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On a Frontier-Line of Ethnology and Geology

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different from the Australians. The Tasmanian had no throwing-stick, and neither in language nor in appearance did he resemble the Australian.

It seemed, therefore, physically impossible that the Tasmanian could have come from Australia, and apparently the only way of accounting for the presence of the Tasmanian was to assume his migration from New Caledonia and the neighbouring islands. It would appear that at one time a low negrito type spread eastwards, and reached Tasmania not by means of direct and uninterrupted land-communication between New Caledonia and Tasmania, but rather by means of broken land in the form of a chain of islands now submerged, similar to that which at present extends between New Caledonia and New Guinea.

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The following paper was then read by the Hon. Secretary :—

#### XIV. *On a FRONTIER-LINE of ETHNOLOGY and GEOLOGY.*

By H. H. HOWORTH, Esq.

BUCKLE reduced many problems of history to questions depending on fixed laws. Fanciful and crotchety sometimes no doubt, we cannot but follow him with approval in many of his speculations. He first taught as a system that man is the creature of the physical surroundings in which he finds himself, that his life is only the subject of choice within very narrow limits, and that even these limits depend a good deal on his culture, and while very appreciable in a philosopher, are almost absent in the savage. If we confine this remark to one subject only, namely, the migrations of different races, we shall not be slow to accept it.

A very superficial survey of ethnology is sufficient to satisfy any inquirer that its grand divisions coincide remarkably with the great zoological and botanical provinces. I am, of course, excluding at present the vast colonizations of different parts of the earth which have taken place since the 16th century. Neglecting these, we find Australia (that remnant of one of the most ancient land-horizons in geology, with a fauna and flora of a very primitive type) occupied by the humblest and most degraded type of man. The forests and hills of India, and *parts* of South Africa, which form another province, are inhabited by a black race which connects the Australian with the purer negro. Central and South America, including Mexico, have another type, as they form another province; China and Indo-China another; Southern Asia and the Mediterranean border-land another; Northern Europe, Siberia, and North America yet another. I now wish to call attention to the

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effects of the invasion of one ethnological province by a race belonging to another—perhaps, rather, the coincident and accompanying circumstances than the effects. The readiest materials at our command for the purpose are furnished by the wide-spread migration, in recent times, of that race collectively known as Indo-European or Iranian. It is a trite and undeniable fact that this migration has been accompanied by a very great change in the fauna and flora of the country to which it has tended. A portion of the ancient fauna and flora has been driven out or extinguished, and a portion of the rest is fighting a losing battle. The victors are the invaders,—a new fauna and a new flora, brought with them by the invading race, and apparently as superior in vigour to the ancient fauna and flora as the new race of men is to the old. It is not sufficiently considered that such changes may not be the effects of man's migration at all, save in that he is the immediate instrument of their being brought about, but that they are the results of an invariable law to which man is as subject as the lower animals, and which has held good in all geologic time, namely, that the fauna and flora, including the higher and the humbler classes, change together. The fact is no less true of other races than the Indo-European. Indeed I hold it to be a general law, that where the man of one ethnological province bodily invades and drives out the former inhabitants, he is merely the forerunner of a great change in the fauna and flora of the new country,—such a change as in geology would mark the advent of a new period; and that, in fact, such a new period in geology is being at this moment inaugurated in every country where the Indo-European race is occupying the soil; and further (but I am rather forestalling), that this new life-period is coincident with new climatic and other conditions, not the mere handiwork of man, but the necessary unfolding of a fresh leaf in the history of the world, of which the creatures more immediately dependent on man, and the plants and animals more necessary to his existence and pleasure, are to form the palæontological *differentiæ*. I wish to apply this reasoning, which, so far as I know, is new, to a more limited area of inquiry.

Siberia and North America form perhaps one of the best defined provinces we have, zoologically and botanically. In these respects it coincides almost exactly with the fauna and flora of the prehistoric period\*. The *Megaceros* hardly differs from the Moose, or the *Felis spelæa* from the Manchurian Tiger; and the rest of the animals are equally related. It is, in fact,

\* I use the word "prehistoric" as Mr. Boyd Dawkins uses it, to represent the period intervening between the pleistocene deposits and the purely historical ones.

the yearly diminishing but still vast remnant of the world of yesterday, or rather of *our* world of yesterday. In climate and conditions and products we may there study that world just as it was with us. The boundary line of this province on the south follows, as is natural enough, an isothermal line, which girdles the northern hemisphere along the same parallel of latitude, except at one point. It is well known that the isothermals of Western Europe have a very abnormal course. Twisted from the horizontal direction they maintain across the Atlantic, they turn gradually as they approach Europe, and on the coast of Norway pass almost due north, and enclosing a finger-like projection, they return again as rapidly through Central Russia. If we ignore the European emigrants to America, and the as recent Russian emigrants to Siberia, and fix upon the beginning of the 16th century when neither of these events had occurred, we shall be startled to find what a decided boundary line this isothermal is in ethnology, as well as in zoology and botany even, after the generalization we commenced with. North of it we find races whose physical resemblance is unmistakable,—Ugrians, Samoiedes, Gilyaks, Kamskatki, and North-American Indians. In America the ethnological boundary is not so well defined, perhaps, more because we have not yet discriminated, as we shall do some time, the various divisions of the American tribes, than because of the want of a real frontier. In Asia and Europe the case is different.

