

trates it at all; and in meteorology, it will hereafter be known that vapour rises into the regions where clouds are forced only by being carried up by ascending currents of air containing it.—*Scientific American*.

3. AN IMPORTANT WEATHER THEORY.

M. de Pastes, in a recent paper read at the *Academie des Sciences*, propounds a theory which, if correct, may be of service in the prognostication of weather. He intimates that the polar regions are not disturbed by storms, but are regions of calm, and quotes a communication to the Academy, in July, 1870, in which he wrote: "the next winter, 1870-71, will be one of the coldest in the whole century." It will be remembered that the peculiarity of the great gale in which the Royal Charter, with several hundred passengers and crew, foundered in sight of the Welsh shore, was its extreme coldness: it was due to a polar current. In a recent article on the meteorological arrangements of America, Professor Maury dwells upon the importance of enlarging the applications of the electric telegraph. In November, 1864, he says, while the Anglo-French fleet was operating in the Black Sea against Sebastopol, telegraphic communication was received in Paris that a great tempest was passing the western coast of France, and, according to barometrical indications was on its way eastward. Marshal Vialant telegraphed from Paris in time to enable this splendid fleet to put to sea before the cyclone could traverse the five hundred leagues and disperse the ships. The storm came with fatal fury at the predicted hour, and so ravaged the Crimea that the allied camp presented a scene of havoc and ruin such as the combined fire of all the Russian forces could not have wrought. The telegram saved the allied navies from a most destructive disaster, which might well have disabled them from sustaining the besieging armies, and possibly have changed the course of the great Eastern war. In a year the great plague of London destroyed 90,000 lives, in a single day, the 5th of October, 1864, the storm which swept over Calcutta destroyed 45,000 lives. It is even asserted that, with daily telegrams from the Azores and Iceland, two or three days' intimation could be had of almost every storm that visits Great Britain. The telegram from Iceland would give timely information of the Polar air-current, that from the Azores of the tropical air-current. The accuracy of Maury's cyclonic theory of storms has been demonstrated by Dove and Thorn for the Indian and China seas, and Mr. Stevenson has shown that, in cases where storms passing over the British Isles have appeared to deviate from the cyclonic law, the result may be demonstrated to be due to the collision of interfering cyclones—a phenomenon which will repay further investigation.

4. THE DECEMBER ECLIPSE OF THE SUN.

On the 12th of next December there is to be a total eclipse of the sun. It will be visible close by Arabia, first in the open sea. It will traverse the northern part of the Indian peninsula. It will thence pass across the northern extremity of Ceylon. It will not touch land again until it reaches the south of Sumatra and the western extremity of Java. Thence it will cross the northern part of Australia, and, except in some of the smaller islands of the Polynesian group, it will not be seen again on land. We notice that the Governments of Europe, particularly that of Great Britain, are preparing to send out expeditions to the available points of observation; and it is stated that some of the best astronomers of Great Britain and France, encouraged by the results of the experiments made on the occasion of the last solar eclipse, are determined at all hazards to find their way to Java, and, from that point of observation, to examine once more, with all the aid that science can give, the sun's corona. What the corona is, is as yet a puzzle to the philosophers. Theories are numerous. The spectroscope is again to be largely used, and every attempt will be made to procure accurate photographs. A Dr. Huggins has devised a telescope, by means of which one observer will be able to study the aspect of the corona, while another will study the spectrum of the light from the same part. This instrument is, we understand, to be taken out to some suitable point of observation.

IV. Papers on the Condition of our Schools.

1. NECESSITY FOR PROPER "SCHOOL ACCOMMODATION."

The School Law Improvement Act of 1871 very wisely enacts in its second section, that

"Each school corporation [in city, town, village, or rural section,] shall provide adequate accommodations for all the children of school age resident in their school division or municipality."

