

✓ NOYES, (I.P.)

THE WEATHER MAP.  
(SKELETON MAP.)

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presented by the author

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easily, but when once set on fire it burns steadily, slowly, and smokelessly, leaving a carbonaceous residue of about two per cent. of its weight. Solid petroleum burns three times slower than coal, but yields a greater heat than the latter. American petroleum, according to Dr. Kauffman's experiments, is more easily solidifiable than Russian. Previous experiments to solidify petroleum by boiling it up with common soap appear to have been no practical success.

**The Weather Map.**—The weather map was a late acquisition to the scientific knowledge of the world—and well demonstrates the fact of the inductive methods of science. We could no more understand our weather phenomena until the facts in regard to them had been accumulated and formulated than we could have our complete ship until all the necessary material had been gathered and fashioned by the hands of the master builder. The map was started in 1870, but like all new things, it was of little value until it had acquired a certain state of perfection.

In one sense this map may be termed one of the grand results of the late war, and to the signal office, a bureau of the War Department, are we indebted chiefly for it. At the close of the war, the signal service had little or nothing to do, but after a few years the idea was conceived of making it useful in the arts of peace. The field was new. They had something of the kind in Europe, but there was no such favorable field for their labors as we had here. Our territory, in the rough comprising a parallelogram of 1,500 miles from north to south and 3,000 miles from east to west, all under one general government, with a network of telegraph wires, whereby messages could be sent from all parts of this wide domain to some one center like Washington was indeed most favorable. The world never before had such an opportunity for obtaining information in regard to that stratum of nature which lies between the heavens and the earth, and which is the medium whereby the earth is blessed and its productive qualities made available.

Years ago the wise men thought they knew something about meteorology. They published huge volumes on the subject—vol-

umes which their descendants naturally treasured. But, as we now see, from the very nature of things, these huge volumes throw little practical light upon the subject, and really proved a hindrance rather than a help, for by them "wise" sons had learned what they had supposed was wisdom from their fathers. They had supposed themselves to be on a sure and enviable road, and through this supposed wisdom they were blind and neglectful of the new revelations. From 1870 the weather map quietly advanced. At first it did not reveal much, and it was not expected it would or could. The territory was new and it necessarily took a number of years to accumulate a sufficient number of facts and to present them in such a shape as to be of value.

About 1876 the map had reached an appreciable degree of perfection. But those in charge of it, like true men of science, were not satisfied. With more and more light upon the subject came more and more degrees of perfection, until the present satisfactory condition was reached. All who have studied the text books on the subject will remember the explanation of the cause of rain, and how it was illustrated by a fine engraving of a mountain, across the top of which clouds were being blown by the wind, which on the other side were by colder currents converted into rain.

This is a fine illustration of the ingenuity of man; if he does not know of any good and true reason he will often invent one.

If there was anything in this mountain chain theory we would need mountains interspersed with plains at every hundred miles or less. When we come to learn something definite in regard to the weather we learn that in this respect the mountain chains have little or no effect; that the storm center "low" (low barometer) interspersed with "high" (high barometer) is the while moving over the country, and that neither mountain nor valley produces any such result. The topography of the country undoubtedly has its effect on the factors we term "high" and "low," but no such effect as the old school illustration would imply.

Through the weather map we learn of the movements of high and low barometer, and that these move on general lines from the west toward the east, sometimes moving in

