for Reform in the Study of English Municipal History," and there is also a longer article on the "Yazoo Land Companies," giving an account of a gigantic land speculation of a century ago, in which political intrigue played a prominent part. But the article that will be likely to interest the greatest number of readers is that on "The Lost Colony of Roanoke," by Stephen B. Weeks. The colony planted by Raleigh on Roanoke Island has always been supposed to have perished; but in 1885 Mr. Hamilton McMillan of North Carolina advanced the theory that the colonists retreated inland, where they ultimately intermarried with some friendly Indians, and that the Croatan Indians, now living in the western part of the State, are their descendants. The evidence for this theory in the physique, the traditions, and the names of those Indians is really quite striking; and persons interested in our early history will like to read Mr. Weeks's paper.

— A second edition of "Modern American Methods of Copper Smelting," by Dr. E. D. Peters, Jun., has just been published by the Scientific Publishing Company of this city. The book has met with great success, the demand for it having long since exhausted the first edition. The entire book has been practically rewritten, and new chapters have been introduced on the electrolytic assay of copper, the smelting of copper with gas in regenerative furnaces, and the smelting of copper-nickel ores in water-jackets. Additions of great importance have also been made to the chapter on reverberatory smelting, and this portion of the work has been illustrated by nine full sized pages, which form what is said to be the most complete set of detailed working drawings of the kind ever published. The arrangement of the book has been improved; and in addition to the full alphabetical index at the end, a detailed table of contents has been prepared that will be a great aid to the reader. The author has brought a riper ex-