In Asia the great succession of deserts that extend from the Caspian to the Khingan mountains are inhabited by mixed races whose history points a curious moral. They are all distinct from the races north of these deserts, and their history I have epitomized in a series of papers I am writing for this Society. In Europe the contrast is still greater.

South of the great frontier line are the races whose fame is wide spread, under the name of Indo-Europeans,—races stretching from the Hindu-Kush to the Atlantic, and forming a powerful ingredient in the blood of the Hindoos. Most of the intervening races who inhabit the Asiatic deserts are compounded of these Iranians, the Chinese, and the original occupants of Siberia, whom one cannot call by a better name than Ugrians. Our evidence goes to show that the Tungus, the Mongols, and the Turks all originated in such a mixture, and that they chiefly occupy ground once held by the same Ugrians, of whom relics and wrecks are found in every corner of Northern Asia. The Ugrian race, then, is the race identified with those climatic and other conditions which in geology constituted the prehistoric period.

If we complete the isothermal line we have mentioned along

its normal course, and make it traverse Europe at the same latitude that it crosses Asia, we shall enclose between it and the present isothermal the European area characterized by remains of the prehistoric fauna. This enclosed area is also one of infinite interest to the ethnologist. During the last 2000 years (a period well within the reach of close criticism) we find that amidst the ceaseless and confusing emigrations that have occurred in this area, there has been a constant move in one direction at least,—a gradual encroachment by the Celtic, Germanic, and Slavic races upon the humbler races on their frontiers, and these latter invariably of the Ugrian family. The Basques in Spain are now penned in a small corner of their ancient patrimony in the time of the Romans. The Fins and Laps have been pushed back in Scandinavia to a very small portion of their ancient holding. In Livonia, in Esthonia, and in three-fourths of European Russia the Ugrians were, even in the 11th century, the preponderating population. Proofs are now accumulating that before the Christian era this process of displacement was taking place even at a greater rate, the area to be occupied having been much more fertile and inviting. I have attempted to show, in a paper read before the British Association, that a very great element in the Celtic language is Ugrian, and I believe the same to be true of the Latin and Greek. The German-speaking race can, I believe, be shown to have occupied Central Europe since the 3rd century B.C., the Celts and the Slaves to have arrived since the 9th, and the Indo-European element of Italy and Greece since the 10th or 11th. If this be so, then we get a very recent date comparatively for the period when the Basques in Spain and the Fins in Sweden, now mere wrecks and waifs of the original population, were close neighbours; and one homogeneous people occupied, if not a ring round the world, at least one reaching from Britain to Kamskatka, when Europe was overrun by fishermen and hunters, such as we find in Siberia, where we ought to go if we are to study the religion, the manners, and government of the so-called stone-folk. If the result of our ethnological inquiry be to discover so recent an occupation of Western and Central Europe by the Ugrian races, what about the palæontological and botanical evidence? During the last 2000 years huge forests have disappeared from France, Germany, and Britain, and have been replaced by cultivated land in some instances, in others by bogs and heath. At a not remotely earlier day, Denmark and Prussia and Ireland were similarly covered. The gradual extinction of the bear, the wolf, the beaver, the elk, the reindeer, and the urus in Western Europe can all be dated in various areas. We hear of the reindeer, the urus, and the elk

in Germany in the days of Cæsar, and the reindeer is mentioned in Caithness by the Norse Saga writers. The urus survives in Lithuania, and has only disappeared from Transylvania within a century. Eastern Germany still has in its forests some of the ancient animals, and, as we approach the Siberian area, they increase in numbers: their course of extinction has followed that of the Ugrian races. As we have the Basques still remaining in Spain, so do we find a few bears and wolves, and a lynx or two in the Pyrenæan mountains and the larger forests of the peninsula. Man more readily and quickly occupies a new area, the animals take a longer time to replace one another, and the plants a longer time still; but the story is equally true of all three classes. This change in the fauna and flora of a country is preceded by a change in climatic and other conditions. We cannot read the accounts given by the ancients of Thrace, of the northern shores of the Euxine, of the Hercynian forest, and of Gaul, without seeing at once what a rigorous climate there was in those areas formerly as compared with that climate now-a-days. Among the remains of the stone-folk found in Switzerland are bunches of reindeer moss, which will grow only in a very severe climate. To my mind, the disappearance of the reindeer was caused chiefly by the disappearance of this its food, just as the elk was extinguished in Ireland when the forests in which it is alone at home were demolished. The whole evidence goes to show that the isothermal lines in Europe have been gradually twisted further to the north. We have been told that this is due to the forests having been cut down, and to other minor influences of man's occupation; but this is a ridiculously inadequate cause; nor would it account for the facts in Norway, where the ancient forests remain, nor for Switzerland, where the same holds good. There is only one adequate cause,—a cause which has been a good deal pooh-poohed of late years, namely, the *Gulf-stream*, or some body of equatorial water drifting northward. We have been told that no such stream exists beyond the mid-Atlantic, and that it there is gradually absorbed and dies away; but the existence and influence of the stream has, to my mind, been triumphantly established in the communication made by Admiral Isbister to Sir R. I. Murchison, Bart., and even better by the dredging-expeditions of Dr. Carpenter. The presence of West-Indian fruits on the coasts of Iceland and the open fiords of Norway in winter can have no other explanation; nor the belt of warm sea-bottom, so clearly distinguished by its fauna from the surrounding cold waters in the North Atlantic. I have not the slightest doubt that the flexion of the European isothermal is caused mainly by the presence of this stream. If this be so,

