

occasion the temperature above and below the Fall did not differ more than a fifth of a degree if as much.

On reflection it would appear that though an immense amount of heat may be evolved by the mechanical energy of the cataract, yet the temperature produced, and, if we estimate the height of the fall at 160 feet, this will give an elevation of temperature for every pound of water, of about one-fourth of a degree. The difference of observed temperature is less than this amount, and the excess was probably expended principally in producing the constant formation of the clouds before described. All these observations were made in the course of about six hours, and though they may not establish definitely, any important fact, yet they may serve to indicate a line of interesting investigation in regard to the phenomena present in unparalleled magnitude in this cataract.

3. GREAT DIFFERENCE IN THE VOLUME OF WATER AT THE FALLS AND AT THE OCEAN.

Lieut. Maury, in lecturing recently on the meteorology of the Lakes, spoke of the vast work of evaporation going on in the great chain of lakes on the North American Continent. He estimated that by the process of evaporation, the lakes were relieved of five or six times the quantity of water that passes over the Falls of Niagara. Just imagine half a dozen Falls of Niagara boiled, so as to pass away into the air, and you have a condensation of lake evaporation.

The chain of lakes contain one-third of the fresh water on the surface of the globe—the entire surface of the earth being divided, as follows :

	Square Miles.
Land and Water	197,000,000
Sea.....	145,000,000
Land and fresh water	52,000,000

The great chain of Lakes have been estimated to contain eleven thousand cubit miles of fresh water. To give an idea of the amount of this vast body of water, after explaining the mode of the careful measurements of the Mississippi river at Memphis, the lecturer said that the lakes contained more water than the Mississippi discharges into the gulf of Mexico in one hundred years. In other words, were all waste from the lakes by evaporation and other causes to be cut off, and a sluice to be opened the size of the Mississippi channel, it would flow for a century, in draining these vast inland seas. The lakes contain a surface of 2,000 square miles, and drain a water-shed of 50,000 square miles.

According to Col. Graham's report of 1855 to the department at Washington, the value of the shipping and commerce interested in the construction of a single breakwater at Michigan City, was \$218,000,000, and, according to observation taken, the value of the shipping and commerce passing the flats of the St. Clair, on an average of 230 days for the busy season, reached the daily average of \$1,129,223. The entire value of the lake commerce was \$200,000,000 to each lake, varying more in favor of Lakes Michigan and Huron, less to Lake Superior, and as Lake Erie is an outlet to others, amounting in its case to \$300,000,000.

VI. Papers on Natural History.

1. THE BELOVED FAMILY OF BIRDS.

A REMONSTRANCE AGAINST SHOOTING THEM.

Our feelings have seldom been better expressed than by the following, from the "Boston Courier," *appropos* of the shooting of robins and others of the beloved family of birds:—

We cannot believe it. We should require the affidavit of three respectable householders to credit such a charge against the inhabitants of that pleasant town. A hard-hearted man was said to have once burst into tears; to which it was replied that that was impossible, but that he might perchance have burst into a tear. So a man in Dedham may have shot a robin; but men there do not and cannot shoot robins.

It is our deliberate opinion that any man who would shoot a robin, would pick a pocket or sell his mother's grave for a house lot. We say a man; for boys are crude and thoughtless, and their acts of destructiveness are the expressions of the love of power, or the love of action, and are not the growth of deliberate cruelty. But a full grown man who will take aim at a robin is a possible pirate. "The notes of the robin in Spring are universally known, and as universally beloved," says Wilson. Nuttall says of him—"The confidence he reposes in us by making his abode in our gardens and orchards, the frankness and innocence of his manners, beside his vocal powers to please, inspire respect and attachment even in the truant schoolboy, and his exposed nest is but rarely molested."

