THE GENESEE RIVER.

BY REV. BROWNELL ROGERS, A.M., CONQUEST, N.Y.

THE Genesee River rises in Potter County, Pa., about seven miles south of the State line. The average elevation of the highest hills in this county is not far from twenty five hundred feet. The valley of the Genesee reaches southward between the basins of the Susquehanna, on the east, and of the Chautauqua Allegheny, on the west. The water-shed between these three basins lies in the townships of Allegheny and Ulysses.

The river flows north-northwest into Allegheny County, New York, to the town of Caneadea, where its direction changes to north-northeast. This direction is held until the river reaches Lake Ontario. The total fall is about twenty-two hundred feet. Its entire length is not far from one hundred miles, but flowing so nearly northward it cuts across all the formations of the New York system from the Catskills to the Medina sandstone, these formations in this part of the State having a nearly uniform east and west strike. Yet, notwithstanding, there are but two localities where these formations are generally exposed, viz., at Portage and at Rochester. True, there are a few other places where the rock is uncovered, as at Mapes, and at Belmont, Allegheny County, New York, but these are only limited exposures, and do not at all compare with the gorges at Portage and at Rochester. It is this fact that makes the river such an interesting study; for these two gorges — the one at Portage about three miles in length, and the one at Rochester about seven — are post-glacial; the remainder of the course of the river being in a pre-glacial valley, which is nearly filled with drift. This old valley was several hundred feet deeper than at present, for the drift has been penetrated at various places two, three, and even four hundred feet before the bed-rock was reached, while on the hills, either side of the river, rock is struck a hundred feet or more above the present level of the water. Indeed, many of the tributary creeks have uncovered the native rock for some distance back from the river.

During the glacial epoch this old valley was undoubtedly filled with ice, for the terminal moraine forms the water-shed of Potter County. During the retreat of the ice, halts were made in at least three different places, allowing the accumulation of drift in greater quantities than elsewhere, thus damming up the already nearly-filled valley.

The first of these dams is about eight miles north of the State line, in the town of Willing. It was not so high, though, but, on the further retreat of the ice northward, the water easily found a way over the obstruction. This was on the western end of the dam, consequently this end has been almost entirely washed away. There are remnants, however, on the side of the valley at an elevation corresponding with the eastern end, which is left almost entire The second great glacial dam is at Portage. Here the drift formed so complete a barrier that the river was turned out of its course. But, instead of turning back again and flowing southward as the Allegheny River did, the Genesee was simply turned to the west, and re-entered its vallew below the dam. In plunging over the precipice, back into the old channel, strata of various degrees of hardness were exposed, the erosion of which has resulted in the formation of the present cañon, with its series of three water-falls. At the upper falls the walls of the gorge are two hundred and fifty feet high. Here the river makes a perpendicular fall of sixty feet; half a mile below, a perpendicular fall of one hundred and ten feet; and one and a half miles farther down, a broken fall of eighty feet. The summit rock at the lower falls being so soft, many changes have been produced in the falls during the last eighty years. A little south of Rochester the valley was again so completely filled as to turn the river out of its course, and again it turned to the west, cutting the gorge below the city, and north of the outcrop of the hard Niagara limestone which forms the summit of the falls at the head of the gorge. The depression occupied by Irondequoit Bay is the mouth of the old valley where it emerged from the Ontario plateau, but the valley itself is traced far out into the lake, where it opened into the old Erigan River. Had the Genesee valley not been so completely filled up throughout its entire length, we undoubtedly would have had another lake similar to Seneca and Cayuga Lakes, all of these depressions being the results of pre-glacial erosion. Sodus Bay and Fair Haven sustaining the same relation to these depressions as Irondequoit does to the valley of the Genesee.

ODDITIES IN BIRD LIFE.

BY C. W. SWALLOW, WILLSBURGH, OREGON.

The water ouzel (*Cinclus mexicanus*) is a very peculiar specimen of the feathered race. Here we have a bird that, from its habits, long legs and teetering motion, may easily be mistaken for a sandpiper. It may almost be called duck-like, as it is so much at home in the water, wading, swimming and diving with ease, and even walking on the bottom under water in search of food. From its shape and song it is somewhat wren-like; then again, from its bill, its song and some other points, it is quite thrush-like. The bird is not especially noted for its musical ability, yet when its sweet trills and warbles are heard in the wild forest near some rocky stream, where song-birds are rare, it is certainly charming to one that loves bird notes.

