Prescott. It is not clear what particular point is meant by Pima; there are many stations of that name in Arizona, but none of them very near to Prescott; the Weather Bureau voluntary station "Pima" is about 200 miles to the southeast of Prescott. This hailstorm seems to have occurred within the area of low pressure at the head of the Gulf of California, and while an area of high pressure was moving southward over the Rocky Mountains.

In general, the areas covered by destructive hailstorms, when they occur in the United States, are but a few square miles. Now that the prevention of a hailstorm by the Stiger method of cannonading begins to be advocated, it becomes important for us to know the total area covered by such storms in each State annually, also the number of storms at any one place, and the average frequency of their occurrence per year or decade. We hope that our section directors will be able to give some attention to these statistics, so that we may have some basis upon which to figure out whether it would be economical to go to the expense of preventing hail, assuming that we had an infallible method. Of course, where land is worth less than $5 per acre, and the annual crop from that land worth less than $10 per acre, it would be foolish to spend $100 per acre annually in protecting from hailstorms.

ATMOSPHERIC CONDITIONS FAVORABLE TO COTTON SPINNING.

Mr. Lee A. Denson, Observer, Weather Bureau, at Meridian, Miss., favorably indorses the following remarks of Mr. Louis Cohn of that place, extracted from a paper read by him on July 10 before the Young Men's Business League.

Among the advantages of the South for the manufacture of cotton are * * * (8) mildness of climate peculiarly adapted to the proper manipulation of the delicate fiber, and also a saving of large expense in heating the manufacturing establishments. * * * The natural advantages of Meridian for the manufacture of the cotton fiber result from its peculiar physical location. Being almost entirely surrounded by hills and thus within a large basin, the moisture in the atmosphere is retained to a remarkable degree. The average conditions of the atmosphere, as found in Meridian, are such as are much sought by all *intelligently-conducted cotton manufacturing plants*, and large sums are invested for securing such conditions artificially as are here furnished by nature. It is the atmospheric conditions found in the Lancashire and Manchester sections of England and at Fall River, Mass., that have made those districts so celebrated for the manufacture of southern goods, and investigation will disclose the fact that Meridian possesses this essential requisite to a greater degree than possibly any other locality in the South.

Mr. Denson, in commenting on this paper, says:

With Mr. Cohn, I, also, am firmly convinced that the general atmospheric conditions of Meridian are considerably influenced by the topographical surroundings. * * * I believe that the conditions are sufficiently well marked to warrant an investigation. It is a well-known fact that the temperature at Meridian with a northerly wind, is lower than at neighboring stations in the same latitude; this fact is also shown by the effect on fruit, as peaches are often killed here when trees beyond the hills on the south bear abundantly.

We understand that a relative humidity of 70 per cent, a temperature above 50° F., and freedom from atmospheric electricity, are the favorable conditions for cotton spinning, and that these are frequently secured by artificial means in those cotton factories that are not favorably located as to average climate.

It is not clear to us that the desired moderate temperatures and rather high relative humidity are secured by the establishment of a factory or a manufacturing town in a large basin surrounded by hills. There is no apparent reason why the moisture of the atmosphere should be especially retained by this arrangement; it is easily carried away by the wind. Such basins are usually hot and dry in the middle of the day, but cool and damp in the night-time and early morning. If the temperature at Meridian is really cooler with a northerly wind than at neighboring stations, we should be rather inclined to attribute this local coolness, as well as the accompanying humidity, to topographic conditions. We hope that Mr. Denson will furnish us with fuller data as to the relative humidity and temperature during the 10, 12, or 14 hours of factory work.

AURORA IN FLORIDA.

On page 582 of the Annual Summary for 1899, Mr. H. H. Ten Broeck gives some account of an unusual aurora observed by him at Braidentown, Fla. In a recent letter he says:

I was formerly an observer for the Smithsonian Institution. In regard to the aurora of November 18, 1899, I would add that the next day I saw a press dispatch from Birmingham, Ala., reporting an extraordinary appearance observed at that place. The intelligent observer said that the bands of light were about 2 feet wide. The light was observed there over two hours before it was seen by me. This appears to show that the aurora is sometimes local and that its center is moving over the land. I have seen it stated repeatedly that the center of the aurora is over the earth's magnetic pole, but in this present case evidently it could not have been so.

