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1932

## 750TH ORDINARY GENERAL MEETING,

HELD IN COMMITTEE ROOM B, THE CENTRAL HALL,  
WESTMINSTER, S.W.1, ON MONDAY, JANUARY 4TH, 1932,

AT 4.30 P.M.

CAPTAIN T. W. E. HIGGENS IN THE CHAIR.

The Minutes of the last Meeting were read, confirmed, and signed, and the HON. SECRETARY announced the following elections:—As Associates: Joseph Smith, Esq., M.Eng.; Harry D. Sharpe, Esq., B.Eng.; and Lady King-Harman.

The CHAIRMAN then called on Mr. G. Robert Gair, F.S.A.Scot., F.R.A.I., F.G.S.E., to read his paper on "Geographical Environment and Race Movements."

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### GEOGRAPHICAL ENVIRONMENT AND RACE MOVEMENTS.

By G. R. GAIR, F.S.A.Scot., F.R.A.I., F.G.S.E.

#### INTRODUCTION.

IN the course of this paper I wish to show the part played by geographical environment in bringing about migrations, in moulding their character, and in the consequent distribution of mankind. There is justification for such a viewpoint since the peculiar circumstances of geographical environment and isolation have produced definite strains the members of which bear closer genetic relationship to each other than to members of outside communities. Thus geographical factors have played an important part in making what are termed "Races."<sup>1</sup> Therefore, in order to understand man's distribution and anatomical peculiarities we must survey him in his geographical significance and approach anthropology from this viewpoint; thereby some contribution may be made to the study and classification of concepts concerning *homo sapiens*—as he is and as he was in prehistoric times.

## DISTRIBUTION OF THE LAND MASSES.

The fundamental relation of geography to racial-movement lies in the accessibility of land masses to each other, migrations being only possible where easy corridors are provided.

A North Polar projection of the world illustrates the juxtaposition of the land masses and the possibilities of migrations from central Asia to Europe, Africa, across the Bering Strait to Alaska, North, Central, and South America, and through southern Asia to the islands of Australasia.

Climate being the arbiter of settlement, continuity of land alone does not make migration possible. For by its regulation of his habitat man's physique is moulded and his variations created. We see the power of climate in the Eskimaux (with their shortened stature and narrowed nostrils) wandering before—but never traversing—the frowning polar front; or in the hardy Mongols, driven by the dry aridity of inner Asia from its inhospitable face; and in the Negro's thickened lips and pigment—physical characters consequent to denizens of equatorial lands. Many such examples readily occur to illustrate the dependence of man upon geographical conditions. It is therefore reasonable to say that the distribution of man rests on the accessibility of land masses to each other and on position of climatic regions, for with these man can only up to a point make free.

Owing to the juxtaposition of the land masses (but subject to climatic and other modifications) the distribution of races, as of flora and fauna, should present, *ceteris paribus*, a zoned appearance around the original centre of distribution. This principle is merely applying to man a method recognized by zoologist and botanist. Griffith Taylor<sup>2</sup> and others contend that such a series of zones can be detected and that such place the centre of distribution in central Asia. Support is obtained from anthropology for we find the dolichocephalic types tending to form a zone around the Alpines and the brachycephalic peoples. Prehistoric archæology (as far as is at present ascertained) can adduce many examples to show the migration of cultures into Europe from Asia, thus implying greater age for civilization there than in Europe. While the distribution of such primitive men as Neanderthal, Talgai, Rhodesian and Galilee—not to mention Pekinensis<sup>3</sup> seems to indicate a dispersion from a focal point in western or central Asia. A close

philological study also is claimed to indicate the same zonal tendency around central Asia. Thus the centre of the land masses, perhaps in the region of Turkestan, and in the centre of the zones of races and of languages, midway between the Alpines of the West and the Mongols of the East, must be (to use Professor Boyd Dawkins' phrase) the Ancient Eden, the birth-place of the Nations.

Endorsing this general principle on *prima facie* geographical grounds does not necessarily mean accepting every implication as rigidly as would be done in zoology or botany, since man, possessing culture and reasoning power beyond that of any animal, is not wholly subject to these laws nor bound hand and foot by his environment. To him is given the power of navigating lakes and seas on primitive log or in stoutest ship. Thus men with some impunity may transgress the well-defined corridors and cross the vast expanses of waters.<sup>4</sup>

#### CORRIDORS AND ROUTES.

From earliest times certain main corridors would be used by migrants. Densely forested regions, deserts, tundra, high mountain peaks and swamps, would be avoided and consequently less inhabited than the open park and grasslands. In such the first to seek homes would be the degenerates—fragments of humanity—seeking any haven in the racial tempest raging where the more fit held the thinner forests, parks and steppes so necessary to agriculturist, pastoralist and hunter. Therefore the great elevations, continental interiors in higher latitudes, great forest belts, and the regions deficient in rainfall would be formidable and almost insurmountable barriers to racial movements in early times.

On the other hand, the influences permitting, and in fact inviting, migration are thin forest lands, comparatively low foothills, downs, and mountains not high enough to be rigorous, steppes, sea margins, river valleys and small temperate and tropical seas. Only after these routes were exhausted would peoples responding to pressure plunge into the less hospitable regions.

The facility of rivers to settlement is illustrated as recently as Saxon times by the distribution of early graves along the river valleys.<sup>5</sup> While an example of the consequence of mountains is to be seen in the distribution of artefacts of the late bronze

age in Wales where the majority of sites are along the river valleys and the low hills.<sup>6</sup> Further, among many other cases, is the spread of the Danubian Civilization along the plains, valleys, and low foothills studiously avoiding the high mountain areas.<sup>7</sup>

#### NORTHERN AND SOUTHERN CORRIDORS.

Thus a likely route of migration into Europe is to be found within a zone traversable from the eastern Steppes, avoiding the northern forests and their extreme winter cold, leading into southern and central Europe by the northern Steppe, Black Earth and Danubian lands, and finally spreading through the lowest passes of the mountains into western Europe.

