RACIAL CHARACTERS OF SKIN IN RELATION TO HEALTH.*

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PROFESSOR FLEURE said it seemed appropriate to devote the first Malcolm Morris Memorial Lecture to a consideration of the racial characters of the human skin and racial types in relation to health, because Malcolm Morris had been concerned in practice with the treatment of disorders of the skin, and also actively interested in hygiene—in the art of right living and the right use of environment, sunshine, fresh air, and cleanliness.

Early Man and the Sahara.

While the poverty of body hair and the need for emitting heat are general features of mankind, differences exist between human groups in this respect and affect particularly the character of the skin, so that this has often been used as a basis for attempts to make a classification of mankind. The colour of the skin shows obvious differences in various regions of the world, and has been increasingly used as a basis of classification. Professors Leonard Hill and Ellsworth Huntington, from different approaches, have both reached the view that physiological efficiency is best maintained under cool temperate conditions with variability and storms as a feature. If we accept, broadly, the views of Hill and Huntington about bodily well-being and its weather conditions, we may argue thence that, at some stage before modern types of men had come to differ much among themselves, they were living in a fairly cool temperate, variable, and seasonally stormy climate. The earliest skeletal remains of men of modern type that we have were found in Europe, and belong to the days of the retreat of the ice sheets, after the last maximum phase of the Great Ice Age. It is reasonably certain that these men did not live in Europe during that maximum phase, and it is becoming ever more probable that they moved into Europe as climate began to improve. What are now the Sahara, Arabia, and Mesopotamia have, in the course of human history, changed from rather cool grasslands largely to deserts with long periods of great heat that dried their surfaces and led to pressure of their populations on the riverine belts of the Euphrates and the Nile and to drifting out of people in all directions. It is therefore more than likely that the early types of modern men had pigmented skins, the pigment being developed probably just after birth as the resultant reaction of the skin to influence of light in some way. Pigmentation is an almost universal reaction of skin to light. The rays of shorter wave-length—that is, the ultra-violet part of the spectrum—seem to be stopped in large measure by the horny layers of the skin; the rays of somewhat longer wave-lengths, but still towards the violet end, penetrate more deeply. They, like the ultra-violet, though to a less extent, have histolytic chemical influences. They are absorbed and converted into radiation of greater wave-length by pigment in the epidermis, and thus pigmentation may protect the dermis from deleterious effects of too much light. This gives a clue to the value of pigmentation, but, at the same time, we must not forget that the rays of short wave-lengths are invaluable in certain ways if in the right quantities.

The Drift Southwards: the Dissipation of Body Heat.

Ape hair grows from roots deeply invaginated in the skin and the follicles have the form of fairly even lines at 50 to 80 degrees to the surface of the skin; the downy hair or lanugo, so abundant pre-natally in all human types, has roots of this kind and grows in similar fashion, and, in many races, the juvenile and adult hair grows quite similarly. It is thus probable that the skin of early modern men had hair of this type, and that other forms of hair, such as we now find among peoples of Mongolia, North China, etc., on the one hand, and among peoples of torrid

and South Africa, Papua, Melanesia, etc., on the other, are specializations. We are justified in arguing, both on grounds of general principles of climatology and on the grounds of Falconer's geological observations, that in the early days of modern man the African grasslands that are now the Sahara had a southern more or less desert fringe—an unfavourable environment for men at that stage. The early drifts southward in Africa were thus probable drifts of the less well equipped types, who were driven to face a climate that diminished their power of getting rid of body heat. They may be supposed to have been men with more than average pigment, though not very dark. The areas of very dark pigment in Africa are in some instances rather inhospitable, where poor food is characteristic and salt scarce.

Towards understanding the variations of colour in inter-tropical Africa, we may use the hypotheses:

(a) That red and brown colouring are both fundamental, but that their relative proportions are liable to vary in different regions and among individuals, otherwise much alike, in one and the same region.

(b) That regions with specially lowly societies, refugees of ancient types, societies on poor soil, apart from forest, tend to be specially dark.

