

CORRESPONDENCE.

THE TILL IN NEW ENGLAND.

SIR,—Recent explorations of Professor C. H. Hitchcock and the writer in the Geological Survey of New Hampshire show that the unmodified drift in that State consists commonly of two deposits, quite distinct from each other. These appear to correspond to the *lower till* and *upper till* of Scotland and Sweden, described in the second edition of Geikie's *Great Ice Age*.

The lower till of New Hampshire and other parts of New England is composed of boulders, gravel, sand, and clay, indiscriminately mingled together, without any traces of stratification such as is produced by currents of water. Most of its pebbles and boulders have their sides planed to flat surfaces, which often retain striæ. The detritus in which these are imbedded is usually clayey and dark or bluish in colour, its iron being in an imperfectly oxidized state. This deposit is also distinguished by its being very hard and compact, so as to require it to be loosened by a pick before it can be shovelled, which has gained for it among the common people the name of "hard pan." It is the lowest in our series of glacial deposits, and appears by all these features to be the ground-moraine of an ice-sheet. Its accumulation seems to have been by the gradual addition or lodgment of material upon its surface, as is shown by a kind of lamination, which is almost always noticeable in sections that have been for a short time exposed to the weather. The detritus, though filled with rock-fragments, is obscurely divided into flakes one-eighth to one-fourth of an inch thick, which lie in planes parallel to the surface.

The upper till is a confused mixture of boulders, gravel, and sand, but seldom contains any considerable proportion of clay. It usually shows no stratification of any kind. Its rock-fragments are mainly rough and sharply angular, showing no marks of attrition, and they are generally larger than those in the lower till. Blocks occur in both up to ten feet in diameter, and in the upper till have sometimes from twice to four times that size. The colour of the upper till is yellowish, its iron having been fully oxidized. This deposit is loose, and may be easily excavated. It seems probable from these characteristics that this was material contained in the ice-sheet, gathered into it in its passage over hills and mountains, and that at its final melting the upper till was dropped loosely upon the lower till, or ground-moraine, on which it lies, being separated at a definite line.

The lower till occurs in flattened or undulating sheets generally throughout New England. It also forms in some districts very remarkable oval hills, which are from a few hundred feet to a mile in length, with two-thirds as great width, while their height correspondingly varies from 25 to 200 feet. But whatever may be their size, they are singularly alike in form, having steep sides crowned by a gracefully rounded top, presenting a very smooth and regular

contour. From their resemblance in shape to an elliptical convex lens, Professor Hitchcock has called them *lenticular hills*. The trend of their longer axis is always approximately parallel with the stræ marked upon the bed-rocks of the same region. These accumulations are scattered without any apparent order quite abundantly upon areas five to ten miles wide, and ten to twenty-five miles long. One of these areas includes Boston and its harbour, and extends five to fifteen miles on all sides of that city; while North-eastern Massachusetts and Southern New Hampshire have three belts of territory upon which these lenticular hills abound. These areas are separated by others of equal extent, which are entirely destitute of such accumulations of till, or show only occasionally one, quite typical and prominent, but isolated from all others of its kind.

These hills, like the valleys and the whole of New England, are overspread by the nearly universal mantle of the upper till, which is commonly between one and five feet in depth, but sometimes reaches to ten or twenty feet.

As this MAGAZINE has formerly presented instructive comparisons of the superficial deposits in Great Britain and in America, I would like to inquire through its pages whether British geologists have noted accumulations of till like our lenticular hills.

NASHUA, NEW HAMPSHIRE, *April* 14, 1879.

WARREN UPHAM.

THE GEOLOGICAL CONGRESS AT PARIS.

SIR,—I am requested by an eminent foreign geologist to make the following additions and corrections with regard to the article on the International Geological Congress signed "A. L.," which appeared in the GEOLOGICAL MAGAZINE for this month.

The Committee on Nomenclature included Professor Dewalque of Liège as Secretary, Professor Hébert being its President. Since then, Professor Ferdinand Römer, of Breslau, has occupied the office of German representative.

Professor Hughes, of Cambridge, is entered as member of both Committees; this double appointment has been made since the Congress, and is contrary (as I am informed by the eminent geologist aforesaid) to the principles of the Congress. The complete absence of non-colonial Englishmen at the Congress was much discussed at the time, and the fact that a country like England should be unable to provide *two* geologists to join in the Universal Congress augurs but poorly for the success of the meeting at Bologna. F. G. S.

April 28th, 1879.

BEEKITE FROM THE PUNJAB, INDIA.

SIR,—In a paper read before the Geological Section of the British Association held at Cheltenham, in 1856, Mr. W. Pengelly brought to notice a very remarkable and somewhat unique form of chalcedony, found plentifully in Torbay among the Triassic conglomerates, to which the name of Beekite has been given from Dr. Beeke, a former Dean of Bristol, by whom they were first publicly noticed. These Beekites consist of calcareous nuclei in a more or less advanced