While high mountainous areas have been specified as inhospitable to migration and settlement it should be emphasized here that this does not apply to the lower mountains and hills. In fact the reverse is rather the case, for in England it is along the Downs that the evidences of prehistoric man are found,<sup>8</sup> and in Scotland the stone circles, generally attributed to the bronze age, are found on the lower mountain regions.<sup>9</sup> Not overlooking the value therefore of the lower hills and mountains, especially in the lower latitudes, it is evident that another belt of migration presents itself in the region to the south of the northern Steppe route stretching from the highlands west of Afghanistan through Persia to the Caspian Sea, to Anatolia, the Black Sea and the Mediterranean. Once man had left the hunting stage this would prove a more inviting route for here, owing to the higher relief, more rain falls even to-day than in the more arid steppe, and, as a consequence agriculture being carried on in the valleys, it possesses a greater population. Primitive agriculture came into being as soon as a pastoral life (if not before), and this route would appear to have been the most suited for all the earlier agriculturists as well as pastoralists and hunters. Eurasia was once less arid than it is now, and this ought to have been an ideal climate zone and principal route from east to west.

At present the Northern Corridor runs in a west-south-westerly direction from somewhere about Omsk, 54° 58' N. 73° 24' E. to the Black Sea. This is cut off from the fertile lands of the south by a wide stretch of poor steppe and from south of Lake Balkash to the Turkmen Republic and almost the

shores of the Caspian Sea by a series of deserts. Under normal conditions migrating peoples could only satisfactorily communicate with the south and its hill zone along the poor steppe lands and wooded slopes to the east and south of Lake Balkash. However, given a slightly damper climate (as seems to have been the case), the Siberian forest would extend further south, and what is now poor steppe and even desert would become grasslands, while the mountain plateaux (which we might term the Southern Corridor) would possess well-watered valleys and enjoy a climate not very much different from that of Armenia. The Northern Corridor would be favoured by pure pastoralists, but the Southern would be ideal for peoples keeping flocks or cultivating crops.

At the period of the final retreat of the European ice the Caspian Sea was probably of much greater extent and stretching as far north as Uralsk, and towards the Baltic, and as far east as the Aral Sea, while the climate was much more damp. The southern boundary of the forest belt would be on the northern coast of the enlarged Caspian. During its maximum this would interrupt, although perhaps not very seriously, east and west migrations, and therefore the Southern Corridor would actually be a more advantageous route. An alternative route coincident with the gradual shrinking of the enlarged Caspian would appear to eventually develop into what I have termed the Northern Corridor—Prof. Fleure's Northern Steppe—running across what is now the desert of Turkestan from the Hindu Kush to the Crimea.

In January the temperature nowadays along the Northern Corridor is from 10 to 0 degrees Fahrenheit. Sheep and herds can stand fairly severe temperatures, but they must be able to obtain access to food which, under these conditions, is under the frozen snow and ice. The Southern Corridor, on the other hand, has a far more satisfactory climate in the same month, when the average temperature is between 30 and 50 degrees Fahrenheit. Such a corridor especially in a more pluvial time actually would form the means of communication between the three great centres of ancient civilization, the North-West Indian, the Mesopotamian and the Egyptian. Therefore geographical (apart from archaeological)<sup>10</sup> considerations point to the Southern Corridor as a more probable means by which culture was transmitted and from which were disseminated races which were to profoundly affect east and west.

## CAUSES OF MIGRATION.

Migration may be due to increase of population, drought, cold or excessive wetness. Very seldom can migration be attributed to religious concepts or desires of conquest solely, although these may influence their character. Thus since deserts are even more inhospitable than tundra their borders, during periods of desiccation, would be deserted by all those able to carve out for themselves new homes elsewhere.<sup>11</sup> Or should a succession of good seasons cause a rapid increase in population swarms would pour out of the homeland. To some such cause (over population or sudden dearth) migrations must be attributed.

Thus far have we considered in barest outline the main environmental factors bearing on man and his distribution in geological and archæological time. We have seen :—

1. The importance of the distribution of the land masses on the spread of humanity from the original "home."
2. Arising out of this the feasibility of the theory of the zoning of races, and therefore the identification of an original centre of distribution in Asia.
3. The dependence of man on suitable corridors or avenues of migration. Such corridors being identified as running from Asia to the west and being divided into a Northern Steppeland Corridor, suitable for pastoralists only, and a Southern Mountain Corridor more suitable for the migration of agriculturists and mixed farmers. (The latter corridor being instrumental in spreading the earliest cultures of civilized antiquity.)
4. Finally the causes of migrations. These being rather to sheer necessity than to choice.

Thus far we have considered purely general geographical principles, but by going further and turning to an historical study we find that these principles have been constantly in operation.

## THE RESPONSE OF MAN AND CULTURE TO ENVIRONMENT.

The greatest geographical pressure ever exerted on man was the advent of the Pleistocene Ice Age.<sup>12</sup> During a glaciation of northern Europe (owing to a deflection southwards of the cyclone



belt)<sup>13, 14</sup> the Sahara and the now arid regions of western Asia were well-watered parks and grasslands.<sup>15</sup> A pleasant belt stretched from central Asia through Persia, Arabia and North Africa to the Atlantic, inhabited by such animals as the Mauretanian Rhinoceros, African Elephant, Gnu, Wild Ox, Zebra, Bear, Jackal, and Cave-Hyena.<sup>16</sup> This belt was inhabited by the Capsians while Magdalenian man was compelled to live further north under Arctic conditions on the verge of the ice-sheet. Testút,<sup>17</sup> Hervé,<sup>18</sup> Boyd Dawkins,<sup>19</sup> and others held the Eskimaux (because of certain peculiarities in the Chancelade skull and similarities of artefacts) were a survival of Magdalenians who migrated northwards with their environment and have continued living on the polar front. However, this argument contains many difficulties, and Sergi is on good grounds when he says that the geological and climatic conditions under which the Eskimaux live probably account for any similarities to the Magdalenians.<sup>20</sup>

