

of viscosity or fluid friction, and still less connection due to terrestrial resistances. These upper layers are affected by radiation and absorption, by density, by the attraction of the earth, the moon, and the sun, by the action of solar electrons and cosmic shooting stars, and by the motion of the earth in space, as well as its diurnal rotation. Their motions represent the sum total of astronomical and planetary influences, and they react in a most complicated manner upon the lowest layer of the atmosphere which is under the influence of convective circulation.

The study of the motions of the centers of high and low pressure presented to us every day on these international polar charts of the Northern Hemisphere, may be conducted either by pure analysis, or by graphic methods, or by laboratory experiment. Some suggestions with regard to the latter will be found in the MONTHLY WEATHER REVIEW, December, 1907, volume 35, page 559.

With regard to graphic methods of approaching the problem, I believe that two memoirs, one of which is to appear in the Bulletin Mount Weather Observatory, volume 6, part 5, and the other to appear in this REVIEW, present almost our first practical ideas; their further development and application to our daily weather maps will, we hope, stimulate our best mathematicians to renewed efforts.

With regard to the purely analytical treatment of the problems of atmospheric, the best men, such as Helmholtz, Lord Kelvin, Margules, Lord Rayleigh, Prof. Lamb, and many others, have contributed here and there a mite toward the completion of the work done by Ferrel, but hitherto each has found it impracticable to even attack in its generality that problem which must be solved by some future generation before all doubts and difficulties have been removed.—[C. A.]

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PROPOSED DAILY WEATHER MAP FOR THE SOUTHERN HEMISPHERE.

All meteorologists will be interested in a letter from W. Martin Watt, Agricultural Engineer, Salisbury, Rhodesia, who says:

I am very much obliged for your memorandum covering a copy of the weather map of the United States and the Northern Hemisphere. I find in it a most interesting study, and if it is not asking too much I should be very grateful for an occasional copy.

I trust it will not be long before a similar map is prepared for the Southern Hemisphere, as it would be of immense assistance to forecasters.

This idea of a comprehensive weather map of the world—namely, a map of both Southern and Northern Hemispheres—has been in the minds of most meteorologists for many years. A plan for maps appropriate to their study was published in full in the MONTHLY WEATHER REVIEW for December, 1907, volume 35, page 559. Perhaps the first question to be decided before such maps are prepared will be whether the map of the Southern Hemisphere on a polar projection, should be drawn as seen from the South Pole, or as seen from the North Pole.

The ordinary geographer gives us a map of the Northern Hemisphere as seen from the North Pole and one of the Southern Hemisphere as seen from the South Pole; but all studies in which dynamics enters so intimately as it does in our meteorology require that the point of view should be uniform for both hemispheres, just as it also requires that the observations should be simultaneous with regard to time, and just as the astronomical problems require that same conformability.

The hope that Mr. Watt expresses is perfectly attainable now that the world has at hand the resources offered by wireless telegraphy and ocean cables.

What was supposed to be a mere dream 60 years ago has become an actual reality; no one can foresee what may become a commonplace matter 50 years hence.

The map of the Northern Hemisphere is a matter of coöperation between the northern nations; but these are the powers that have ruled the beginnings of civilization in both Northern and Southern Hemispheres.

A few words from the North and a little financial coöperation would quickly bring to actual realization the daily weather map of the Southern Hemisphere.

The so-called International Meteorological Congress and especially its Permanent Committee may properly take under advisement the project suggested by Mr. Watt.

Africa, Australia and South America, the South Atlantic, the South Pacific and the Indian oceans, certainly need and are worthy of a daily weather map of the Southern Hemisphere. It will pay them and will pay the merchants of the whole world.

The study of the southern map will, indeed, greatly assist the student of the northern map. From pole to pole, around the whole globe and upward to its limits, the atmosphere must be studied as a unit if we would so thoroughly understand its phenomena as to enjoy that accurate long-range forecasting which is to be the privilege of future civilized nations. "Nil desperandum, labor omnia vincit."—[C. A.]

NOTES.

The first structure that the Massachusetts Institute of Technology has erected for its own uses on its site in Cambridge is the new aerodynamic laboratory. The building is finished and the apparatus is in process of installation. The portion of its equipment that is first to be installed is the 4-foot wind tunnel with its accompanying blower. This is of the pattern now in use at the National Physical Laboratory at Teddington, England, which has furnished the plans.

SEISMIC DISTURBANCES IN THE PHILIPPINES.

The Philippine Journal of Science No. 4, published at Manila, August, 1913, contains a careful study of seismic disturbances in the Philippines by M. Saderra Masó and Warren D. Smith. The authors show that seismology and geology combined is a matter of great practical value to humanity and especially to great engineering projects. The major earthquakes are not due to volcanoes, but to splits, cracks, and shifts in the solid rock. They are tectonic and not volcanic. The practical conclusions which the authors draw from their investigations are as follows:

1. The fact of the instability of the earth's crust has been proved time and again both by tremendous catastrophes and by laboratory experiments. It has been demonstrated that many of these devastating earth movements take place along definite lines of weakness in the crust. The location and extent of these lines can usually be fairly accurately determined by a geological examination.

2. The points of intersection of such lines are dangerous as can be shown by an examination of the Province of Calabria in Italy.

3. Volcanoes are only incidental phenomena, and are results rather than causes. They are usually found to be lined up along some rift line. * * *

5. Types of structure best suited to Philippine conditions—
(a) Bamboo houses. All parts tied together with rattan.