The numerous notes on auroras in the MONTHLY WEATHER REVIEW for 1895–96 have already shown that it frequently happens that auroras appear almost simultaneously in very restricted localities, although these may be widely separated from each other. The atmospheric conditions favorable to aurora formation almost always move slowly southward over the United States from New York and New England to Virginia at rates that correspond fairly well with the motion over Alabama and Florida on November 18, 1899.

PROGRESS IN WIRELESS TELEGRAPHY.

The following extracts from an article signed G. E. W. published in the Electrical World and Engineer, New York, August 18, page 252, seem to have been written by one in authority and desirous of saying the very best that can be said for the Marconi system of wireless telegraphy, especially as developed and modified by the engineers of the British army. The Weather Bureau will undoubtedly adopt some style of wireless telegraphy for communication with ships at sea as soon as apparatus has been devised that is reasonably economical and reliable, but we are not yet sure that Marconi's is the best. The following are the extracts referred to:

* * * * * * *

Signor Marconi did not go to South Africa personally, but several of his assistants went there with several outfits of wireless telegraphy, and they operated in conjunction with the fleet patroling the coast. They confined their attention exclusively to sending messages between the several warships and between the fleet and the shore. At Delagoa Bay the British admiral sent messages a distance of 80 miles to the fleet off shore. The British battleship *Hannibal* also sent and received messages to and from the battleship *Jupiter*, when under way, over a distance of 32 miles. One message was sent 100 miles, the greatest distance successfully covered.

While there were none of his assistants with the land forces in South Africa, his system of telegraphy was used by Lord Roberts, and a modification of it by General Baden-Powell. * * * Upon assuming command in South Africa, he (Lord Roberts) summoned a body of wireless telegraphers and kept them in his camp all through the struggle. These experts kept him in touch with the various units of his enormous army, and some of the messages were sent overland a distance of 60 miles. There are ten sets of instruments in Lord Roberts's army, and these have been developed successfully. All scientific questions and experiments made by a rapidly-moving army are of necessity scantily reported by a commander in the field, and the accounts of the tests with the wireless telegraphy are still quite vague. Considerable interest will be shown in the official reports of the operators when the war has terminated, and no one will hail the accounts of the experiments with more concern than the inventor.

One important improvement in the system in war times was made through the cooperation of the hero of Mafeking. The difficulty of sending messages any great distance in a mountainous country like

South Africa was overcome by the invention of a system of kites by Baden-Powell. In order to make wireless telegraphy successful it is necessary to raise the wire attached to the instrument to a considerable distance in the air. Thus, to telegraph 60 miles the elevation of the wire should be at least 100 feet above the surface. It was often impossible to find any way to secure this altitude for the wires, but by using the kites the problem was easily solved. Kites of the Baden-Powell type consequently became inseparably associated with the wireless telegraphy in South Africa, and it was by this means that messages were sent a distance of 60 miles.

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WIRELESS TELEPHONY.

Already in December 1899, the Editor had occasion to confer with Prof. R. A. Fessenden as to the possibility of modifying Marconi's system of wireless telegraphy, so as to give us a system of wireless telephony. Methods were suggested that can perhaps be made to work successfully, but the problem is far more delicate than that of wireless telegraphy and it is more important that the latter should first be developed to a high state of perfection, in order that we may with ease communicate with stations at very great distances. The 100 miles spoken of as an exceptional success, in the above paragraph, ought to become a matter of every day occurrence. Such great distances can, of course, be attained by using sending and receiving wires of very great length, suspended from poles or kites at great heights; but much better methods have already been devised by Professor Fessenden. A cablegram of September 8 announces that the wireless telephony has already been accomplished by the Chief of the Postal Telegraph Service of Great Britain, Mr. W. H. Preece, but this was only for a distance of five or six miles.

THE WEATHER OF THE MONTH.

By P. C. DAY, Acting Chief Division Meteorological Records.

PRESSURE.

The distribution of monthly mean pressure is graphically shown on Chart IV, and the numerical values are given in Tables I and X.