The Yoldia Sea period followed the maxima of the ice<sup>21</sup> and the Baltic was in direct contact with the Arctic Ocean, stretching a great distance over Russia. Characteristic is the aspen and the willow. The Ancylus lake (Boreal Period) with the continental pine flourishing appeared next, and man followed the changing climate northwards.<sup>22</sup> The Maglemose<sup>23</sup> culture belonged to this phase and was created by fishers living on rafts and using dug-out canoes, harpoons, chisels of bone and horn, and possessing the domesticated dog. This culture is traceable in Denmark, Yorkshire, Mecklenberg, Central Germany, as far south as Kalbe on the Milde, Pomerania, Prussia, and Norway. The warmer Boreal influences causing the rapid growth of forest lands to the south seem to have later isolated these peoples on the Baltic.

The Boreal was succeeded by the Atlantic or Littorina phase (brought about by a sinking of the land permitting an inflow of salt waters from the Atlantic) with the warm wet oak typical of the period. Associated with it is the Ertebølle and Kjøkken-Modding (Kitchen Midden)—the earliest true neolithic—cultures, in which pottery of a crude type was manufactured in northern Europe for the first time. Finally the climate became drier, giving rise to the sub-Boreal phase. Greater communication became easier and so we find the wider spreading of cultures and the development of the true neolithic. Thus the climate in Europe has been the arbiter of the bounds of man. These changes have apparently not left unimpressed the folk-memories of the peoples. Brooks<sup>24</sup> cites the meteorological legend of the

twilight of the Norse gods, when snow and frost ruled the land for generations, which he attributes to a great change of climate about 850 B.C. This, however, may be a traditional account of a still earlier event nearer the glacial period.<sup>25</sup>

There is also the older tradition of the Noachian Deluge, paralleled by the Egyptian story written about the time of Seti I (according to Elliot Smith), and by legend among the Mongols, Kamchadales (Malay Peninsula), Chaldeans (recorded by Berosus and by the Epic of Gilgamesh),<sup>26</sup> Greeks and Persians, by the Satapatha Brahmana of the Indians, and tales of the Bahnars in Cochin China and so on.<sup>27</sup> These may be some reference to changes of sufficient magnitude, brought about by post-glacial variations of land and sea which have left a corresponding impression on the human mind. With the close of the Atlantic period the epipalæolithic or very early neolithic in northern Europe ended. The sub-Boreal brought in the beginning of neolithic and bronze age cultures, while the new sub-Atlantic saw the closing phase of prehistory—the iron age. These great cultural changes (which are not altogether unrelated to ethnic movements) occurred in all probability in response to the changing climate of their areas of characterization.<sup>28</sup>

It is now generally acknowledged that climate in Europe is dependent on the position of the cyclonic belt. Therefore from the archæological and geological evidence we can work out the changes in the position of the belt. In the Boreal Period the cyclonic belt must have been to the south of its present position, although in the process of adjusting itself to modern conditions. The Maglemose folk were among the earliest to penetrate to the North. (Examples of such early migrations stretching from the Mediterranean can be well illustrated by the sites of Mugom and of the Azilian-Tardenoisian cultures from southern France to the Baltic and Oronsay.) At a later period there would be a dispersion along the central plains and the Black Earth region, exemplified in the infiltration of neolithic, chalcolithic and bronze cultures,<sup>29</sup> and finally the forest belts of northern continental Europe would be pierced and destroyed as the cyclonic belt took up its present position. To be correlated with this latter phase would be the movements of the Hallstatt and La Tène civilizations and ultimately the final moving northward of two branches of a Nordic-like stock—Kelt and Goth. Ellsworth Huntington<sup>30</sup> points out that the climatic conditions of north-western Europe and eastern U.S.A. are now most favourable to

civilization, and since there were once great centres of civilization, in Mesopotamia, Egypt, and the eastern Mediterranean (which gave place to Greece and then to Rome), these changes were due to the movement northward of the belt of cyclonic activity. Further, Huntington<sup>31</sup> accumulated evidence to show that fluctuations in the prosperity of ancient civilization were ultimately due to climatic conditions and that in the Near East there was peace when sufficient rainfall, but war and migration when it diminished. Thus, just after 1700 B.C. the invasions from the deserts of Kassites into Media, Elam, and Babylonia, of Hyksos and of Hebrews into Egypt occurred, and (about 1400 B.C.) of Aramaeans into Syria from the south and Hittites from the north. These movements postulate desiccation of this region—a view held by Kropotkin who maintained that there had been gradual desiccation of central Asia.

Such dispersals were facilitated by new methods of transport. It is claimed that probably before 5000 B.C. somewhere in western Asia, domestication of camels, cattle, horses and asses occurred. (Domestic oxen, sheep, goats and swine were pastured by the Fayûm peoples in Egypt and by the Prediluvians in Mesopotamia, while domestication was apparently common to the early Asiatic civilizations.)<sup>32</sup> Ox-carts were used in the bronze age, and we know that the horse reached Sumeria from the north about the time of Hammurabi, and the later conquest of Egypt by the Hyksos was greatly facilitated by their horse-drawn chariots.