(c) That groups which have lived in the forest for generations are lighter than their relatives on open country. Forest regions of the north-east Congo appear to include groups that are almost olive.

(d) The better lands usually have lighter coloured peoples.

(e) There have been infiltrations from Algeria and Tibesti, and from people of the Nile, who have been red-brown from early times; infiltrations from that direction may have helped to produce the chocolate tint of the Berberines of Nubia, the Niam-Niam, peoples around Lake Rudolf, etc.

The shiny appearance of the skin, especially in Africa, due to sebaceous secretions from large and loose sweat glands with flabby pores, also promotes loss of heat. Yet another feature very widespread among the early drifts of men equatorwards appears to have been kinky, spirally curved hair arising from curved roots near the surface of the skin. These hairs do not appear much before birth. I associate this, and the extreme reduction of body hair that goes with it, with the need for getting rid of heat, this emission of heat being notably promoted by bringing the blood vessels nearer the surface. In some peoples, especially in Africa, the blood vessels are not only near the surface, but also highly developed, thus still further promoting cooling. It is not necessary to enlarge on further devices for cooling, such as the everted lips, the weakly developed nose, which lets air almost direct down to the pharynx, and so on.

Generally speaking, according to Dr. Shaxby's researches, the skin colour of intertropical peoples has brown and red constituents in varying proportions, the red being in part, but apparently not entirely, a blood effect. These brown and red constituents occur also in European skin, and it is impossible to get a line of demarcation between negro and white man as regards skin colour—every grade of intermediacy can be traced. The body skin of the forest pygmies of Africa often has a good deal of the downy hair of infancy on it, and a little is found among the head hairs of the Bushman, though he has little body hair. The forest pygmies are said to mature at 10 and to die of old age at about 40—a life-cycle of about the length found in apes—and their downy hair, their very feebly developed noses, their very prognathous mouths, their small stature, and other details all suggest that they are survivals from a far antiquity—that is, from very early variants of modern man, with very probably some degenerative features as well.

The Drift Northwards.

As ice sheets diminished men were able to migrate not only to the south and east, but also to the north, and were presently pressed in this, as well as other directions, by the drying of the Sahara, etc. Some would spread across still-lingering land-bridges, such as that between Tunis and Sicily; others would spread into the grasslands of Turkestan and South Russia through the gaps between Elburz and Hindu Kush; others, probably, later would find Anatolia opening up ways into south-east Europe; and, finally, the ice sheets on the great central highlands of Asia would diminish sufficiently to allow such men as were inured to highland difficulties to enter them.

* An abridgement of the first Malcolm Morris Memorial Lecture, given under the auspices of the Chadwick Trustees on November 15th, 1926, when Sir James Crichton-Browne, M.D., F.R.S., was in the chair.

With the passing of the ice sheets and the establishment of greenness and cloud in the European west, the evocation of pigment by glare during development became small, and this is a factor of the bleaching that in varying degrees characterizes the peoples of non-arctic Europe. A few individuals who still carry very ancient skull characters are found here and there in Tras-os-Montes, Sardinia, the Dordogne, the Welsh and Scottish moorlands, Norway, etc., and they are more swarthy than their neighbours. Where westerly winds rule in winter the blood vessels are often easily seen in the rather delicate skin, and we get the well known pink and white effect; but, in the regions of strongly marked winter anticyclones, such as the Alps and Carpathians and Poland, etc., a rather dead white is common. In a climate of fairly mild winters the blood vessels can safely lie fairly near the surface, and the coolness at the same time allows the superfluous heat, produced in the course of the active life appropriate to north-west Europe's climate, to be emitted easily. Exposure produces occasional local disorganization and consequent red blotching. With steadier winter severity seems to go a reduction of the superficial blood vessels. The relative hairiness that we have supposed to be a feature of early types of modern men is to a considerable extent maintained in European man, as we should expect in view of the general character of the skin, and the hair is typically wavy. The cool climate apparently prolongs the maturation phase, full maturity coming later than in most intertropical lands, but here social custom no doubt plays a part as well. The climate favours muscular activity, and this again helps to prolong growth and to delay full maturity; even some peoples of intertropical Africa who are very active hunters appear to mature relatively late.

