

NE covered with snow. 27th, hail. 28th, at 9.30 p.m. an ordinary meteor in S fell towards SW. Storms of wind 1st, 2nd, 6th, 13th, 14th, 18th, 20th, 21st, 22nd, 27th, 29th, 30th. Fogs 1st, 2nd, 3rd. Rain 1st, 2nd, 10th, 24th. Snow 2nd, 3rd, 4th, 6th, 7th, 9th, 12th, 13th, 16th, 17th, 21st, 22nd, 25th, 27th.

**PEMBROKE.**—On evening of 1st, and during 2nd, stormy, wind velocity 5; lightning with rain on 1st. Rain also on 10th. Storms of wind 2nd, 11th, 13th, 14th, 18th, 25th, 28th, 29th. Snow on 2nd, 4th, 5th, 7th, 9th, 10th, 12th, 13th, 17th, 24th, 25th. Crows have returned in large numbers; some ravens remained during winter; and some blue jays; a few white or spruce partridge seen. Snow began going on 20th, but wheels not used till 31st. An unusual amount of sickness and a large number of sudden deaths; typhoid fever has taken away many children and adults; also much pulmonary disease.

**PETERBOROUGH.**—On 1st, dim halo round sun; several flashes of lightning with thunder and rain at 8.28 p.m. 2nd, wind suddenly veered from SW to W at 8 a.m. and rose to velocity 6, till sunset, when it gradually subsided. 5th, two falling stars observed—one at E the other at S, the latter flashed before disappearing. Motion of both from W to E. 7th, very fine auroral display—at 9 p.m. sky overcast but clouds breaking and auroral light occasionally perceptible; at 10.40 sky clear; the whole North (to height of about 46°) filled with long thin streamers perpendicular to H moving as if blown by a gusty wind; patches of bright light appeared here and there and disappeared gradually; the whole had disappeared by 11.30 p.m. 8th, fog to E and SE on lake and river; heavy hoar frost on trees and other exposed objects. 9th, crows first observed. 15th, atmosphere hazy and smoky. 19th, fog to eastward; smoke lying in low strata, also on 20th. 23rd, halo round sun, imperfect, only half circumference towards NW. The observer says on 26th, "on this and some of the following days occurred a phenomenon which, though a frequent occurrence, is little observed, viz.: whenever, after foul weather with easterly wind, the wind goes round, by the North, to the West, the weather never settles till the wind gets to East again, and goes round by South to West. Though wind westerly 28th, 29th and 30th (after change by N from E) still the air continued raw—wind gusty—with occasional symptoms that weather was not settled." threatenings of rain on 31st, (Sunday.) Rain on 1st, 10th (Sunday), 24th (Sunday), 25th. Snow on 4th, 7th, 12th, 13th, 14th, 16th, 17th, 18th, 24th (Sunday), 27th. Snow and rain could not be separately measured on 24th, entered as rain.

**SIMCOE.**—On 7th, at 7 a.m. clouds in general moving SW, but dense volume of black clouds rapidly moving in the opposite direction; at 9 p.m. first aurora seen this year, class II. (arch and streamers), it was the segment of a circle and embraced about 60 degrees of the horizon, middle part perhaps six degrees in height, and under the middle star of Ursa Minor; afterwards rays and brushes shot upward, the most considerable one pointing up towards the broad part of Ursa Major; the whole was of a somewhat pale, milky colour; at 10 o'clock it was much broken up and much more faint and indistinct. 8th, the aurora lacteal suffusion in the North. 13th, faint auroral twilight, scarcely recognisable. 19th, large halo round moon, and very remarkable strati moulded no doubt by the upper current. 20th, large lunar halo exactly similar to that of preceding night. Rain on 10th and 23rd. Snow on 3rd, 4th, 7th, 12th, 16th, 17th, 21st, 22nd, 24th and 28th. 30th, a clear silvery auroral suffusion in the north of considerable extent which lasted from 9 till 12 p.m.

**STRATFORD.**—On 1st, at 6.55 p.m. lightning seen; rain from 5 to 10 p.m. 2nd, storm of wind NW. 5th, crows first seen. 10th, rain, depth 1.591. 13th, evening windy. 15th, lunar halo. 16th, at 1 p.m. large solar halo; at 5.30 p.m. storm of snow and wind began; 17th, snow ended at 8.30 p.m. depth, 4 inches, wind lulled about 9 p.m. 19th, at 9 p.m. imperfect lunar halo. 20th, lunar halo. 21st, storm of wind and snow—snow ended at 11.30 p.m. of 22nd. Fogs 1st and 10th. Snow on 2nd, 3rd, 4th, 6th, 7th, 12th, 16th, 17th, 21st, 22nd, 24th, 27th. Spring birds first seen on 31st. The thermometrical means for the month are all lower than the corresponding means for February.