Climatic changes that have occurred in Asia and their influence on civilization and migrations are illustrated at Anau. It was occupied from time to time and abandoned during the intervening periods which are represented by desert formations, and since there is no evidence of conquest, it is generally accepted that the interruptions were due to drought.<sup>33</sup> The first settlement is supposed to have begun about 9000 B.C.,<sup>34</sup> the second about 6000 B.C. The end of the first and all the second show increasing aridity, and it was abandoned soon after 6000 B.C. It was re-occupied about 5200 B.C. until about 2200 B.C. Then followed a period of intense drought to be equated with the sub-Boreal in central Europe and Anau, Susa and Tripolje were abandoned.<sup>35</sup>

We have thus a poignant story of the reaction of man to environment. Following the retreating ice man gradually settled in Europe, while coincident with this the well-watered

regions of Asia and North Africa were desiccated and the nomads set in motion. By means of geographical conditions alone are we able to explain these vicissitudes in the history of man. Climate, however, has not been static in more recent times. Pettersson would account for this by postulating a period of maxima tide-generating force, attaining its latest phase in A.D. 1434 and having periodicity of about 1800 years. In the 14th century, for example, the North Sea and the Baltic coasts were flooded, and cold periods, famines, and migrations resulted. Similar storm-floods impoverished the late bronze age people of Scandinavia. And as early as about 700 B.C. the amber trade route<sup>36</sup> shifted from the Elbe and Weser to the Vistula,<sup>37</sup> the North Sea presumably being very tempestuous. Pettersson contends that there was an iceless period favouring agriculture and commerce (which characterizes the Viking Age) between the two maxima of 400 B.C. and 1400 A.D. This apparently corresponds to the period from Kjekken-Modding to earliest bronze age times. From literature we also know there have been considerable changes—the invasion of the Teutons and Cimbri into Gallia was connected with inundations of Jutland, while tradition among the Druids relates that they were expelled from east of the Rhine by hostile tribes and an invasion of the ocean.

In the 10th and 11th centuries A.D. (the climate being comparatively mild and no ice blockades existing on the north of Iceland and south of Greenland) strong emigration took place from Norway to Iceland and Greenland and voyages were even made beyond.<sup>38</sup> (One fleet took 750 to 1,000 persons to Greenland alone.) But at the close of the 14th century a great accumulation of drift ice off the east coast of Greenland had occurred. This resulted in the 13th and 14th centuries in invasions of Eskimaux and the annihilation of the Norse.<sup>39</sup>

#### ENVIRONMENT AND RACIAL DEVELOPMENT.

Climate not only governs habitat but plays as great a part in moulding anthropological types as hybridization.<sup>40</sup> As a consequence intermediate types are not always due to two strains; separated sections of a race are subjected to their own particular geographical environment and in time they will differ widely from each other. An interesting problem respecting the powers of environment and hybridization arises in our own islands. The Britons,<sup>41</sup> Caledonians,<sup>42</sup> and Gaels,<sup>43</sup> in common with all the

Kelts,<sup>44</sup> were fair peoples. The Saxons and Danes were also fair and a part of this great Nordic stock. Some mixing with the dark aboriginals is bound to have taken place, but to-day the Scots and English (definitely Nordic in most respects) tend to be brunets. This is not necessarily due to hybridization, for if so not only would hair colour have altered in a Mediterranean direction but cranial type, stature, eye-colour, and other features, whereas the opposite appears to have been the case. It has yet to be shown that this brown-haired, tall, blue-eyed, mesaticephalic Nordic people is necessarily "disharmonic." The fairness of hair before maturity and the subsequent development of nigrescence seems to support this view. To reject this would be to deny to geographical environment any influence during two to three thousand years. This is a case of divergent differentiation of the Nordic stock due to climatic conditions. Prof. Fleure,<sup>45</sup> while perhaps not taking quite the same viewpoint, comes to this result and so also does Haddon<sup>46</sup> in regard to the matter of hybridization and differentiation.

Climate therefore does influence the germ-plasm and the reactions to it largely become heritable. This and the combination of isolating factors, has resulted in "races." Biogeographical studies of anthropology, ethnology and prehistory outline for us: natural routes; foci of dispersion; dependence of man on food supply (determined by geographical influences) and therefore man's habitat. Such studies explain the raising of great civilizations in now desert areas and the break-up of their peoples without invoking hypothetical reasons such as "trade" conquests or any other cultural instinct.

By a combination of viewpoints such as these (archæological, anthropological, geological and geographical), some day, we may be able to track down our mystic Asgard—the birthplace of the Nations—the primitive Eden of the old world, and trace the wanderings of the tribes, learning something of their civilizations, until we identify them among the nations of the prosaic 20th Century.

#### BIBLIOGRAPHY.

(1) The outward expression of these genetic groups is characterized by definite physiological traits. However, it is a mistake to stress too far the value of cephalic index, colour or shape of hair, or pigmentation of skin or any other single feature. The sum total of all outstanding racial characteristics is the only scientific criterion

of classification. Professor G. Sergi in *The Mediterranean Race* (1901), p. 198, draws attention to such abuse of anthropological data when discussing the cephalic index of Neanderthal and Cro-Magnon.

(2) Griffith Taylor, *Environment and Race*, Oxford, 1927.

(3) For an account of this skull see "The Significance of the Peking Man," No. XI, Henderson Trust Lecture, Edinburgh University, 1931.

(4) Marett sums up this important provision by saying, "So long as man was the land-animal . . . he must foot it together with the other land-animals along the existing bridges and corridors, and had virtually no choice in the matter. Given a boat, however, he became amphibious; he could to that extent make free with geography." (Article, "Anthropology," *Encyclopædia Britannica*, 14th ed., vol. 2, p. 42.)

(5) *The Archæology of the Anglo-Saxon Settlements*, E. T. Leeds, Oxford, 1913, p. 19.

(6) Dr. R. E. M. Wheeler's plate in *Prehistoric and Roman Wales* aptly illustrates this.

(7) This is illustrated by Professor Fleure and Mr. Peake in their plates (Figs. 80, 81 and 82) appearing in *The Steppe and the Sown*, Oxford, 1928.

(8) C. Fox, *Archæology of the Cambridge Region*.

(9) The circles of Aberdeenshire range from the shore to very fair altitudes, and some in Perthshire are found actually as high as 1,400 feet.

