LETTERS TO THE EDITOR.

The muskrat carnivorous.

I HAVE seldom been more surprised than at the statement that the carnivorous habits of the muskrat have but just been discovered by scientific men. They are so often mentioned in treatises on American conchology, that a little reading would have prevented the error. Thus Dr. James Lewis says of the Unionidae, "They afford abundant food for the muskrat and mink;" and like quotations might be given. But the fact is not left out of sight in treatises on the Rodentia. In the 'Mammalia of New York,' published by the state, De Kay says of the muskrat, "It is also extremely fond of the fresh-water mussel (Unio), heaps of which, in a gnawed or comminuted state, may be found near their retreats." Tenney's 'Zoölogy,' a mere schoolbook, says, "Muskrats feed upon mussels, and roots of grasses, and aquatic plants." To my knowledge, they feed on Unios throughout the year, but mostly in winter and spring. The floor of my boat-house is covered with shells, left by muskrats, every spring; and I have often stopped at the heaps of shells by their holes to see what species occurred near. The fact that they eat fish has certainly been less known.

There seem to be four principal ways in which muskrats get at the animal in the mussel-shell. In a small lake near me there are very fine specimens of Anodonta fragilis, but in such situations that it is almost impossible to get the finest ones alive. The shells are large, but almost like paper; and the muskrat invariably tears off one valve. In the thicker shells of Seneca River, not far off, its common way is to break the thinner end of the shell. In the much heavier shells of the west and south, I have heard that they either gnaw the hinge-ligament, or allow the animal to freeze and open.

While speaking of the Unionidae, I may mention a curious circumstance. Very few of their shells are to be found on one shore of Onondaga Lake, which is flat and marly; and this is partly so because the animal burrows deeply in the tenacious mud, and is not easily dislodged. But I passed that shore one day when a number of Anodonta Benedictii were washed in. They were helpless in the waves; but, when they had rested a while on the beach, they got up on edge, protruded the muscular foot, got a firm hold on the marl, and worked their way back to the water with apparent ease. W. M. BEAUCHAMP.

A census of hallucinations.

In a letter which you published on Dec. 5, I mentioned a sort of census whereby we are inquiring what proportion of the population has experienced waking visions of absent friends; the object being to discover how far *chance* may account for the numerous cases where such hallucinations have coincided with the death (or some serious crisis in the life) of the person whose presence was suggested, or how far, on the other hand, these cases drive us to some such hypothesis as 'telepathy.' In a letter published by you on the same day, Professor Newcomb has objected that untrue answers may be given by persons wishing to amuse themselves at our expense. I am far from denying that persons may exist who would be glad to thwart us, and amuse themselves, even at the cost of untruth. But when the question is put, "Do you remember having ever distinctly seen the face or form of a person known to you, when that person was not really there?" it is not at once obvious whether the *amusing* untruth would be 'yes' or 'no.' In neither case would the joke seem to be of a very exhilarating quality; but, on the whole, I should say that 'yes' would be the favorite, as at any rate representing the rarer and less commonplace experience. 'Yes' is, moreover, the answer, which, as a matter of fact, it has been very generally thought we ourselves preferred; so that to give it might produce a piquant sense of fooling us to the top of our bent. But a moment's reflection will show, that, so far as the census might be thus affected, it would be affected in a direction *adverse* to the telepathic argument; for the commoner the purely casual hallucinations are reckoned to be, the stronger is the argument that the visions which correspond with real events do so *by chance*. And if the number of these coincident visions makes the chance-argument untenable, even when the basis of estimation is affected in the way supposed, *a fortiori* would this be the case if the *yeses* were reduced to their true number.

While on this point, I may add that in such a census as ours there are reasons why, quite apart from untruth, an unfair number of *yeses* are sure to be obtained. One chief reason is, that, when forms to be filled up are distributed on a large scale, it is impossible to bring it home to the minds of many of the persons whose answer would be 'no,' that there is *any use* in recording that answer. Their instinct is, that results, to be of scientific value, must be positive, like natural-history specimens. This difficulty has been encountered again and again; and I feel little doubt that the proportion of *yeses* to *noes* will in the end be quite double what it ought to be: in other words, the telepathic argument, if it prevails, will prevail, though based on data distinctly unfavorable to it.

As Professor Newcomb seemed to confine his objection to the results of the census, I need not occupy your space with a description of the various precautions by which we ascertain that our cases of *coincident* visions — of *veridical* hallucinations — are *bona fide* records. Suffice it to say, that, whatever the possible sources of error in our evidence may be, — and there are some which demand unceasing care and watchfulness, — deliberate hoaxing is a danger which we believe we can reduce to an amount that will not affect the validity of our general conclusions.

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Dec. 22.

Dikes of peridotite cutting the carboniferous rocks of Kentucky.

Prof. A. R. Crandall, of the Kentucky geological survey, has recently discovered in Elliot county, of that state, several dikes of very interesting peridotite, which intersect the carboniferous formation. It very rarely happens that such youthful felspar-free, massive rocks occur in regions of so little disturbance as eastern Kentucky, and under such circumstances that their eruptive character can be established beyond question. Professor Crandall and myself, with the approval of the U. S. geological survey, hope to be able to give these rocks the careful study they ought to receive. J. S. DILLER.

U. S. geol. survey, Washington, D.C.

Lake Mistassini.

Your contributor, Prof. J. D. Whitney (*Science*, No. 100), is quite mistaken in ascribing the recent newspaper paragraphs referring to Lake Mistassini

as having been caused by Professor Laflamme's communication to the geographical section of the British association at its late meeting in Montreal.