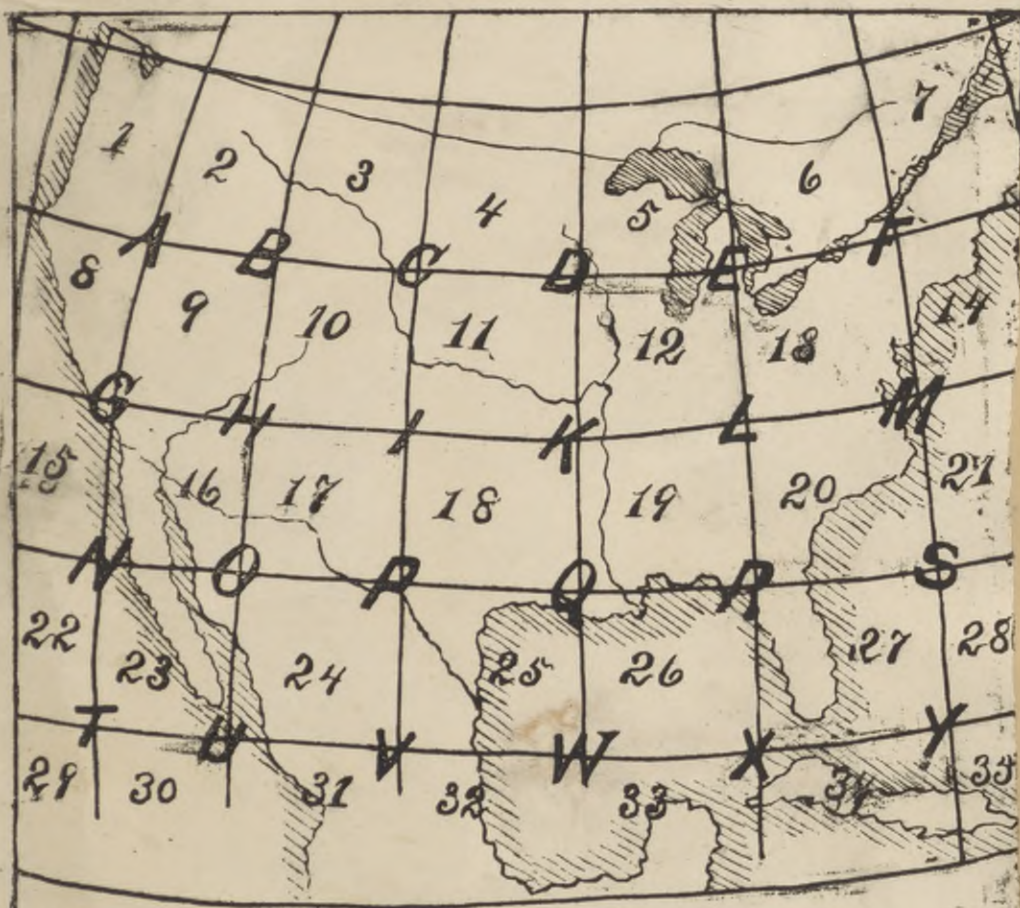




a northerly, or even a southerly direction, but always advancing toward the rising sun. The mountain chains, relatively to us, may be very high and formidable, but relatively to these factors they are of no more account than the unevenness of the world to the globe it's a mass."

The value of the weather map consists in

telligent people of this country realized the value of these stations, not another session of Congress would pass without an ample appropriation for such additional stations in the extreme West, from southwest to northwest, as would make our system more complete, at least so far as our own territory is considered.



following it up day by day, month by month, and year by year. It takes us up, as it were, to an exceedingly high pinnacle and shows us the weather conditions of the earth, and the limit is only bounded by the range of the signal stations. The more numerous are they, and the greater the extent of territory they cover, the greater the practical benefit to be derived therefrom. If the in-

The system could be made further beneficial to us by stations in Mexico, and by ocean stations in the Gulf of Mexico, and off the Pacific coast 500 to 1,000 miles, the further to the westward the better. Indeed, we should like to have them around the world, and to this the future will undoubtedly see. Our present system, so far as it goes, is quite as perfect as it can be.



Now, as herein stated, the weather map is the only medium whereby we can understand and appropriate this useful knowledge, but the weather map is only published at Washington, and can not, like a newspaper (except at enormous expense), be reproduced in the cities of the country. Besides, a map published here can not be of full value very far away, and the farther away, and the more the time required to receive it the less the practical value. If, however, we can not have the map itself we can have, and that at slight cost, a valuable substitute.

Let maps of the United States be printed in blank form which shall be divided into convenient sized squares, formed by lines of latitude and longitude. As to the size of these squares let that be determined by the convenience of those who have the matter in charge; the all important thing is to have the system uniform, and all maps, whether large or small, should be divided into the same relative number of squares. These squares to be lettered or numbered, as most convenient; it may be the better plan to combine figures and letters. The signal office at Washington receives the reports from the various points throughout the country, and after preparing its regular map and noting how the lines of barometric pressure are distributed, report the same by telegraph all over the country. The lines of "high" and low in such and such squares, or on such and such lines. The old "low", i. e., the "low" that has passed the farthest to the eastward, is in such a square, or on such a line. "High" is marked in such and such other squares. The new "low" in the west, north, or southwest is indicated.

The most convenient plan might be to have the squares numbered, and the angles of the squares lettered. This would permit us to locate the lines of "low" and "high" and to describe fine points with very little trouble.

Let the public once become accustomed to this system and it will operate mutually to the benefit of themselves and the signal office. From it they will imperceptibly learn something positive about the weather. All such humbugs as "weather prophets" will be driven from the field, for then the public will perceive how vain and presump-

tuous are their attempts to forecast the weather for weeks and months in advance.

Something after this nature, I am sure, will undoubtedly be the meteorological system of the future. Not only may we have, the Skeleton map in our offices, but it may be on a large scale at prominent central places throughout the country. At these places we may have a large skeleton map of the United States on a blackboard or slate—some material on which lines may readily be drawn. When a report is received a handy person with a piece of chalk can, by making a few lines on this map, reveal to the observer the meteorological conditions of the hour. It would be well to have these reports at least three times a day, morning, noon, and evening.

Again the map may be on a very small scale, sufficiently small so to be set in a column of the daily newspaper. In place of the present indications underneath the map let the report of location of "high" and "low" appear. When the public become familiar with the new system I do not think they would willingly go back to the old. They will not only be warned as to the next twelve or twenty-four hours, but will see what new storms are developing in the West, and the better note the effect of a storm as it advances toward the east.

There is nothing impracticable or visionary about this idea; it is simple and instructive. It is to be hoped that the public will become interested in the matter and sanction and support the steps necessary to make it a reality.

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