(10) A distribution from the southern mountain chain is supported by Dr. Frankfurt, who favours the western section of the Iranian Plateau as the centre of distribution of flat-ended ear-rings and pins of the rolled eyelet and raquet varieties—tokens of an intrusive culture. *Antiquaries Journal*, viii, p. 230.

(11) Marett does not exaggerate when he (Article, "Anthropology," *Encyclopædia Britannica*, 14th ed., vol. 2, p. 43), says, "As a cause of migration on a grand scale dessication is perhaps more effective than any cultural influence, such as commercial enterprise or colonial expansion."

(12) This consisted of a number of glacials and interglacials, details of which cannot be given here. The main divisions are Günz, Mindel, Riss and Würm. For further information see *Stone Age Antiquities*, British Museum, *Prehistory and Our Forerunners*, by M. C. Burkitt, M.A., etc.

(13) Brooks, *Climate Through the Ages*, London, 1926, p. 185; also *The Evolution of Climate*, 2nd ed. (1924), and *Quarterly Journal, Meteorological Society of London*, xlvii, p. 173 (1921).

(14) A map illustrative of the probable effect of the ice cap on the cyclone path is given by G. C. Simpson, *Proceedings*,

*Royal Society of Edinburgh*, vol. 1, part iii, No. 21, p. 275, referring to the Mindel Maximum and based on the views of Köppen and Wegener, *Die Klimate der geologischen Vorzeit*, Berlin, 1924.

(15) Professor V. G. Childe's *Most Ancient East*, cap. ii, for short account.

(16) A concise list of the fauna existing in Europe at this time is given in Table I, p. 283, *Proceedings of the Royal Society of Edinburgh*, vol. 1, part iii (No. 21), "The Climate during the Pleistocene Period," by G. C. Simpson, and based (for archæological correlation) on the work of R. R. Schmidt, *Die Diluviale Vorzeit Deutschlands*, 1912, and Soergel's *Lösse, Eiszeiten, und Palæolithische Kulturen*, Jena, 1919.

(17) Testút, *Bull. Soc. Anth. de Lyon*, vol. viii (1899).

(18) Hervé, *La Race des Troglodytes Magdalenians*.

(19) Boyd Dawkins, *Early Man in Britain*, London, 1880, p. 233 *et seq.*

(20) Sergi, *The Mediterranean Race*, p. 197, ed. 1901.

(21) The date of the retreat is variously estimated. Lidén estimated the end of the glacial retreat as late as 6500 B.C. De Geer estimated the beginning of the retreat as 13000 B.C. to 14000 B.C. Peake and Fleure—*Hunters and Artists* (1927), pp. 9–10. A. Heim estimated the retreat of the ice from Lucerne at 14000 B.C. Mr. M. C. Burkitt, working on de Geer's calculations, gives the retreat of the ice from the Baltic Ridge (the southern limit of the last glaciation) as 12500 B.C. Professor Sollas, however, estimates 15000 B.C. See M. C. Burkitt, *Our Forerunners* (1923), p. 63.

(22) See *Dawn of European Civilization* (1925), Professor V. G. Childe, pp. 8–9.

(23) M. C. Burkitt thinks the Maglemose was of the same age as the Azilian in France and would date it at 10000 B.C., *Our Forerunners* (1923), p. 64.

(24) Brooks, *Climate Through the Ages*, London, 1926, p. 331.

(25) There is another story of a period of great cold with frost and snow, which may be a legend of the Ice Age, in the Zend Avesta, the most sacred books of the Zoroastrians or Parsees. See Peake, *The Flood* (1930), pp. 23–24.

(26) A concise and short account of this is given in *The Babylonian Story of the Deluge and the Epic of Gilgamesh*, published by the British Museum, 1929.

(27) See Peake, *The Flood* (1930).

(28) A concise and clear account of the post-glacial changes in climate, especially in regard to forests and growth of peat, is given by T. W. Woodhead, Ph.D., "Post-Glacial Succession of Forests in Europe," *Science and Progress*, No. 102, October, 1931.

(29) Professor V. G. Childe, *Bronze Age*, contains a map of bronze age cultures, which illustrate the infiltration by this route.

(30) Ellsworth Huntington, *Civilization and Climate*, 3rd ed. New Haven (1924).

(31) Ellsworth Huntington, *The Pulse of Asia*, London (1907), and *Palestine and its Transformation*, London (1911).

(32) Professor V. G. Childe, *Most Ancient East*, for early asiatic civilization, and also M. C. Burkitt, *Our Forerunners*, p. 137.

(33) See Peake, *The Bronze Age and the Celtic World*, and Brooks, *Climate Through the Ages*, London (1926), p. 358.

(34) It should be pointed out that there is no ascertained chronology for Anau in Russian Turkestan, and the dates given are merely tentative and those used by Brooks. See V. G. Childe, *Most Ancient East*, p. 229.

(35) Brooks, *Climate Through the Ages*, London, 1926, p. 358.

(36) For maps of the amber trade route see Professor W. B. Dawkins, *Early Man in Britain*, p. 168, and map in Professor V. G. Childe's *Bronze Age*.

(37) The one amber trade route ran from the head of the Adriatic up the Adige, through the Brenner Pass, down the Inn to Passau and the Danube, across the Bohemian Forest to the Moldau and the Elbe. The other Route ran from the Gulf of Trieste to Laibach, Gratz, down the Leitha to the Danube at Pressburg, up the March, across Moravia, through Silesia along the Oder, across Posen to the Vistula and Baltic near Danzig. *Antiquities of the Bronze Age*, p. 136, British Museum (1920).

(38) See account of voyages of Biorn Heriulfson in vol. 5 (1879), *The Yorkshire Archaeological Journal*, p. 183 *et seq.*, by Rev. D. M. Haigh.

(39) O. Pettersson, *Ur Svenska Hydrografisk-Biol. Kom. Skrifter*. See also Brooks, *Climate Through the Ages*, p. 398, London, 1926.