**WINDSOR.**—On 1st, fog. 7th, meteor from Z to W; the auroral display on this night was of great beauty—the arch rising about 30 degrees above the horizon, streamers shooting to the zenith, dark cloud underneath; motion vertical and horizontal, with distinct prismatic colouring. 8th, the rossignol (gray bird) seen and heard for the first time. 15th, bright and large lunar halo. 19th, lunar halo at 8.30 p.m. which disappeared at 9 p.m.; strong haze on horizon on morning of 19th. Storms of wind 20th and 21st. Rain on 1st, 10th and 24th. Snow on 3rd, 6th, 7th, 11th, 16th, 21st, 22nd, 26th, 27th.

## 2. A THEORY OF THE TIDES.

The phenomenon of the tides has only been recently attributed to the moon, but the theory of the tide on the side of the earth opposite the moon has never yet been satisfactorily explained. Professor Sullivan with other geographers explain it as owing to the body of the earth being drawn away by the attraction of the moon, leaving the waters behind as a tide. But a young Canadian author, Mr. E. S. Wiggins, now claims the honor of having discovered the true theory, as appears from a recent article in the *Picton Times*. After showing the futility of the idea that the earth is drawn toward the moon by such a small body, which however, it never approaches, he gives the following explanation:—"On looking at a map of the world, it will be seen that two great ridges of land on nearly oppo-

site sides of the earth, formed by the great continents, intersect the watery world from north to south. Now the moon passing transversely over these in her western course, owing to the rotatory motion of the earth towards the east, creates a tidal wave in the Atlantic, extending along the meridian of western Africa and Europe. This follows the moon westward, but can continue no farther than the coast of the New World. Here, from the resistance it receives and its tendency to seek an equilibrium, it is reflected back and is recrossing the Atlantic by the time the moon has originated a similar wave on the opposite side of the earth in the Pacific." This, he thinks is plainly proved by the fact, that, as has long been a source of marvel, the tides never appear but once every twenty-four hours south of Cape Horn or the Cape of Good Hope, owing, he opines, to the continents not extending far enough south to reflect the tidal wave. All this seems plausible, when it is considered that in the mid-ocean the tides never rise higher than five feet and that they are always later on the eastern coast of Great Britain than on the western, which all admit to result from the motion of the tidal wave towards the east.

## V. Papers on Natural History.

### 1. THE ANIMALS OF AUSTRALIA.

It is said that the birds of Australia do not sing, that they merely chirp and chatter. Some of them chant most hilarious notes, like the tinkling of bells. The "laughing Jackass" is a prodigy, giving out unexpectedly a low uproarious noise, sufficient to awaken the "seven sleepers." Many of the birds are of the same type as those of Great Britain; some, however, varying a little in their plumage. There is the domestic pet, the robin, with the wren, wagtail, crow, curlew, plover, and snipe. There are also the harbingers of spring and summer in the several varieties of swallows, and the cuckoo. The cuckoo is only heard at night. There are bats, owls, and hawks in great abundance; and the mountain pheasant or lyre bird, which, however, is rare. The eagle hawk is very large and destructive to young lambs; there is one species of pure white color. There are many varieties of pigeons; one is very small, being about the size of a house sparrow. It is seldom that more than two or three are seen together; and there are no large flocks of them, such as are seen in the forests of New Zealand. The fleshy berries with which the pine trees are there covered furnish them with the greatest abundance of food, and they do not appear to have the enemies there which they have in Australia.

The macaw, a large black parrot, and the quail, seem to be the only two birds alike in both countries, with this remarkable difference—the macaw in New Zealand is very tame, permitting one to come near and kill it; at least I know that one permitted me to approach it; but in Australia it is exceedingly wild—said, indeed, to be untameable. There are some large birds in New Zealand which do not fly, and some of singular habits, as the mutton bird, which burrows holes in sandy places in the ground. The natives have their seasons for catching them, and adopt ingenious methods for preserving them when killed for future use by the use of their fat and aromatic herbs. There is the robin, too, in New Zealand where it is very tame. Whilst travelling one perched itself on my shoulder. There are many other birds of hallowed associations, which make the forest resound with mirth and melody. The most remarkable perhaps, is the "tui," or "parson bird," the latter name having been given it in consequence of its being jet black, and having two small white feathers, like a clergyman's bands, hanging out from its breast. It is of the same size as the blackbird, and is the most noisy of all the New Zealand birds. There are parrots in New Zealand, but not in any proportion to the very great variety which exist in Australia.

The climate in Australia being so widely different, there is a corresponding difference in animal life. Among the birds the most prevalent are parrots. The large white parrot cockatoos are always seen in flocks, and are great pests to the farmers. The greatest favourite is the magpie, which may always be observed hopping about the door of a dwelling, piping out a long carol of friendly salutations. Of the wild turkey, more properly the bustard, one seldom sees more than two together. The brush turkey, very like the Norfolk, but much smaller, and found in the scrubs in hot districts, is very remarkable for laying a large quantity of eggs, for covering them with leaves and sand, and leaving the sun to hatch them. The emu is nearly as large as an ostrich, to which it bears some resemblance, but it is dark in color. It lays about a dozen eggs, and hatches them in the same way as domestic fowls. Large numbers of them may be seen together; they do not fly, and owe their safety to their fleetness in running. A stroke from one of their feet will stun, if not kill a dog, which may attempt to seize it. The native companion is a gigantic crane, which is very easily tamed, but it is