They commenced with a very sensational article in the *Montreal witness* dated Quebec, Nov. 17, arising out of an interview of a reporter with Mr. F. H. Bignell, a gentleman who had just returned from a trip to the Hudson Bay post on Lake Mistassini, made for the purpose of taking in supplies for the winter consumption of the party organized and despatched last spring, by the geological survey, to explore that region, and to complete the survey of the lake, which was commenced in 1870, and continued in 1871, as described in the report of the survey for those years, and of which surveys Professor Whitney does not appear to be cognizant, or of my letters to the editors of the *Ottawa free press* and the *Montreal gazette* of Nov. 17 and Nov. 25 respectively, in which the substance of the foregoing remarks was stated.

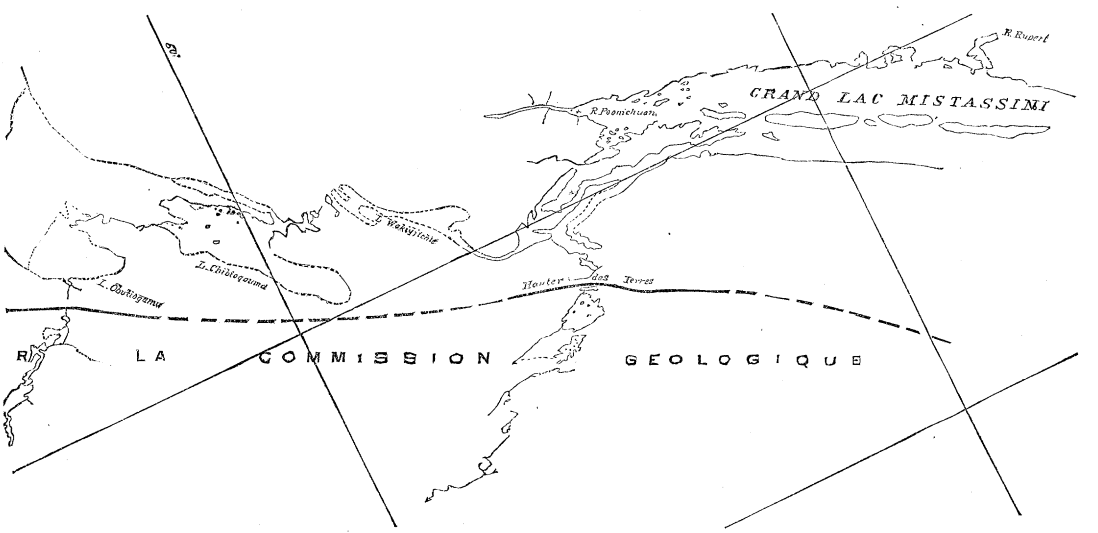
assigned to it in the geological survey map of 1866, while its outline is also very different. That it consists of several almost separate lakes, as described by the old explorers, is, I think, certain; but the assumption that there is a body of water in any way comparable to Lake Superior is exceedingly improbable, and not warranted by any recorded observations.

ALFRED R. C. SELWYN,
Director, geological survey of Canada.

Lava from the new volcano on Bogosloff Island.

Three specimens of the lava which was erupted from the new volcano on Bogosloff Island, Alaska, in October, 1883, were sent by Sergeant Applegate, the signal-service observer at Unalashka, to the central office in Washington, and referred to the U. S. geological survey for investigation.

It is gratifying to note that an examination of these



The only published map on which the result of these surveys of 1870 and 1871 by the geological corps is correctly laid down, and which Professor Whitney has probably not seen, is enitled "Carte de la Province de Quebec, Canada. Dressé au département des Terres de la Couronne, par Eugène Taché, assistant commissaire, 1880." The map is on a scale of fourteen miles to one inch; and on the face of it, in the Lake Mistassini region, we find the words 'Exploré par la commission géologique.' This map, and the report I have referred to, give the latest authentic published information about Lake Mistassini. The survey of the lake is, I hope, now in progress; and next year the size of it, and of its numerous arms, will be definitely known from actual measurement. Geologically it is a basin of flat-lying limestones, probably of lower Cambrian age, resting on Laurentian and Huronian rocks.

I enclose a tracing of the lake as it appears on the Quebec crown-lands map. The latest general map of Canada is that published in 1882 by the Department of railways and canals, Ottawa. I have not seen the Arrowsmith-Stanford map of 1880; but, in the recent maps I have referred to, the position of the lake is nearly half a degree west, not east, of that

specimens has verified to the fullest extent the hypotheses made concerning the source of the volcanic sand which fell at Unalashka, Oct. 20, 1883, and the mineralogical composition of the lava from which it originated. The facts noted in Mr. Applegate's letter of information render it altogether probable that the volcanic sand came from the new volcano on Bogosloff Island, and a comparison of the sand with lava from that place removes all doubt.

The members of the party from the Corwin sank almost to their knees in soft ashes; and other facts, already published in *Science* (Nov. 7, p. 432), indicate that a considerable portion of the new mountain may be composed of ejectamenta. It has been stated upon the authority of Lieut. Stoney, I believe, that "the mass of the volcano was found to be a species of sand-rock, with large black rocks scattered about the crust. No traces of lava, and but small quantities of pumice, were found." Whether the 'large black rocks' referred to are portions of lava-streams projecting through the coating of sand and lapilli, or large ejected fragments, is difficult to conjecture. We are led to believe that the specimens received were taken from such masses. Through the courtesy of Mr. Merrill, I have been able to compare