(40) The reaction of race to changing conditions does not preclude the principle of a race-making period of Mr. Walter Bagehot, but the position is well stated by Marett: "No biological trait . . . is in a strict sense invariable, the plasticity of organic life pervades all its parts. Yet some human characters undergo alternate modifications that, once acquired, are reproduced with a high degree of regularity. Headform, hair texture and skin-colour are instances in point, not to mention many minor features of great persistency such as eye-colour, or the shape, and especially the breadth, of the nose." ("Anthropology," *Encyclopædia Britannica*, 14th ed., vol. 2.)

(41) The Roman ladies dyed their hair fair on account of the fairness of the Britons. Boudicca had flowing yellow hair, and Welsh records say fair hair was prized. This indicates a fair stock in the West as well as a dark Mediterranean race. See Professor F. G. Parsons, *The Earlier Inhabitants of London*, 1st ed. (1927), p. 103.

(42) *Rutilæ comæ, magni artus*, according to Tacitus.



(43) The Gael called foreigners the "Dark People," thus marking themselves as fair.

(44) Classical writers generally credit the Kelt with great stature, fair or reddish hair and blue or grey eyes. *Early Iron Age Antiquities*, p. 6 (1925). This is also the view of no less an authority than Professor Watson, Edinburgh University.

(45) "The most abundant type in England is that of a long-headed fairly dark and rather tall man, though stunting is sadly frequent. This is not to say that we have not numerous tall, fair long-heads, and, in some districts, short, dark long-heads, but the general run is neither the one nor the other, and, it seems almost certain, not a mixture of the two. It is rather a case of differentiation which has reached neither the one goal nor the other." (*Eugenics Rev.*, xiv (1922), p. 97; and *Journal of the Royal Anthropological Institute*, vol. 1, pp. 39-40.)

(46) "It is possible that there may be groups apparently intermediate between two others, which do not owe their intermediateness to racial mixture but to their being less modified descendants of an ancestral stock from which the other two stocks have diverged. Thus with more complete knowledge it becomes increasingly difficult to define a 'race.'" *The Races of Man*, p. 2 (1924).

#### DISCUSSION.

The CHAIRMAN (Capt. T. W. E. Higgins) said: In considering the subject we naturally ask, Who were the Races who "moved," and why did they move? The lecturer has fully answered the second question, but he does not tell us which were the races who moved, nor does he tell us how to distinguish a race. Professor Fleure recently wrote: "Existing types have all evolved from one ancestral type already quite human," and the lecturer claims that the variations from this type—*homo sapiens*—such as the Negro's thick lips and black skin, are largely due to the influence of climate; but when he refers to "dolichocephalous types" and "brachycephalous peoples" does he suggest that climate has any influence in such modifications? or can he suggest how such differences arose, and what ages it took to make long skulls broad?

That geographical environment and climate mould character, is no doubt true to a certain extent, but the lecturer does not give any details of its effect on the mentality or morality of any people. Do the people of N.-W. Scotland (for instance) differ from those of

S.-E. England only because they do not share alike the blessings of our climate in equal proportions ?

Griffith Taylor, to whom the lecturer refers, in his map of the *Zones of Migration showing the Evolution of Races* uses the cephalic index as the basis of his survey; and it strongly supports the lecturer's contention that very ancient types of man wandered from the original home, possibly driven further by broad-headed people, so that we now find the oldest types, consisting mostly of inferior long-headed people, located on the extreme edges of the world. This appears to be corroborated in two other lines of approach.

Professor Roland Dixon, of Harvard, by an entirely new method of classification, based solely on skull measurement, comes to the same conclusion as Taylor.

But from quite a different line of approach Father Schmidt, of Vienna, in *The Origin and Growth of Religion* (1930), brings evidence in support of the lecturer's contention, showing that the nations not only spread forth from one centre, but carried with them *the common traditions*. He says [my summary of pp. 234 and 261]: Assuming that the human race originated in Asia, it gradually migrated to other portions of the globe. Those portions of the world which contain the savage races to-day, namely, Africa, Oceania, and America are connected to Asia by isthmuses or strings of islands, so narrow that the bulk of the migrations must have followed this one way, and these men of the most primitive cultures carried with them the belief in a Supreme Being, so that this belief is almost like a girdle around the south central part of the Old World, and it is an essential property of the most ancient cultures; and must have been deeply and strongly rooted at the very dawn of time, before the individual groups had separated from one another.

Thus Griffith Taylor, Roland Dixon, and Father Schmidt all support the lecturer's contention. When we discuss "Races" and "Zones of Races," we are brought back to the question, What constitutes a race? But I must be careful. A writer in this month's *Contemporary Review* says: "Race is a sadly abused word, which is only safe when it is used by an Anthropologist—and not even always then." Both Taylor and Dixon accept skull measurements as the most reliable criterion of race, and Ellsworth Huntington says that Dixon's new method of race determination "produces results which

agree to an extraordinary degree with the known facts of history." With skin-colour or hair-texture as the basis of our classification, we cannot usually tell in digging up an old skull whether the owner was black, yellow or white; whether his hair, if he had any, was straight or frizzy. To me it seems that Dixon's classification of eight racial types of skulls is the most simple.

As regards migrations: If a group of people wandered off and settled in a forbidding and unsuitable neighbourhood, would it not be the more progressive who went further into the unknown to find a more suitable home, leaving the less energetic behind? Ellsworth Huntingdon's theory appears to be that as the wanderers struggled on, the difficulties encountered acted as a process of natural selection, causing the survivors to become of a higher mental and physical type, and only after they had established themselves in some more comfortable surroundings did a period of degeneration set in.