The necessity for such an enactment has been for years fully demonstrated to every one familiar with the condition of the school premises, especially in many of our rural sections. The following remarks of an active Inspector, who has been inquiring into the matter, will excite a painful surprise that trustees could allow such a state of things to exist, especially in an old and prosperous neighbourhood. He writes:—

"The management of the schools, with a few exceptions, is deplorable in all the stages. Even the bodily comfort of young children is often shamefully neglected. Yesterday I examined a school in an old settlement. On entering, the first object that met the eye was a row of little boys, apparently about six or seven years of age, seated on a piece of scantling about six inches wide, and raised on two pieces of firewood, so as to elevate the seat to seven or eight inches above the floor, consequently they had their knees in proximity to the chin, and were shivering with cold,—the north wind blowing freely through the spaces between the logs of the miserable building. The teacher said she had remonstrated with the trustees, but in vain. None of the trustees can either read or write. I sent them a message through their secretary-treasurer, which I hope they will attend to. It is needless to say that the state of learning was of a piece with the building and its surroundings."

In order to give effect to the wise provision of the law requiring trustees to remedy such an inhuman state of things, the following regulations have been adopted by the Council of Public Instruction:

Adequate School Accommodation.—The law declares trustees "shall provide adequate accommodations for all the children of school age [i.e., between the ages of five and twenty-one years, resident] in their school division." (i.e., school section, city, town, or village.) These "accommodations" to be "adequate," should include

- (1.) A site of an acre, in extent, but not less than half an acre.
- (2.) A school house (with separate rooms where the number of pupils exceeds fifty), the walls of which shall not be less than ten feet high in the clear, and which shall not contain less than nine square feet on the floor for each child in attendance, so as to allow an area in each room, for at least one hundred cubic feet of air for each child. It shall also be sufficiently warmed and ventilated, and the premises properly drained.
- (3.) A sufficient fence or paling round the school premises.
- (4.) A play ground, or other satisfactory provision for physical exercise, within the fences, and off the road.
- (5.) A well, or other means of procuring water for the school.
- (6.) Proper and separate offices for both sexes, at some little distance from the school house, and suitably enclosed.
- (7.) Suitable school furniture and apparatus, viz.: desks, seats, blackboards, maps, library, presses and books, etc., necessary for the efficient conduct of the school. (See also note to (a) of regulation 4, of the "Duties of Inspectors," as follows):

[NOTE.—In his inquiries in these matters, the Inspector is especially directed to see whether the law and regulations have been complied with in regard to the following matters; (should he discover remissness in any of them, he should at once call the attention of the trustees to it, before withholding the school fund from the section, with a view to its remedy before his next half-yearly visit):

- (1.) *Size of Section.*—As to the size of the school section, as prescribed by the fifteenth section of the School Law of 1871.*
- (2.) *School Accommodation.*—Whether the trustees have provided "adequate accommodation for all children of school age [i.e., between the ages of five and twenty-one years, resident] in their school division," [i.e., school section, city, town, or village] as required by the second section of the School Act of 1871.
- (3.) *Space for air.*—Whether the required space of nine square feet for each pupil, and the average space for one hundred cubic feet of air for each child, have been allowed in the construction of the school house and its class rooms.† (See regulation 9, *Duties of Trustees*, above.)

**Size of School Grounds.*—The school grounds, wherever practicable, should in the rural sections embrace an acre in extent, and not less than half an acre, so as to allow the school house to be set well back from the road, and furnish play-grounds within the fences. A convenient form for school grounds will be found to be an area of ten rods front by sixteen rods deep, with the school house set back four or six rods from the road. The grounds should be strongly fenced, the yards and outhouses in the rear of the school house being invariably separated by a high and tight board fence; the front grounds being planted with shade trees and shrubs. For a small school, an area of eight rods front by ten rods deep may be sufficient, the school-house being set back four rods from the front.

†*Ventilation* becomes easy as soon as it is known that it is embraced in these two essential operations, viz.: 1st, to supply fresh air; 2nd, to expel foul air. It is evident that fresh air cannot be crowded into a room unless the foul air is permitted to pass freely out; and certainly the foul air will not go out unless fresh air comes in to fill its place. It is useless to open ventilating flues when there is no means provided to admit a constant supply of fresh air from without.