The ouzel, or American dipper, as it is sometimes called, is a western bird, found along the mountain streams between the Rocky Mountains and the Pacific coast. The birds are bluish-slate in color, darkest on top of head, back and wings. Tail nearly black. The winter plumage and young have the feathers of the throat and underparts and some of the wing feathers white-tipped, giving some specimens the appearance of being quite gray. These odd birds are about 7 inches long, with 11 inches extent of wings; wing, 3.5 inches; tail, 2 inches; tarsus, 1.1 inch; bill, .7 inch, horn-blue, yellowish at base; feet and legs yellowish. The nest, placed by or under the upturned roots of a tree or an overhanging rock or like situation, is a well-made, dome-like structure of moss and rootlets, with the entrance on one side. One nest that I examined had the entrance nearly concealed by a swinging door of moss, evidently placed there for that purpose. They are said to lay about five pure white eggs.

Perhaps one of the most odd of American birds, in habits as well as appearance, is the evening grosbeak (*Coccothraustes vespertina*). Although seemingly very widely distributed, it being reported from the New England States to Oregon and from Mexico to Canada, yet little if anything seems to be known of its breeding range and habits. Last winter, 1891 and 1892, it was quite a common bird in the vicinity of Portland, Oregon. I often observed a flock of about a score which came to a certain locality nearly every morning for a number of weeks to feed on the buds of the vine maple. I noted them from December, 1891, until April 25, 1892. This winter I have failed to see or hear one in the same localities, although it has been a much more severe winter, and would naturally lead one to expect northern birds to be more abundant than last winter, which was remarkably mild.

These birds utter a clear, bell-like chip, when flying, and occasionally when on trees; it seems to be a call note. The largest specimen I have measures as follows: Length, 8 inches; extent of wings, 13.85; wing, 4.5; tail, 3; tarsus, .75; middle toe with claw, .95; hind toe with claw, .65. They have a very heavy, cone-shaped, greenish-yellow beak about .8 inches long, by .6 broad, and .65 deep at base. With their odd colors of yellow, black and white, these birds may remind one of the setting sun, night and snow. They have a black crown patch nearly enclosed by yellow on forehead and stripes over the eyes running back to the nape; a few black feathers at base of bill; neck, sides of head and throat brownish-olive, shading into yellow on the rump and underparts; wings and tail black; secondary coverts and some of the secondaries white, producing a large white blotch on each wing; under tail coverts yellow; feet and claws light brown; closed wings reaching to within about one-half inch of end of tail. The winter habits of the bird seem to be very much like the pine grosbeak (*Pinicola enucleator*), which is quite common in the eastern States some winters.

Another species that would be included as oddities is the chats (*Icteria*), represented in the eastern States by (*Icteria virens*)

yellow-breasted chat, and in the Pacific coast by (*I. v. longicauda*), long tailed chat. The western variety can hardly be distinguished from the eastern except by the longer tail and perhaps brighter colors. These birds are about 7 inches or a little more in length, having an extent of wings of 9.5 inches; wing a little more than 3 inches, the tail of the western bird being about the same length; bill, .65 inch long. They are slaty-brown on the head, neck and back; wings and tail brown, tinged with yellow; throat and breast bright yellow; underparts brownish-white; yellow of the throat bordered with white; a few white feathers about the eyes, and a faint light stripe from nostril to eye. They build quite a bulky nest in bushes or briars near the ground, and lay from four to six white eggs, spotted with brown. As a songster, for variety and execution, I think they are second only to the mocking bird in Oregon; but in the eastern States I do not think they can equal the brown thrasher or catbird.

In the breeding season the chats have a peculiar habit of flying up and dropping down nearly straight, beating the air with their wings incessantly. Occasionally they will remain almost stationary in the air for several minutes, beating the air with their wings and singing. At times they flap their wings so as to be heard some distance away.

A curiosity in the owl family is the pygmy owl. One variety (*Glaucidium gnoma*) is quite often seen in Oregon. They are well named pygmies, as they are only about 7.25 inches in length and 14.5 in extent of wings; tail, 2 85, of twelve feathers; bill, greenish-yellow with lighter tip; feet and claws brownish-black. This little owl appears very much like a miniature barred owl (*Syrnium nebulosum*), as it has a smooth head with no ear tufts, and is marked much like the barred owl, being of a slaty-brown, thickly barred and spotted with white, darkest on the wings and back, lighter on the underparts. This little owl I think is more of a day-bird than most of the family, as it may quite often be seen on cloudy days out hunting for mice and small birds, or even moths and insects, which I think sometimes form part of its food. It no doubt breeds in hollow trees, but I have never found its nest.

TELEPHONING BY INDUCTION.

BY G. H. BRYAN, M.A., ST. PETER'S COLLEGE, CAMBRIDGE, ENGLAND.