To come to our own Island: The lecturer mentions the "Britons" as being, in common with the Kelts, a fair people. May I suggest that they would be better described as "The Brythons" or "Brythonic Kelts." The ancient Britons, who were here before the Kelts, were short, dark, long-headed people of the Mediterranean Race (the "Long Barrow" people). Their predecessors, early types of Neolithic man, were supposed to be of much the same appearance; and the short, dark, long-headed people to be found in Herts, Devon, Cornwall and elsewhere are said to be the remnants of these two ancient peoples. It seems, however, highly probable that persons of the Mediterranean Race, especially women, were left in out-of-the-way places in many other parts of the kingdom—hence our dark-haired countrymen.

Professor Parsons, after researches among medical students and hospital patients in London, is of opinion that the modern Londoner is still more than three-quarters Nordic, though he considers that the Alpine type is increasing at the present time. And here, one may well ask, is the character of the English people altering? Are the Mediterranean and other types submerging the Nordics? How else can we account for the extraordinary desire manifest in some of our leaders, ecclesiastical as well as lay, to depreciate the deeds of our forefathers, and bid us be always apologizing for the leading

position which our God-given Empire has taken in world affairs, given, as I believe, that we may teach the nations His will.

Ripley, in his *Races of Europe*, states that the average cephalic index in the British Isles lies between 77 and 79, and is practically uniform from end to end of the country. When Ripley wrote, no attempt at a complete survey of the population had been made—nor has it yet—but when any intensive survey has been made in any locality, like those carried out by Messrs. Fleure and James in Wales, it has been found that there is often a wide variation, displaying quite distinct types, which apparently have lived side by side for generations, without mixing. To what extent climate influences the germ-plasm, and what, if any, limits can be set to its influence and the heritable reactions resulting therefrom, are very interesting questions, which I am sure we would all like to see fully discussed.

Lastly, we must remember that though great movements of nations may take place from the combinations of what we call natural forces; yet behind all is a Divine Providence, working to some Great End, which in this life we but dimly envisage, feeling certain that its ultimate purpose may be summed up in the motto of our Institute, To the greater glory of God, AD MAJOREM DEI GLORIAM.

Rev. Dr. H. C. MORTON said: Our thanks are due to Mr. Gair for presenting to us the geographical factors governing man's possible migrations. There is, I think, need for some revision of certain sentences, the meaning of which is not clear, such as the sentence relating to the proof as to the northern corridor: "This is cut off from the fertile lands of the south by a wide stretch of poor steppe and from south of Lake Balkash to the Turkmen Republic and almost the shores of the Caspian Sea by a series of deserts." It may be that though I used maps I did not use maps big enough.

The geographical facts are very interesting: but as to migration the whole question appears to be first of all "Whence?" and while Mr. Gair seems to look toward Bible records in some of his remarks—I am thinking of the kindly references to Eden—in others he assumes the current anthropological evolutionary accounts of mankind, with their prodigious assumptions as to enormous ages for the human race. If *Hesperopithecus* and *Neanderthal*, and

Pithecanthropus Erectus, and Taungs Man, and now Homo Pekinensis, are to be taken, not as creations of imagination pushed to the very borderland of the ridiculous, but as serious evidence for an antiquity—I quote, for instance, regarding Pekin Man “of from 1,000,000 to 5,000,000 years old,” an evident sheer guess, which carries upon its own face the rebuke of its audacity—of millions of years for the human race, then we must really give up all pretence of harmonizing the Bible with that kind of anthropology.

But apart from these strange unaccountable reckonings in millions, very much smaller but still most divergent reckonings in thousands of years seem to me to drive us to the conclusion that all hypotheses concerning race migration as presented to us to-day are quite speculative in character. In regard to the different human cultures to which references are made, should not these also be regarded as speculative? So many hypotheses respecting distinct cultures seem built up upon such slender foundations of evidence. So at least it has seemed to me in my anthropological reading, and when I find them treated very seriously I feel grateful for all efforts to improve my intellectual pathways for me, but I shall still walk with wary feet.

#### WRITTEN COMMUNICATIONS.

Colonel SHORTT wrote: Mr. Gair has given us a most helpful paper on a very difficult, but necessary, subject.

I would like, however, to suggest that a distinction should be made between *Migration* and *Spread*. By *Spread*, I mean, the gradual outward colonization, along the most favoured corridors owing to over-population. Yet nature, in early days, as with animal and bird life, regulated the population by war and disease, and I suggest that this influence may be exaggerated. *Migration*, on the other hand, might be due to a spirit of adventure, more often to *fear*. There is probably no more potent cause of migration than fear of a stronger neighbour. It was fear which caused the Eskimos to colonize Greenland in the fourteenth century. It drove the Kelts to the western fringe of Europe, the Brythons to the mountains of Wales, the Angles and Saxons into England, and was responsible for the emigration of a great mass of Dan, Asher, Zabulon and Naphthali, who thus evaded the captivity under Assyria, and turned

nomad. Such movements would not follow the corridors. Rather the reverse, for their main purpose would be to place the greatest barriers, whether of sea or land, between them and their enemies.

Lieut.-Col. L. M. DAVIES wrote : I am glad to see that Mr. Gair seems to endorse two points which I tried to make in my last paper read before the Institute, namely, the diffusion of mankind from a central position east of the Mesopotamian region, and the sub-recent desiccation of lands compelling and ruling the migrations of various branches of the human stock (*Trans. Vict. Inst.*, vol. lxii, p. 83, etc.).

Our race has twice, according to Scripture, dispersed from a central spot ; the first dispersion (of which no details are given) being from Eden, and the second dispersion, after the Flood (which I take more seriously than most geologists do to-day), being from a region *higher* than (and *east* of) the Mesopotamian lowlands. On any showing, whether one explains the greater moisture by the break-up of the Ice Age, or by residual waters left after a general deluge, the continents seem to have been considerably damper in the not very distant past than they are to-day. The well-marked evidence of this in Central Asia, which was never properly glaciated, points to flood, rather than glacial influence, as argued by G. F. Wright himself, the well-known American glacialist.

