Channels, and we do not know how much the Molluscan assemblage in the Channel waters was affected by the cold of the Glacial Period. If I am right in believing that the Straits of Dover did not exist at the time when the raised beaches were formed, and that the Channel Sea was then a gulf opening westward, it is probable that the temperature of the water was never very much lowered, and that its fauna underwent very little change from early Pleistocene time to the present day.

With regard to Mr. Hunt's geographical facts, I quite fail to see their bearing or why a beach at Hope's Nose should "represent a very much later stage of coast erosion" than one at Portland Bill.

The matter stands thus: It is not a case of all the available evidence tending to show that I did not know what I was writing about; the geological facts are as I have stated above, and if Mr. Hunt declines to accept the inferences that other people have drawn from them, he will have to adduce much more definite and cogent reasons for his disbelief. It will certainly take all he can get out of "geography, conchology, physics, palæontology, archæology, anthropology, and micro-petrology" to upset the geological evidence!

In 1905 he had to admit that he had completely misunderstood one important particular in Messrs. Wright & Muff's (Maufe's) account of the Cork raised beach, and it now looks as if he had quite failed to realize its bearings in another direction.

A. J. Jukes-Browne.

P.S.—Since writing the above I have discovered what Mr. Hunt meant by his reference to a Neolithic flint "*at Hope's Nose*". It is recorded in one of his own papers,[1] and, as I suspected, it was not found in the beach itself. His words are: "I noticed a flint flake jutting out of a stratum of landwash at the top of the little cliff just east of the Hope's Nose beach. It was about two feet below the surface. With it there were three other fragments and two littorina shells. I sent the flake with one of the smaller pieces to Sir John Evans, K.C.B., who replied: 'Both the enclosed seem to be artificially made flakes probably of Neolithic date.' As there are some flints in the raised beach, it seems possible that these flakes were made on the spot." It is evident, therefore, that Mr. Hunt knew that the flint was only a flake, and that it did not occur in the material of the beach but in landwash above it; yet he blandly quotes its occurrence as an argument against the early Pleistocene age of the beach! It will be interesting to learn what explanation Mr. Hunt has to offer.

A. J. J.-B.

Westleigh, Ash Hill Road, Torquay.

AGE OF RAISED BEACHES.

Sir,—In an ingenious classification of the Raised Beaches and associated deposits of the South and West of England, Mr. H. Dewey (Geol. Mag., April, 1913, pp. 154–63) refers to similar beaches in the South of Ireland and brings them within his scheme. By a round-about argument from their hypothetical relationship to the Thames

[1] Trans. Devon Assoc., vol. xxxvi, p. 475, 1905.

gravels, all these beaches are ranked in the scheme as newer than the Chalky Boulder-clay. But the only Infra-glacial beach that is known to occur within the region of the Chalky Boulder-clay, viz. that which is at times clearly exposed at Sewerby on the Yorkshire coast, is left entirely out of the reckoning. Thorough investigation of this beach by digging and borings in 1887–90 enabled me to show that it was older than the oldest ('Basement') Boulder-clay of the Yorkshire coast, which is at least as old as the Chalky Boulder-clay. Further, there can be no doubt that the Infra-glacial beaches of the South of Ireland, with which I am well acquainted, are of practically the same age as the Sewerby beach and stand in the same relationship to the glaciation. There seems every reason, also, for supposing that the Infra-glacial beaches of South Wales belong to the same period.

If Mr. Dewey be right in his correlation of the beaches of Devon and Cornwall with those of the South of Ireland, it would follow that they are older than the Chalky Boulder-clay, and not newer. But, in the absence of Boulder-clays south of the Bristol Channel, the correlation has still an element of uncertainty. Deposits of the character of 'Head' and 'Combe Rock' are unsatisfactory materials on which to base conclusions as to time-divisions of the Glacial period, since it is clear that rubbles of this type were being formed locally throughout the period in areas not covered by ice. In Yorkshire, though the chief masses occur beneath all the Boulder-clays, the rubbles are by no means confined to this horizon.

G. W. Lamplugh.

St. Albans.
April 13, 1913.

SEA-WATER AND CRITICAL TEMPERATURES.

Sir,—I certainly have never written a paper with the actual title referring to critical temperatures, but very much of my life has been spent in promulgating the view of the solubility of H^2O in fused silicates and laying down the fundamental principles of varying volcanic action based upon that as illustrated in fragmentary ejecta. Neither the critical temperature of water nor the spheroidal state has anything to do with the question, which, I have always maintained and repeat, depends on the critical temperature and pressure of solution of gaseous oxides (H^2O), etc., in fused liquid oxides and silicates.

Curiously enough, my views have never been much referred to in England, but are very generally accepted by Continental geologists, which, if we are to believe Mr. A. R. Hunt, means that English geologists read very little either the researches of their own countrymen or those of foreigners.

Nine of my papers in the list mentioned by Mr. Hunt refer to the subject under discussion, and I am now sending him a new list up to date of 161 papers, in which four others treat of the same question.

H. J. Johnston-Lavis.

Beaulieu-sur-Mer, France.
April 7, 1913.