

conserve ice. In the morning I noted a temperature of -19° C. [-2.2° F.].

From these experiments I am convinced that 0° F. is not "the lowest temperature obtainable with ice and salt." Just what the "lowest temperature" is I am unable to state, having failed to secure a greater lowering than -21° C. Theoretically the lowest temperature should be the cryohydric point (-22° to -23° C.), where the cryohydrate, ice and salt, containing 23.6 per cent of NaCl, separates.

523.745

THE MOTION OF THE SOLAR ATMOSPHERE.

Meteorologists have long been interested in the studies of the solar atmosphere by astronomers; hoping therefrom to derive some suggestions that may contribute to our knowledge of the earth's atmosphere. One of the most interesting points of resemblance between the atmospheres of the sun and the earth has recently been published by the Observatory of Zurich.¹ It is an elaborate study by Wilhelm Brenner on the proper motions of groups of sun spots, which perhaps is the same thing as the motion of the sun's atmosphere within a region of sun spots. He first determines the accuracy of the heliographic positions of the spots within that region. Of course, the general movement of the region has long been understood as corresponding to that of our hurricanes in our Northern and Southern Hemispheres. But within each group of spots there is a divergence of motion among the individual spots corresponding very closely to the outflow of atmosphere from our own regions of high pressure. In other words, the fragments diverge from each other, separating as they are removed from the center of the region, and also rotating anticlockwise in the Northern Hemisphere. Every new increase in the activity of any given group is accompanied by an increase in the divergence of the spots, but this increase is rather feebler than it was when the group of spots first began to develop. This was true in 90 per cent of the groups investigated.

It seems probable that the strength of the divergence depends upon and may be proportional to the energy of the development of the group. In fact Brenner has every reason to believe that there is no connection between the magnitude of the divergence within any spot and the activity of the so-called 11-year period, or with the heliographic latitude.

The possible connection between Brenner's results and certain analogous phenomena consists in the interesting fact that his results agree with the hypothesis that each spot, large or small, and each group of spots, is an eruption or boiling up from within the solar atmosphere. This causes a heaping up over the boiling region, above which the solar gases with their dark and bright spots, flow slowly outward and downward with the anticyclonic whirl without seriously affecting the general motion of the group across the solar surface.—[C. A.]

551.594.221

LIGHTNING AT MOUNT WILSON OBSERVATORY.

By WENDELL P. HOGE, Night Assistant.

[Dated Mount Wilson, Cal., Mar. 30, 1914.]

Yesterday, Sunday, March 29, at 3:30 p. m., the mountain top [elevation, 5,886 feet] was in the midst of a severe snowstorm following a light rain during the forenoon.

Fog covered the mountain. Temperature about 31° F.; wind 12 to 15 miles from the southeast. The wind had risen from very light to brisk about 1 p. m. I was sitting near a window in a one-story concrete metal-roofed building known as the observatory laboratory and study. While the snow was falling quite rapidly in moderate-sized flakes, a rather bright flash of lightning came, followed after an interval of between one-fourth to one-half of a second by a single, short, sharp report quite similar to that of a .22 rifle shot. Then absolute silence. In about five minutes a second flash came, much brighter than the first. This was accompanied instantly by a rather faint very sharp crack, very similar in sound to the spark frequently produced in the laboratory. Then silence again. No more flashes were noticed. Such bright flashes of lightning with such exceedingly wild reports following, I have not before experienced.

POPULAR MISCONCEPTIONS.

Nearly every day brings to the attention of the Editor renewed evidence of the need of education; the abundance of ideas, the rashness of hasty statements, in conversation, in the daily press, and in letters from fellow citizens who wish their ideas to be tested by some expert. In general, these crude notions have occurred to active minds who wish to inquire into the ways of Nature and yet are not willing to accept the principles of research—principles and axioms that have been long since well established. It would seem that a large fraction of mankind is still in the condition of mind that characterized the world before the days of Copernicus, Galileo, and Isaac Newton. It was Columbus who first practically endeavored to verify his theory that the world was not flat but a sphere, and Magellan completed the demonstration. It was Copernicus who maintained that the earth revolved daily on its axis and annually around the sun, and gave a satisfactory demonstration of the truth of his theory. It was Galileo who maintained that bodies fall toward the earth by gravitation and demonstrated the accuracy of his idea. It was Sir Isaac Newton who maintained that this gravitation was universal and that the sun held the earth in its annual orbit, and that the earth held her moon in its monthly orbit, and gave a satisfactory demonstration of the correctness of this idea. And so we might trace the progress of knowledge from those early days down to the present time. Step by step those who have climbed the hill of science have perceived the possibility of some deeper insight into Nature and have been able to demonstrate some new principle. In every case, however, it has been necessary for the respective discoverer to appreciate whatever had already been discovered bearing on the points that he was especially interested in, before he could feel prepared to make additional progress in our knowledge of Nature. The consciousness that we are but beginners in the study of an almost infinite series of problems should make one very modest in his assertions as to how Nature must operate, or how the world was made, or what the possibilities of Nature ought to be. The pathway of science within the past 300 years is strewn with tens of thousands of suggestions that have fallen by the wayside and are long since forgotten; they have helped to show us what does not take place and what is not true and have thus paved the way, and eased the path, of those who have discovered what is true.

Our numerous correspondents must not be surprised or chagrined if in reply to the theories that seem to them

¹ Publikationen der Sternwarte des eidg. Polytechnikums zu Zurich. Bd. 5.