If the Bible account of the early history of our race is to be taken seriously—as I maintain—then the survivors of the Flood must first have moved *east* from the region of Ararat, and subsequently (in part, at least) back *from* the east into the Mesopotamian lowlands (Gen. xi, 2). That eastern region, into which they first went (thus indicated, but not named, in Scripture) must represent the area in which the race first again recovered its numbers, and from which it subsequently dispersed again a second time to cover the earth. High lands—in those days the best lands—stretch from Ararat into Central Asia, and from there disperse north-west, north-east and south-east. The early settlers in Australia and in the Americas must, on almost any showing, have followed these routes ; while the “ Southern Corridor,” as Mr. Gair calls it, to south of the Caspian (which undoubtedly extended far further north in those days, while much of northern Russia was still under the Arctic) would afford

the natural route for dispersion to Europe in the west and Africa (via the Syrian highlands) in the south-west. An attempt to call a halt, in the course of this latter migration, was (according to Scripture) broken up at Babel.

#### LECTURER'S REPLY.

When Captain Higgens raises the interesting problem of the responsibility of climate for anthropological differences, he encroaches on the whole basis of the relationship of heredity and environment. In the limited space, to which I am restricted in this reply, there is not opportunity for adequate discussion. It is sufficient, however, to say that the realization of a distribution of peculiar racial characteristics, co-extensive with a particular type of environment, is significant. So much so, that it is safe to assume that the geographic control is at least partly operative. If such conditions are found in connection with the fleshy structures (such as colour of skin, shape of lips and nose, and so forth), then it is reasonable and logical to assume that the whole physical structure is, in a greater or less degree, subject to reactions to environment. In making this deduction, it is not necessary to overlook, or underestimate the inherent properties of "race" itself.

To discuss these factors, brings us up against the whole of the difficulties of the race-problem. To me it seems that the environmental (or geographical) control has undoubtedly modified physical types from the beginning of time. Nevertheless, there is still a race-factor, since no amount of Irish environment will make a bull-dog into an Irish terrier. Therefore, while claiming that environment has played a large part in modifying racial types, it behoves both schools of thought to be moderate in the logical application of their theories.

Before I could answer the question, whether the people of N.W. Scotland differed from those of S.E. England on account of differences of climate, certain facts would have to be ascertained. If, after careful anthropometric and ethnological research, it was found that the people of these two areas were essentially of the same racial stock, then any apparent differences should be ascribed directly, or indirectly, to environment. If they were of different strains,

then the racial as well as the environmental factor must be taken into account. For my part, I am inclined to consider the inhabitants of these areas, so different ethnologically, are not so far apart racially, as often considered.

I am glad that Capt. Higgens draws attention to Schmidt's work, since the scope of my paper did not allow me the opportunity of digression into this profitable field of comparative religion, in relation to ethnography. The result of such research is undoubtedly in favour of an oriental centre of dispersion.

I used "Britons" expressly for a Keltic people. It always seems to me a very loose practice to give that name to the aboriginal Mediterranean peoples. There is no historic justification for such procedure. The Britons of history are always Keltic, and in the main, from the description, of Nordic type.

That some of the dark Mediterranean stock may have been left in eastern Britain does not invalidate my main contention. The fairness of children, the general fairness of rural as against urban populations, and the statements of history, to which I have referred, leave no doubt, in my mind, that there was a preponderating fair element in Britain in early times. Steadily increasing nigrescence is to be expected on the basis of Mendelian laws of inheritance alone. It is a fact that, if a person with light hair marries a black haired individual, the offspring tend to be dark. A dark strain in Britain to-day does not necessarily postulate any very great proportion of dark-haired (or Mediterranean) ancestors. Light eyes and light hair are considered complementary. Therefore a light-eyed stock would not be classified as Mediterranean, even if the hair were dark. It is possible to demonstrate that the light-eyed (and therefore fair-haired, or potentially fair-haired, Nordic stock) was very great in early times. This is best illustrated by a quotation from Dr. J. Brownlee's Henderson Trust Lecture, 1924 (Edinburgh), entitled, "The Origin and Distribution of Racial Types in Scotland" (p. 23), "As hair and eye-colour are inherited on Mendelian lines, it is possible to test by Dr. Beddoe's survey whether there was any source of light eyes in the ancestry of the race other than that provided by the light-haired invaders. This is best applied by adding the number of dark and jet-black-haired person to the number of light-eyed persons. If this total exceeds



the total number of persons observed, there is an excess of light eyes beyond that given by the mixture of race commonly assumed. This analysis shows that this excess is very large in many districts. In the West of Ireland, and especially Sligo, half the original dark-haired invaders must have had light eyes. This excess is also marked in Cornwall, Devonshire, and Wales, and in Scotland, especially in the West, in the region of the Great Glen and in Orkney."

Thus the evidence tends to minimize the occurrence of any great amount of the Mediterranean strain at all. Therefore, I should account for dark-hair on a basis of recessiveness and environmental change. Sir Arthur Keith recognizes this early Nordicism of Britain, but believes the invaders were dark-haired, since they had not reached the degree of fairness of historical times. I am inclined to dissent from this view, on the basis of the historical evidence alone.

I quite agree with Capt. Higgens when he says that the Nordic stock, although still the preponderating element, is decreasing in Britain. To me, this seems to be partly due to industrialisation and legislation, both of which tend to repress the Nordic class. However, this is a matter for further discussion and investigation in collaboration with the eugenicist.

Lack of space prevents me from dealing adequately with other than these salient points. As regards Dr. Morton's criticism, all I can say is, that in all scientific work, certain basic principles must be accepted, if only to form a basis of philosophical reasoning. Therefore, on that account alone, the principle of stratigraphy (upon which is built the whole time sequence of prehistory) cannot be lightly thrust aside without adequate arguments being advanced to disprove it. Dr. Morton makes no attempt to do this.