hand are very complete. Full credit will be given for every report received, and quotations will be published from reports containing information of special value.

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.*

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

On request, twenty copies of the number containing his communication will be furnished free to any correspondent.

On the Geology of Quebec City.

THE researches of Sir William Logan, Mr. Billings, Dr. Sterry Hunt, Dr. Selwyn, Sir William Dawson, Professor James Hall, Professor Emmons, Professor Walcott, Professor Marcou, Dr. Ells, Professor Lapworth, and many others, on the geology of Quebec and its environs, have made that region classic ground to the student of North American geology. The famous Quebec group controversy, as well as its closely related friend the Taconic question in geology and the Lorraine-Hudson River problem, are all involved in the geologic history of Quebec. Much diversity of opinion has existed as to the exact geological position of some of the terranes at and about Quebec City, as also along the whole line of the great Appalachian or St. Lawrence-Champlain fault; and this is not at all astonishing, seeing that profound dislocations exist, intricate foldings of strata occur, and several terranes are met within an exceedingly small area, faulted and folded together in any thing but a simple manner, which require exceedingly detailed and careful examination before satisfactory conclusions are arrived at.

The rocks forming the citadel hill or promontory of Quebec (Cape Diamond) have been assigned to different positions in the geological scale by different writers and at different times. An elaborate review of their views is given in Dr. Ells' last report to Dr. Selwyn (1888), and published by the Geological Survey of Canada, which includes Dr. Bigsby's paper (1827), down to Professor Lapworth's report, etc., published in the "Transactions of the Royal Society of Canada" (1887). These Quebec rocks have been referred by some of the geologists above named to the age of the Quebec group (Levis division), while others, and the majority at present, regard them as newer than the Trenton limestone, viz., being of "Trenton-Utica," "Utica-Hudson," or "Lorraine" age. But before assigning a definite position to the rocks of Quebec City in the scale of terranes in America, it is necessary for the writer to state that so far he has been unable to find any evidence in the field, either stratigraphical or paleontological, whereby the Hudson River rocks and Lorraine shales as originally understood by Emmons could be correlated, and referred to the same or immediately following geologic terrane.

The fauna of the Norman's Kiln shales, that of the Marsouin, of the Tartigo River, Griffin Cove, and Gagnon's Beach rocks, as well as those from Crane Island, south-western point of the Island of Orleans, Quebec City, Etchemin Riviere (between St. Henry and St. Anselme), Drummondville, and other localities in Maine, Vermont, and New York States, form one large assemblage of forms peculiar to one terrane.

The fauna of the Lorraine shales (Cincinnati era) as characterized at Montmorency Falls, Cote Sauvageau, St. Charles Valley, Charlesbourg (near Church, two miles above St. Nicholas), Yamaska River, Riviere des Hurons, and in the undisturbed regions of Ontario (intermediate between the Utica terrane and the base of the Silurian (Upper) epoch), marks another terrane.

These two faunas, I hold, are very distinct, both in their paleontological and stratigraphical relations. The Lorraine terrane (see Dr. Selwyn's classification of formations in Canada, "Index to the Colours and Signs used by the Geological Survey of Canada") has a definite position; viz., at the summit of the Cambro-Silurian or Ordovician system. The strata at Quebec cannot be referred to the Lorraine terrane, nor to the Utica, nor yet to the Trenton or the Black River formation. Sir William Logan referred the Quebec City rocks to the Levis division of Quebec group; and yet the fauna which Mr. Weston and the writer have, along with Mr. Giroux and L'Abbe Laflamme, been able to obtain from the rocks of that locality, contains some forty or fifty species of fossils, including graptolites, brachiopods, ostracods, and trilobites, different from Levis forms, and yet capable of being correlated with forms from a portion of the Quebec group of Logan as described in his Newfoundland section, as also with Cambro-Silurian strata in the Beccaginmic valley of New Brunswick.

To give the precise geological horizon of the strata at Quebec City, I hold, is perhaps premature. They appear, however, to occupy a position in the Ordovician system higher than the Levis formation, being probably an upward extension of that peculiar series of sedimentary strata occurring along the present St. Lawrence valley, and which, owing to the peculiar conditions of deposition and specialized fauna entombed, Sir William Logan advisedly classed together under the term "Quebec group." This would make the rocks at Quebec about equivalent to the Chazy formation of the New York and Ontario divisions.

As to the propriety of retaining the term "Hudson River" group or terrane in geologic nomenclature at present, there may be some doubt. Much confusion exists as to its use. It would very naturally follow, however, that some such designation as the "Quebec terrane" or "Quebec formation" would be most acceptable at this particular juncture, and would include those rocks which constitute the citadel and main portion of Quebec City and other synchronous strata.

In a paper which the writer is now completing for the approaching meeting of the Geological Society of America next month, on the same subject, a more detailed and exhaustive demonstration will be made of the facts now in our possession, whereby to correlate many series of strata hitherto separated, and differentiate others which are by nature unlike. HENRY M. AMI.

Geological Survey of Canada, Ottawa, Nov. 28.

The Education of the Deaf.

POSITIVE evidence is all the world over regarded as of more value than negative testimony; and any one desirous may convince himself that congenital deaf-mutes can be taught to use spoken language correctly by articulation and by writing, without the intervention of any artificial signs, by a pilgrimage to the Institution for the Improved Instruction of Deaf-Mutes, corner of 67th Street and Lexington Avenue, this city; the Clark Institution for the Deaf at Northampton, Mass.; or the Day School for the Deaf, Boston, Mass. Any unbiased individual will come away from such a visit with the firm conviction that some teachers for the deaf have been for the last seventy years working great detriment to the elevation of an unfortunate class of our fellow-beings by preaching the fallacious and utterly untenable doctrine that such an education is an impossibility, and impracticable if possible. B. ENGELSMAN.

New York, Dec. 2.

BOOK-REVIEWS.

Are the Effects of Use and Disuse Inherited? An Examination of the View held by Spencer and Darwin. By WILLIAM PLATT BALL. London and New York, Macmillan. 8°.

THIS book is ultra neo-Darwinistic. Natural selection has achieved every thing, according to the author: the effects of use and disuse are not inherited. "Innumerable modifications in accordance with altered use or disuse, such as the enlarged udders of cows and goats, and the diminished lungs and livers in highly bred animals that take little exercise, can be readily and fully explained as depending on selection. As the fittest for the natural or artificial requirements will be favored, natural or artificial selection may easily enlarge organs that are increasingly used, and economize in those that are less needed. I therefore see no necessity whatever for calling in the aid of use-inheritance, as Darwin does, to account for enlarged udders, or diminished lungs, or the thick arms and thin legs of canoe Indians, or the enlarged chests of mountaineers, or the diminished eyes of moles, or the lost feet of certain beetles, or the reduced wings of logger-headed ducks, or