

WHY ARE THE LARGEST STONES FOUND AT THE EAST END
OF THE CHESIL BANK ?

SIR,—At the risk of being charged with repetition, may I ask for space to cry *Io Triumphe!* that both your correspondents on this subject in June last call in the stroke of the wave, instead of requiring a “tidal current” to lift pebbles 42 feet above its own level. This is a charming change in theory. Those who wish practically to study the question have no need to go to Portland. They have only to observe the beach between any two groins. They will there always find the largest pebbles heaped at the leeward end. The reason is that when motion is given to pebbles, the largest are always on the outside. Shake the sugar-basin: the small sugar descends, the large lumps rise. The large outside pebbles then are always most exposed to the upward and onward stroke of the wave as it travels down the wind. As Portland runs out to sea nearly at right angles to the line of coast, it is a gigantic “natural groin.” As a civil engineer, Mr. Reade must be well aware of the resistless force of the impact given to the wave by the wind. The largest blocks which man can handle with the most powerful machinery, laid so as to avoid the force of the wave by the most skilful engineers, in sea-walls, piers, and breakwaters, how often are they delivered *protervis in mane Creticum portare ventis*. Would that I could persuade him to read chap. viii. of *Rain and Rivers*, on the “Travelling of Sea Beach,” where these things are discussed at length, and to believe that storms of wind are always washing out pebbles into the clays, and forming “Boulder-clay.” Also, that all travelled drift and boulders are simply the result of sea-shore travelling. In fact, that the collection on Moel Tryfaen is a “raised beach,” and has not *flowed up* there on ice.

BROOKWOOD PARK, ALBRESFORD.

GEORGE GREENWOOD, Colonel.

BEHAVIOUR OF GLACIERS AND ICE-SHEETS.

SIR,—In his paper “On Drift,” in your last Number (p. 503), Mr. Goodchild speaks of the separate and independent movement of the upper and lower strata of ice in an ice-sheet as if it were an old-established fact, “long since stated by Prof. Ramsay,” indeed “that it was quite possible that some of the higher parts may have moved in directions *directly opposite* to the course taken by those at a lower level.” Whilst ready to concede the fact, that when the lower part of a stream of ice becomes impeded in its downward course, the upper part of the pent-up ice-stream will rise over and flow on beyond the obstruction, I fail to understand the upper strata flowing in the *reverse direction*. Will Mr. Goodchild make this clearer and refer us to Ramsay’s observation ?

J. FROST.