North-east Asia.

The central highland of Asia, with its summer sun-glare and its winter snow-glare, and its very dry atmosphere, exposes the skin heavily to the action of ultra-violet rays, and brown pigment, probably fully ancestral, is general. We may look upon the North Chinese as, in a measure, depigmented, to some extent as we in Europe are depigmented. The north Chinaman is said to be darker in winter than in summer. In the types subject to the long cold winter anticyclone, whether they are brown or yellow, the skin is dry, sweat glands are scarce, and hair is scarce and coarse, the pores being firmly outlined and tightly filled. We note also the lack of heating quality in the normal diets of the region except on the high plateau, where, in winter at least, heat is obviously the great need. The dry cold Arctic atmosphere is very transparent to ultra-violet rays, and their reflection from the snow also gives them great power in this region. This doubtless accounts for the evocation of pigment. America received the basic elements of its population through north-east Asia, so it would seem that a large part at least of the native American stock is descended from persons with dry, rather hairless skin and brownish (red or yellow with the brown) colouring. This physical endowment has apparently undergone various modifications in different parts of the New World.

Europe.

In spite, however, of the favouring climate after the end of the Ice Age European peoples did not easily rise to their present position in the world, for they found special difficulty in acquiring the art of food production invented by the dwellers on the banks of the Euphrates and perhaps the Nile. Wheat and barley are almost certainly of south-west Asiatic origin, and it evidently took time before races of these plants suited to Europe were fully developed. Moreover, most of the European soils needed more management than those near the Euphrates, Nile, and Ganges, which were seasonally fertilized by silt from river floods, or those near inexhaustible stocks of loess in North China. Not only cultivable plants and domestic animals, but also a fairly high grade of social organization, had to be acclimatized in Europe before our continent could make real headway, and there has generally been a tendency in our quadrant of the world to seek imported supplies of at least some materials.

Europeans in the Tropics.

The bodies of Europeans, and especially of the fair Europeans with blood vessels showing through the uncoloured skin, are engines adapted to ensure emission of a large amount of heat and consequent performance of a large amount of work. If we go to intertropical lands we suffer in many ways, two of which concern us here. The fair skin allows the actinic rays to penetrate it, and they set up a disturbance within, and the sensitiveness of the skin makes these and other intertropical sunlight effects, the more dangerous. Besides this, the emission of heat is less easy under the equatorial sunshine, and an organism adjusted to a great heat loss is thus apt to get below par in a very warm climate. Therefore, whatever the effectiveness of our skin character in our own region, it is apt to bring about nervous debility, and is especially harmful to European children beyond the infancy phase—that is, in active childhood—in intertropical climates. This implies that, even with improved sanitation and extirpation of the causes of notorious diseases, the warm lands will still present grave difficulties to would-be European settlers, and especially to the fair Europeans. These are the more serious because European women living under the tropical sun are naturally very apt to struggle to maintain their fairness of skin—in other words, to resist adjustment to their adopted environment. The compromise of a sheltered life along with employment of coloured native field labour is now being tried out in various ways in several regions, but the attempt to maintain separate European and native groups side by side in the same place is full of social dangers, which react on health in myriad ways, and which are specially troublesome in view of tendencies towards some measure of nervous debility. Types which can be said to “pass for white” but have other blood in them at present seem likely to be more successful, and there are those who think that such elements will increase in some intertropical lands in place of the pure whites, and that these “pass for whites” will tend to diverge increasingly from the white standard and to emphasize the colour element in their inheritance as time goes on. Social conventions among many of the Protestant peoples of Europe, however, militate against any rapid multiplication of “pass for white” populations except among labourers.

