Besides the seasonal variations, there was a gradual lowering of the temperature which produced the phenomena known as Glacial, and which characterized the Glacial period, as it is generally termed. The appearance of man at this stage may be conveniently studied from the point of view of the river deposits of Crayford, in Kent, a place remarkable for the large number of mammoths, bisons and horses, which have there been exhumed. Numerous flint splinters of unmistakeable human workmanship were discovered in the Spring of the present year, under conditions which indicated the exact spot on which an ancient hunter sat and chipped them, and these chips being so little disturbed that it was found possible to put together several large masses, and to restore some of the original nodules from which the implements were made. In one case I was fortunate enough to discover an implement rudely chipped all around which indicated that the primeval hunter of the mammoths, bisons and horses of that neighborhood was in the same state of culture as the man who hunted reindeer in the valley of the Thames in the next or the latest stage of the Pleistocene period. The river valleys of the south of England are covered with sheets of gravel termed river drift, and these contain vast numbers of reindeer, as well as bisons and horses, and were accumulated at a time when the climate was severe. In these, numerous implements were discovered, extending from Peterborough, in the north, as far as the channel. Similar implements are also met with in France, and occur in Spain, Italy, Greece, Northern Africa, and Egypt; they also occur in Asia Minor, and have been found throughout the peninsula of India. They indicate a primeval condition of savagery from which mankind has emerged, which was uniform over the whole of this area. It is not a little strange that the river-drift hunter should have used implements of precisely the same shape and material in the Indian jungles, in the forest-clad shores of the Mediterranean, and in the wilds of Middle and Northern Europe. No human remains assignable to this age are sufficiently perfect to allow of our passing opinion of man's physique, but they tell us that he was a man and not a "missing link." The researches of Dr. Abbott on the river gravels of Trenton appear to establish the fact that the river-drift man was an inhabitant of America during the time when the mammoth was living in the valley of the Delaware. The paleolithic implements of the ate Pleistocene river beds are rude and simple, although they show a considerable advance from the simple flake, which is the only trace left by the man of the middle Pleistocene. As regards the man of that period, it is probable that the plateau of Central Asia was the centre from which the race diverged.

On the bottom of the caves of Creswell, in Yorkshire, were found river-drift implements in association with vast numbers of gnawed bones of both living and extinct animals, brought in by hyenas, while in the upper portions were found implements of a higher type, composed of flint and carved bone. Among these was the incised figure of a horse; these imply a higher type than that of the river-drift, and belong to a state of culture known as that of the cave man. It seems to be unquestionable that the cave men were preceded in their habitations by the river-drift men, in some places at least, and that of the two sets of implements now found the ruder belongs to the latter race. It has been a debated question whether the civilization of the cave man was the outcome of the development of that of the river-drift man. The evidence seems to indicate that they must be classed either as two distinct races or as two sections of the same race, which found their way into Europe at widely different times—the river-drift men being of far greater antiquity in Europe than the others. The discoveries of late years tend to confirm the identification of the cave men with the Esquimaux. We infer that the cave men clothed themselves with skins, for instruments for dressing skins are found precisely like those now employed for that purpose by the Esquimaux. That they wore gloves is shown by carvings which represent them, and there is reason to believe that they were in the habit of decorating their persons in various ways. The art of representing wild animals in carvings and by sculpture was carried to a high stage of excellence by the cave-dwellers, and it is doubtful if an artist of the present time could do better work, or even as good, with the rude instruments used by them. One of the most interesting examples of their skill is shown by representation of a mammoth, and we know that the extinct creature is faithfully portrayed, because its remains have come down to us perfectly preserved in the ice of the northern latitudes. In various ways the habits of the cave men correspond to those which now prevail among the Esquimaux.

NATURAL SELECTION.

A curious instance has occurred showing the difficulty of explaining the true theory of "Natural Selection," even to scientific men; it is therefore not surprising to find that those who are opposed to the principle from religious motives, fail to realize what is understood by the term. In a letter to *Nature*, Mr. Charles Darwin states he is sorry to find Sir Wyville Thompson does not understand this principle of natural selection as explained by himself and Dr. Wallace, as, if he had done so, he would not have wrttten a sentence found in his introduction to the voyage of the *Challenger*, as follows; "The character of the abyssal fauna refuses to give the least support to the theory which refers to the evolution of species to extreme variation, guided only by natural selection." This, says Mr, Darwin, is a standard of criticism not uncommonly reached by theologians and metaphysicians, when they write on scientific subjects, and asks, "can Sir Wyville Thompson name any one who has said that the evolution of species depends only on natural selection?" and continues, "as far as concerns myself, I believe no one has brought forward so many observations on the effect of the use and disuse of parts, as I have done in my 'Variations of Animals and Plants under Domestication,' and those observations were made for that special object. I have also there adduced a considerable body of facts, showing the direct action of external conditions on organisms, though, no doubt, since my books were published, much has been learnt on this head."

PROPAGATION OF SOUND BY LIGHT IN 1811.

In searching a volume, dated 1811, for papers relating to the introduction of illuminating gas, we noticed a paper by Modeste Parolette, entitled "Inquiries Concerning the Influence of Light on the Propagation of Sound," taken from the *Journal de Physique*, Vol. LXVIII.

Although Parolette cannot be said to have anticipated those physical facts, the knowledge of which enabled Edison to design that wonderful instrument, the *Tasimeter*, and since developed by Bell in his *Photophone*, still Parolette seemed to be on the right track.

In opening his subject, Parolette states that the object of his inquiry was the relation which subsists between the action of light and the vibrations of sonorous bodies, and he actually made an instrument for measuring the effect of light on sound-vibrations, and called it the *Phonometer*.

Parolette's experiments were rude compared with those of more recent date, but it most be remembered that they were made seventy years ago. He used no mirrors for concentrating a beam of light, but relied merely on the natural properties of light without such aids. He says, "As it is known that the vibrations of elastic fluids are always analogous to those of the particles of the sounding body, and that if two strings, belonging to two instruments, be in unison, when one is touched the other will vibrate and emit a perceptible sound; I availed myself of these properties in the construction of my apparatus, and in determining the object of my inquiry.

The *Phonometer* consisted of two violins placed on a horizontal plank ten feet long and eight inches wide. Having tuned these instruments to the Paris diapason, he fixed a piece of paper to the second string of one of them to