THE wonderful revelations dealt out to an admiring public by some of our newspapers under such headings as "Science Notes" often afford infinite amusement to the initiated. Some recent experiments of Mr. W. H. Preece, F.R.S., on induction currents, have found their way into some of these collections of information in a form which makes them appear little short of miraculous. According to some accounts, Mr. Preece has solved the problem of "telephoning without wires." He had only to speak the word (so we are told) and the electric fluid *leapt across* the three miles of sea which separates the island of Flat Holm, in the Bristol Channel, England, from the mainland, and delivered its message with unerring accuracy into the telephone placed there for its reception. On reading such accounts as this the British public will exclaim, Oh! with a mixture of awe and admiration, and half a dozen "paradox mongers" will build up unintelligible theories of "the electric fluid and the way it radiates through the ether" or something of the kind — showing that Maxwell and Faraday are *wrong* and they themselves are *right*. Those, however, who know anything about electricity will smile when they see what impossibilities the presiding genius of the British Postoffice Telegraphs is credited with performing. In the first place they will know that either telegraphing or telephoning without wires is still an impossibility. Wires there must be, and the wires at the transmitting and receiving stations must form circuits enclosing a considerable area, but the important feature of the experiments is that the two different sets of wires may be some miles apart without any wire connecting them. Then, again, the idea that the "electric fluid" can jump across through three miles of air like a flash of lightning is absurd. What really happens is that every time that a current is passed through one circuit a current is "induced" in the other circuit, and when the current in the first circuit is stopped an "induced" current flows round the second circuit in the reverse direction to what it did before. This is the well-known principle of electro-magnetic induction, which has given rise to the induction coil, the dynamo, and indeed to most of our modern applications of electricity. The remarkable thing about the present experiments is that they show that this "induction" can not only make itself felt at such great distances, but can actually be utilized to transmit telephonic messages. At present we can only speculate as to the way this "inducing action" takes place, all that we can assert definitely is that *no* electricity passes from one circuit to the other. Even if we regard the action as magnetic, the "lines of magnetic force" do not go from one wire to the other, on the contrary they encircle the wires and do not anywhere terminate on a wire. Again, so far from the action travelling with unerring accuracy in any particular direction, the same message would be transmitted to a receiving apparatus placed anywhere in the neighborhood, provided that it was furnished with a sufficiently large circuit of wire, so that if several transmitting apparatus were in use at the same time in any particular neighborhood, the various messages would get confused.

Scientific discoveries such as this appear to be comparatively simple matters on paper, but they are usually the outcome of many years of patient experimenting It is more than six years since Mr. Preece described some similar experiments made with the telegraph wires running up the northeast and northwest coasts of England respectively. In these experiments, however, the primary current was produced by means of a powerful dynamo, but the induced current right over the other side of England was sufficient to produce a sound "very like a wail" in the telephone employed for its detection.

Feb. 10, 1892.

LETTERS TO THE EDITOR.

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The So-Called "Cache Implements"

THERE has recently crept into archæological literature an unfortunate, because misleading, term for a well-known form of chipped-stone tool or weapon, that of "cache implement." This name has been suggested, on the ground of the erroneous assumption, that long, narrow blades of jasper, argillite, and other flakable stone were only to be found in "caches" or deposits, and then, continuing the argument, because so found, they were unfinished objects and in time were to be disinterred and converted, by further chipping, into knives, spear-heads, and, possibly, arrow-points There is not a scintilla of truth in this, so far as any living man now knows. It fits admirably, however, with a plausible theory by a coterie who have failed to make any important archæological discovery, and so is one of their mainstays in proving the modernity of America's native people; something that must be *proved* at all hazards; or, if not demonstrated, foisted upon the unthinking to secure the scientific prominence of a few archæological mugwumps.

When we examine a series of these "cache" implements, it will be seen that they are not too long, too broad, or too thick to be used as weapons or domestic implements, but lacking an evidence of a notched or narrowed base appear unavailable so far as the matter of attaching a handle thereto; *ergo*, an *un-handled* implement being an impossibility, they are unfinished. If, however, the reader will refer to "Remarks upon Chipped Stone Implements" (Bulletin of the Essex Institute, vol xv., 1883) he will find there pictured just such objects as I refer to, with short wooden handles secured by a "tenacious substance probably obtained from the cactus." Now, the Delaware Indians made most excellent glue by boiling together cherry gum and fish-bone and so could as readily have secured handles to these plain blades and, considering how frequently single whole specimens and broken ones are found on village sites, it is clearly obvious that they were in frequent use.