From what has been said it will be seen that the fairest-skinned Europeans with their high power of heat emission and their activity of body and mind are more suited to rural than to town conditions, and the essential rural specialization of the Nordics in Europe has been a factor of our continent's history. Some very detailed observations by Mr. Bowen, now in progress, are tending to show that this kind of constitution is comparatively free from serious tuberculosis in agricultural areas, but that it becomes rather prone to this scourge when depressed into industrial poverty. Its vigour and activity in rural areas have led populations in which it is abundant to maintain a good level of feeding, though resistance to disease is often lowered by alcoholism, which seems in many cases to be an expression of the Nord's inability to find or to take advantage of a full outlet for his capacities of body and mind.

Town and Moorland.

We need much more observation, but it seems probable that the short, dark, long-headed man, who forms such a large element in the population of our moorlands and our big towns, can get through on the basis of less emission of heat, and he often has less physical energy and initiative. He more readily acquiesces in poor feeding in his moorland home, and there, especially in regions socially depressed by decay of mining or of farming, he seems very prone to tuberculosis. On the other hand, under industrial conditions in large towns where he can get food, of sorts, easily, tuberculosis appears to be less fatal to him than to the fairer types. Thus the character of the skin and hair, both among ourselves in Europe and among the various races of the world, seems to be in some degree an indicator of the general constitution, and especially of the mechanism of heat regulation. And these differences of constitution seem to connect themselves, not only with adaptability to certain climates, but also with resistance

to various diseases, of which I have taken tuberculosis as an example.

I venture to think that there is a future for the study of the incidence of various diseases and of the prevalence of various activities among people of diverse types, especially types of skin, but if that line be pursued the worker must clearly remember that environmental influences are at work all the time, and that, for example, our British dark long head on the moorlands may show features of strength and weakness different from those of the same type in the poor quarter of a large city.

THE THEORY OF DIAGNOSIS.

DR. CROOKSHANK'S BRADSHAW LECTURE.

THE Bradshaw Lecture was delivered on November 4th, before the Royal College of Physicians of London, by Dr. F. G. CROOKSHANK. The lecturer, after paying tribute to the wit, humanity, and sagacity of Dr. Vivian Poore (who gave the first Bradshaw Lecture in 1881), said he had chosen as his theme the Theory of Diagnosis, since none other could be more proper to medicine, or to the branch of medicine called surgery. Indeed, even therapeutics must yield pride of place to diagnosis, for, in the words of Hart, written in 1625, "This part of Physicke doth farre excell the other, to wit the Therapeutick, the which without the Diagnostick is of small use and profit."

Dr. Crookshank proceeded to justify the attempt to give an account of the theory of diagnosis—namely, to explain diagnosis by appeal to first principles that were independent of medical doctrine—by a discussion of the relations between science and philosophy. These had been ignored for the most part during the latter part of the nineteenth century, but were now receiving eager attention by those who saw, with Hobson, that natural science was a conceptual scheme and not a perceptual intuition, and who deplored the domination of science, until quite recently, by the philosophical theory of knowledge known as physical realism, still unconsciously sustained by those who proclaimed the freedom of science and medicine from the thrall of philosophy. If thought was to be clarified, in respect of this as of other subjects, it was necessary, as Galen said, to distinguish between words and things, and as Ogden and Richards had shown, to discriminate between words, thoughts, and things, thus following the injunctions of William of Occam, who, six hundred years ago, begged us to decide always in controversy and discussion whether a word was employed vocally: as expressing the intention of the mind; or representatively, for the object of thought.