then the reasoning I have endeavoured to lay before you in this paper would tend to prove that the gradual advent of such a stream may be traced from no earlier period than about the 12th century B.C., when the Ugrian race and its associated animals and plants began to give way to the Indo-Europeans, and when the isothermals of Europe began to be twisted towards the north; and we thus get an approximate date for one revolution in geology which is susceptible of being more accurately gauged as our evidence increases.

That the Gulf-stream is a very new influence it is not difficult to believe. Apparently, after it reaches the banks of Newfoundland, it follows the line of least resistance, that is, of the deepest water; for we must never forget that the Gulf-stream is an actual river of warm water padded round on every side by cold. This line of least resistance, which it follows on its way to the Pole, makes it skirt the Bahama banks on the north, and come almost due west to the Cape-Verde islands. Now these Cape-Verde islands, in common with the Canaries and other Atlantic islands, are subject to constant earthquakes; the sea-bottom is never long quiescent, but constantly altering its level. If this be the case on the southern frontier of the Gulf-stream, we can well believe, from the evidence we have collected about the coasts of France, Holland, and Britain, that the bed of the North-west Atlantic is also constantly altering its level. It has long been said that the ice-fringe of the Greenland coasts, and the pack in Baffin's Bay, is now much greater than it used to be, while the climate of Greenland itself is apparently becoming more rigorous every year. It may be that in all this we have evidence that the Gulf-stream formerly made its way to the pole on the western rather than the eastern side of the Atlantic, and left Greenland on its right hand rather than its left, as it does at present. If the Gulf-stream be held to be an inadequate cause, the same results would follow from the distortion of some other body of warm water from its normal course towards the pole by the upheaval or sinking of portions of the Atlantic sea-bed. Either one or the other seems to me to be necessary to explain the facts. The advent of this body of warm water has introduced two new sets of deposits,—one subaqueous, that now being correlated by Dr. Carpenter with the ancient chalk, and the other terrestrial.

In concluding this very disconnected paper, I cannot avoid one somewhat romantic moral. If my reasoning be sustained, is it not wondrous strange that the area where these latest geological changes are in progress is also the area where man's culture is most developed, and where the focus of the moral world also exists? Can it be that we have in this correlation an example



of a law of progress, by which the moral empire of mankind moves in unison with the spread of a geological and physical wave of progress?

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Mr. G. M. ATKINSON exhibited a collection of grotesque figures carved in teak-wood, obtained by Captain Edge, R.N., from the Nicobar Islands in 1867; and read the following notes:—

#### XV. NOTES *on the* NICOBAR ISLANDERS.

By G. M. ATKINSON, Esq.\*

IN July 1859 Captain Mackenzie first visited these islands, in command of a barque called the 'Aallotar.' On the first day of his visit about one hundred of the natives came off to the ship in canoes. These were made from trees hollowed partly by fire and partly by the axe; they were from 10 feet to 30 feet in length, and contained on an average from 6 to 8 men each. After the natives came on board, the pipe of peace was lighted by the interpreter, and passed from mouth to mouth among the chiefs, who washed it down with arrack. The goods for barter were then exhibited—axes, iron pots, rice, calico, glass beads, bangles, &c.; and the tariff was arranged, so many cocoa-nuts for each article.

On the following days it was judged prudent to allow only twelve of the natives on board the ship at one time. Military duty was kept up on board; sentinels were stationed on deck; armed men were posted on the tops; guns were all loaded; and one of the cannon was discharged at sunset and at eight o'clock in the morning, until urgently requested by the natives to stop the practice on account of the fright which the noise caused to the women and children.

The chiefs were known as Captain Jack, Captain Tom, &c., names assumed from previous intercourse with Europeans. Although they had no perceptible mark of distinction, they always regulated the barter. No women ever came to trade. This was looked on as a cause of suspicion, as no dependence was to be placed on their professions of friendship, but the interpreter said that if the women came there would be no fear of hostility.

Noncowry and Trincutte are the largest of the Nicobar Islands; they are very hilly, and probably volcanic. Captain Mackenzie noticed blue slate-like rocks. They are densely

\* From information given to me by Captain James Mackenzie.