The areas of high pressure occupied their normal positions over the south Atlantic and north Pacific coasts, with slight departures from the normal. The permanent area of low pressure over the Plateau region embraced a wider extent of territory than the average, and the depression was considerably below the normal. The pressure was slightly above the normal in the Middle and South Atlantic States, attaining a maximum departure of +.07 inch at Augusta, Ga.; throughout the remaining part of the United States and the Dominion of Canada pressure was generally below the normal, with a maximum departure of —.10 inch at Yuma, Ariz. Compared with the preceding month, pressure was generally higher throughout the lower Mississippi Valley, the Atlantic and Gulf States, and over the northern Rocky Mountain and Plateau regions and the British Northwest Territories. In a narrow trough from the upper Lake region southwesterly to the south Pacific coast region the pressure was below that of the preceding month.

TEMPERATURE OF THE AIR.

The distribution of monthly mean surface temperature, as deduced from the records of about 1,000 stations, is shown on Chart VI.

Several periods of high temperature prevailed in the region east of the Rocky Mountains in connection with the southerly drift of the areas of high pressure toward the permanent high area off the south Atlantic coast. The average for the month was above the normal throughout the Atlantic and East Gulf States, the Ohio Valley, and the lower Lake region, also on the north Pacific coast, and in the upper Missouri Valley. Temperature was generally below the normal throughout the upper Lakes, the Mississippi Valley, and over the central and southern Rocky Mountain and Plateau regions. Maximum temperatures of 100° or over occurred at but few points east of the Mississippi Valley. In the upper Missouri Valley, however, and generally throughout the Plateau regions and in Arizona and parts of California, maximum temperatures from 110° to 120° were experienced. Minimum temperatures of 32° occurred at isolated points in the mountain sections.

In Canada.—Prof. R. F. Stupart says:

The mean temperature of the month did not differ very greatly from average in any part of the Dominion; the largest positive departures, amounting to some 2° or 3°, occurred in southern New Brunswick and western Nova Scotia, and the largest negative departures, also from 2° to 3°, in eastern Quebec, Alberta, and western Saskatchewan. A pronounced heat wave passed over the more western and southern portions of Ontario during the 6th and 7th, when temperatures of over 90° were registered, and still greater heat was recorded in Assiniboia between the 23d and 25th, when 102° was registered at Medicine Hat.

The average temperature for the several geographic districts and the departures from normal values are shown in the following table:

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	10	69.2	+ 1.4	+ 8.7	+ 0.5
Middle Atlantic	12	77.1	+ 2.5	+ 8.5	+ 0.8
South Atlantic	10	81.2	+ 1.3	— 3.6	— 0.5
Florida Peninsula	7	82.0	+ 0.5	— 6.0	— 0.9
East Gulf	7	80.6	— 0.4	— 8.6	— 1.2
West Gulf	7	81.1	— 0.8	+ 0.5	+ 0.1
Ohio Valley and Tennessee	12	77.7	+ 0.9	— 2.5	— 0.4
Lower Lake	8	71.8	+ 0.6	— 1.9	— 0.3
Upper Lake	9	66.5	- 0.8	+ 5.2	+ 0.7
North Dakota	8	68.8	+ 0.1	+29.1	+ 4.2
Upper Mississippi Valley	11	74.7	— 0.4	+ 5.1	+ 0.7
Missouri Valley	10	74.9	— 0.2	+16.4	+ 2.3
Northern Slope	7	69.2	— 0.4	+29.6	+ 4.2
Middle Slope	6	76.3	— 0.1	+12.7	+ 1.8
Southern Slope	6	77.4	— 2.0	+ 0.6	+ 0.1
Southern Plateau	15	78.7	+ 0.3	+12.0	+ 1.7
Middle Plateau	9	72.0	+ 0.7	+25.3	+ 3.6
Northern Plateau	10	67.7	— 0.2	+23.0	+ 3.3
North Pacific	9	62.3	+ 0.3	+14.2	+ 2.0
Middle Pacific	5	64.9	+ 0.5	+ 8.7	+ 1.2
South Pacific	4	71.2	+ 0.6	+11.8	+ 1.7

PRECIPITATION.

The monthly distribution of rainfall is shown on Chart III.

In parts of the Missouri and upper Mississippi valleys, the Lake region and over Texas, precipitation was above the normal, reaching a maximum departure of nearly 10 inches at Yankton, S. D., and over 15 inches at Galveston, Tex. In the South Atlantic and east Gulf States precipitation was much less than normal, especially on the immediate coast, where the fall was less than 50 per cent of the average. Throughout the remainder of the States and Territories the fall was generally less than the normal. No serious droughts