The robin and the bob-o-link are the two characteristic living features in our early summer of New England scenery; and who that

has not a heart as dry as the dust of the highway, does not delight in both? What gaiety and animation the robin gives to our gardens, orchards, and lawns in June! How full of life they are, with their quick darting plumage, and their varied and overflowing song! What prettier sight is there than to see them running through the young grass, taller than themselves, and then emerging upon a swept walk, and showing the whole of their trig and cleanly turned figures! How full of charming pertness is the way in which they throw up their pretty heads and turn their bright, restless eyes from side to side, as if saying, "I am a handsome fellow, and I know it; do, please admire me." And then the song of the robin is so cheerful and cordial. He is not a brilliant bravura performer, like the bob-o-link, that huddles forth his joyous heart in such thick precipitated notes as if the longest summer day would not be long enough for him to unravel all the web of music that lies folded in his quivering frame; nor has he the sweet, pathetic, soul-like voice of his congener, the ferruginous thrush—that Jenny Lind of the feathered tribe over whose exquisite song a shade of human feeling seems to pass, like the shadow of a cloud over the stream: but his notes are joyous, honest and domestic. He is a fine ballad singer, not remarkable for tenderness or depth or for brilliant execution, but that pleases all by the charms of nature, truth and simplicity.

For two or three weeks this very year, one of these birds—at least we took him to be one—used to perch on the iron fence which is built around the garret scuttle of a house near our own, and greet the rising sun with a matin hymn. His song was the first sound we heard when the soul drifted back into the world of consciousness; and heard at that calm and silent hour, it was inexpressibly touching and sweet. It was like the voice of an angel floating out of some rift in the sky and filling the whole vault of air with overflowing sound. The heart that heard it went up to heaven on the wings of that musical orison; for the sweet creature seemed to be singing for all the little world around him a hymn of praise, and to be thanking God for the gift of another day. We were the better man all the day for the baptism of that voice, and we could no more have shot that bird than we could have shot our neighbor's baby that is just beginning to pat a greeting to us with his fat little hands.

Some persons attempt to justify their avincinal propensities on the ground that birds eat fruit, and therefore do harm to man and his works. If this means that there is any bird under God's heaven, that in the course of his life does more harm than good to man—we mean the pocket of man—it is a mistake. The plan of God in his creation is full of wisdom, and of minute and carefully adjusted wisdom. There is a balance and proportion among the various tribes of the animal creation, which cannot be disturbed. Robins eat cherries, it is true; what a shocking instance of human depravity it is! how very badly a robin must have been brought up that will steal cherries! We do not profess to have a soul above cherries; but we would rather see robins eat cherries any day, than eat them ourselves.

A knot of jolly feathered gourmands, rioting and junketing in a cherry tree, laughing and chattering and cracking jokes among themselves—doubtless at the expense of the good easy man that planted the tree, and counted upon having some of the fruit, is better than a poor play—better than many cherries. But robins not only eat cherries, but they eat worms, grubs and caterpillars; and it is the same with other birds. Between the feathered creation and the insect creation there is a proportion fixed by Infinite wisdom and goodness, and short-sighted man only makes mischief when he attempts to disturb it. If the numbers of the birds be diminished, that of the insects which do injury to the products of agriculture will be proportionally increased. Spare then, the birds, ye farmers, not merely for the sake of your children—not merely for the sake of your own better natures—but for the sake of your apple trees, your cornfields, and your kitchen gardens.

2. THE CUNNING THRUSH.

There is much more intellect in birds than people suppose. An instance of this occurred the other day at a slate quarry belonging to a friend from whom we have the narrative. A thrush, not aware of the expansive properties of gunpowder, thought proper to build her nest on a ridge of the quarry, in the centre of which they were constantly blasting the rock. At first she was very much discomposed by the fragments flying in all directions, but still she would not quit her chosen locality. She observed that a bell rang whenever a train was about to be fired, and that at the notice the workmen retired to safe positions. In a few days, when she heard the bell, she quitted her exposed situation and flew down to where the workmen sheltered themselves, dropping close to their feet. There she would remain until the explosion had taken place, and then return to her nest. The workmen observed this and narrated it to their employers, and it was also told to the visitors who came to view the quarry. The visitors naturally expressed a wish to witness so curious a specimen