

from sunset to midnight. The difference between the daily extremes is only 6 per cent. of the whole sky.

“The observations show that the diurnal occurrence of rain on the open sea is inversely as the temperature, 684 days' observations giving 96 cases in the seven hours from 9 A.M. to 4 P.M., but 135 in the two hours from midnight to 2 A.M., these being the periods of minimum and maximum occurrence.

“The observations on the open sea give the hours of maximum frequency of thunderstorms from 10 P.M. to 8 A.M., twenty-two having been observed during these ten hours, and ten only during the other fourteen hours of the day. The daily curve of variation is thus precisely the reverse of what is observed everywhere to occur in continental climates; and the result suggests that over the ocean terrestrial radiation, or radiation from the earth with its gaseous envelope, is more powerful than solar radiation in bringing about vertical disturbances in the equilibrium of the atmosphere. Similarly, by far the greatest number of the squalls encountered during the cruise occurred during the night and the least during the day.

“The whole of the observations of the temperature of the surface of the sea and the air have been examined and compared together and sorted into 174 groups, according to geographical position, and the differences entered on the chart of the cruise. In the Southern Ocean, between lat. 45° and 60° S. the temperature of the sea was lower than that of the air, the mean difference being $1^{\circ}4$, the air being warmer owing to the prevalence of W.N.W. winds, and the sea colder owing to the numerous icebergs. South of lat. 60° S. the sea was nearly $2^{\circ}0$ warmer than the air, the result being due to the open sea maintaining a higher surface temperature, and to a greater prevalence in these higher latitudes of cold southerly winds.

“The temperature of the sea exceeded that of the air from June 1874 to March 1875, or during the part of the cruise from Sydney to New Zealand, through the East Indian Islands to Hong Kong, and thence to the Admiralty Islands. During these months, except when passing the north of Australia, the sea was much warmer than the air, the general excess being from 2° to 3° , even rising near Tongatabu to upwards of 4° . In June, when the Challenger passed the north of Australia, the climate was very dry, the sunshine strong, the evaporation large, and consequently the sea there colder than the air; whereas in the other parts of the above extensive region the rainfall was comparatively large, the sky much clouded, the evaporation and sunshine small, and the sea consequently warmer than the air.

“On the other hand, in the North Atlantic from lat. 40° to 20° N. the sea was on the mean half a degree colder than the air. This region is remarkable for its high pressure, for the winds and currents flowing out from it in all directions, its generally clear skies, strong sunshine, and consequently large evaporation, by which the temperature of the surface of the sea is lowered, while that of the air resting on it is raised, being open to