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.

**** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

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.