The lecturer showed that the word "diagnosis" was generally employed in the Hippocratic Collection as indicating judgement, or cognition, and not as standing for discrimination between diseases, while Galen defined it as the "clear cognition of things present." It was not until the seventeenth century that the word appeared in the English language, and was then defined as meaning "dilucidation" or knowledge, while in the eighteenth century it was first used, in English and in French, as indicating the art of distinguishing between the diseases which the botanical physicians of that century, following Sydenham, defined and classified as if objects of perception, like plants or animals. It was only recently that an attempt had become obvious to restore the original usage of the word, and to realize that to "diagnose" in terms of diseases that were supposed to be entities was merely one method, or modality, of (in Dr. Christian's words) evaluating the signs and symptoms observed. Since the discard by medical men of general training in the theory of knowledge there had been, especially during the last hundred and fifty years, an increasing tendency to accept as of permanent validity and as corresponding to objects in nature, the conventions of diagnosis that had grown up, forgetting that, as Llewellys Barker had said, the groupings of signs of illness were conceptual, and to be changed when the purpose changed. Similarly, it had come to be believed that, in the process of diagnosis, physicians went through certain formal logical manœuvres,

whereas psychological inquiry showed that, in diagnosing, some common faculty was exercised that satisfied both the intellectual and affective activities of the mind, "diagnosis" being just the name given to the first stage of the physician's work—the formation of those judgements arrived at by the interpretation of what was observed and expressed by the symbolization of the interpretations that guided him in his office of healing.

Thus considered, diagnosis appeared as a kind of reflex process which in a primitive, yet perfectly satisfactory, though purely selfish way, was exercised by the newt whose tail was cut off, and by the cat who sought the proper grass when ill, the "diagnosis" being in these cases symbolized by the growing of a new tail and the finding of the proper remedy respectively. It seemed possible that there might be ground for assuming the possession of some such instinctive power or ability by those "healers" who were able to express a diagnosis, for others, not in terms of orthodox convention, but therapeutically by manipulation or otherwise.

Discussion of the early philosophical trends amongst primitive man led to the conclusion that, at a very early stage in human progress, natural medicine showed tendencies for division into two schools, the one considering disease as a falling away; the other, as due to something added—a demon or the like. The same trends had been indicated throughout the whole history of medicine, those vitalists who regarded disease as a falling away belonging to the Coan school; the others, or organicists, who saw disease as something added or attacking, being in sympathy with the Cnidians and all who sought, in disease, the evidence of entities, whether diseases or demons. This division into two camps—evident enough even to-day—was only understood when the history of medicine was considered in relation to that of philosophy, the two medical camps corresponding closely to two philosophies—those of the sensualists, or empiricists, and of the Platonists, or rationalists. Natural diagnosticians, who diagnosed in terms of experience, corresponded to the sensualists, or empiricists; conventional diagnosticians, who diagnosed in terms of some rationalized type, were among the Platonists or rationalists. The former, in Mr. Trotter's phraseology, thought directly or concretely; the latter indirectly or abstractedly. The types, or universals, of the conventional diagnosticians were not objects of experience, but were mental constructs, justifiable only by their convenience and not as expressions of reality.

The lecturer proceeded to illustrate his thesis by reference to two stages in the history of medicine—the first marked by the controversy between the Coan and the Cnidian schools; the next by the struggle, in the sixteenth century, between the Hippocratists and Galenists of the Paris Faculty of Medicine. The Coan and Cnidian methods of diagnosis were shown to correspond, practically and philosophically, to the methods and thought of the natural and conventional diagnosticians of all time; and the gradual approximation of Galen, despite his admiration for Hippocrates, to a Platonic form of thought was insisted upon. It was by reason of the subordination of Galen's medicine to a Platonic philosophy that he became, in the sixteenth century, the titular head of those who, relying upon the tenets of scholastic realism, opposed the Hippocratic physicians who were, philosophically, nominalists.

It was in this way that the medical squabbles of the sixteenth century had, philosophically, the same grounds as had the opposition between Aristotelians and Platonists, and, in the Middle Ages, between the realists who upheld the extreme doctrine of the Real Presence and the nominalists who were accused with bitterness of undermining that doctrine. The mediaeval nominalists were to-day represented by the physicians who cared little for formal diagnosis in terms of clinical entities; and the realists by those who insisted on hard and fast distinctions between "entities" to which they allocated real, if not material, existence.

The influence of these modes of thought upon present-day problems was discussed, and the lecturer suggested that dissatisfaction with the diagnostic conventions of the last century was everywhere manifest, these conventions