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Email: gdz@sub.uni-goettingen.de

DISPUTATIO INAUGURALIS

QUÆDAM DE HOMINUM VARIETATIBUS,
ET HARUM CAUSIS EXPONENS,

QUAM ANNUENTE SUMMO NUMINE EX AUCTORITATE
REVERENDI ADMODUM VIRI

GULIELMI ROBERTSON, S.S.T.P.

ACADEMIÆ EDINBURGENÆ PRÆFECTI;

NECNON AMPLISSIMI SENATUS ACADEMICI CONSENSU ET
NOBILISSIMÆ FACULTATIS MEDICÆ DECRETO

PRO GRADU DOCTORIS,

SUMMISQUE IN MEDICINA HONORIBUS ET PRIVILEGIIS

RITE ET LEGITIME CONSEQUENDIS; ERUDITORUM

EXAMINI SUBJICIT

JOANNES HUNTER,

SCOTO-BRITANNUS, SOCIET. MED. SOC. HON.

“The spacious West,
And all the teeming regions of the South,
Hold not a quarry, to the curious flight
Of knowledge, half so tempting or so fair
As man to man.”

AKENSIDE.

PRID. ID. JUNII, HORA LOCOQUE SOLITIS.

EDINBURGI:

APUD BALFOUR ET SMELLIE,
ACADEMIÆ TYPOGRAPHOS.

M.DCC.LXXV.

DISPUTATIO INAUGURALIS

QUAEDAM DE HOMINUM VARIATIONIBUS
ET HACIN CAUSIS EXPOSITIO

AVCTORE
FRANCISCO JOSEPHO WILHELMO

PHYSICAE ET
MATHESIAE DOCTORE

IN
MAGISTRI JOHANNIS KEPLERIS ACADEMIA
VINDOBONENSIS

ANNO
MDCCCXXXIII

JOHANNES HUNTER

PHYSICAE DOCTORE

et
MATHESIAE DOCTORE

AVCTORE

IN
MAGISTRI JOHANNIS KEPLERIS ACADEMIA

PHYSICAE

ET
MATHESIAE DOCTORE

AVCTORE

FRANCISCO JOSEPHO WILHELMO

AN INAUGURAL DISSERTATION,

BY

JOHN HUNTER, M.D. F.R.S.¹

IT is not necessary for me when going to write about the varieties of man, and the causes of them, to try and prove the importance of the subject. Much has been written by many about animated beings, nature, and the gods; and there are and have been those, who have attempted to gauge the strength and faculties of the human mind. But nothing has yet been written clearly by any writer upon the matters which regard the

¹ Many persons, amongst others, J. A. Meigs of Philadelphia, have been under the idea (see Nott and Gliddon, *Indigenous Races of Man*, p. 216), deceived by the similarity of name, that this treatise is the production of the celebrated surgeon John Hunter. A consideration of the date 1775, would have been quite enough to prove the contrary, nor does *the Hunter* appear at any time to have taken the degree of M.D. Not much is known about the author. He was a physician to the army, and wrote some papers on the health of the service, which are to be found in the medical journals. The principal interest attaching to this treatise arises from the fact that it appeared in the very same year, and a month or two before the more famous work of Blumenbach on the same subject. It is very inferior in its mode of treating the subject to the effort of the German naturalist; nor does the author seem to have prosecuted his researches further in this direction. Still anthropology has progressed so very little, that some parts of it are quite on a level with the science of the present day, and it may still be read with interest. The original has become very rare, though four copies are to be found in the British Museum; but it has been thought that a translation would be acceptable to many who might not care to wade through the Latin of a modern physician.

external appearance of man, his countenance, his colour, the dimensions of his body, and other similar topics. Yet it cannot be denied for a moment that many diversities and anomalies do exist among men. Do not those who spring from the same race, and are born of the same parents, differ from each other in temperament, health, strength, stature, colour, form, and above all, in disposition and power of mind? And a greater difference is found between those who live in different climates, and inhabit widely-separated regions of the earth, very diverse from each other. Others differ also by being of a white or black colour, of a handsome or ugly body, by softness of disposition or the reverse, and by polished or rude manners. Such important discrepancies, so well known to all, supply a mass of materials quite sufficient for philosophers, and those who investigate nature, to employ themselves upon. Many¹ who have considered these questions, and endeavoured to ascertain their causes, have thought them too great to be ascribed to natural causes, but that they should be referred to the will of the Governor of all things, the supreme Law of nature, as if He had in the beginning marked out men by so many diverse distinctions. Now if we take up this mode of philosophizing, and attribute everything for which we can give no reason to the Divine interference, we shut the door and stop up all the sources from which all those things spring which adorn life, promote the arts, and finally increase the force and the faculties of the human mind. And therefore it is worth while first of all to inquire what amount of proof there may be for the opinion of those who impute all diversities to the Deity, and therefore imagine man to consist of different species.

Those who believe in the diversity of species contend that the diversities are such that they cannot be explained in any other way, whether by climate or other external causes. What, they ask, is the cause of the copper colour and the beardless chin of the Americans? or of the black teats of the Samoide

¹ *Sketches of the History of Man*, Vol. 1. Sk. I.

women? of the black colour and thick lips of the Africans? of the swelling pudenda of the female inhabitants of the Cape of Good Hope? What man has ever explained these and similar things? So they affirm these things cannot be explained, but must be attributed to God¹.

How much this superstition, which refers everything that seems to us inexplicable, to the Divine hand and the will of God, stands in the way of science, has been said above.

Besides these diversities which it is true we cannot explain, there occur others equally inexplicable, where the notion of a diversity of species cannot be entertained. Who has ever explained the high cheek-bones of the Scotch? No one; but is that a reason for considering them a different species? Nor has any explanation ever yet been given for the blue eyes of the Goths². And are they then of a different species? By this mode of reasoning, it would follow that there are different species in the same family.

In order to prove diversity of species, writers have had recourse even to the mental faculties³. This one is brave; that man timid. How then can they be of the same species? This man receives strangers with pleasure; that one keeps them off as much as ever he can. Are they therefore of the same species?

If this were so, and discrepancies of this kind were accepted for signs and certain proofs of diversities of species, would not different species be produced in almost every single family? Could it not be said of the same man at different times that he in like way was of a different species from himself?

Those who defend this opinion of the diversity of species, not content with these arguments, seek out others from the Final Cause. For inasmuch as the regions inhabited by man are excessively different in climate, soil, heat, and innumerable other points, therefore they believe that different species of

¹ *Sketches of the History of Man*, Vol. I. p. 12.

² Linn. *Fauna Suecica*, p. 1.

³ *Sk. of the Hist. of Man*, Vol. I. p. 15.

men were necessarily accommodated to different regions'. But who can say that it is not more agreeable to perfect wisdom to have given to different animals that kind of nature, by which they could easily accommodate themselves to whatever might happen, than to have created a fresh species adapted to each change of external circumstances?

This question has with justice been most fiercely agitated, for it is by no means one of mere curiosity. For if it be allowed that men are of different species, then they must be so considered in medical, natural, civil, and theological disquisitions, and lastly, in all works which treat of man; and whatever might be said of one species, might possibly be most erroneously predicated of another.

For if it were so, it would be incredible that the Wisdom which framed the universe should have created different species, distinguished only by colour, or thick lips, or a depressed nose, and not of a different nature, and intended for some particular end. So, whatever learned men have written about one species, which has been applied to another, falls to the ground; and the sources of reasoning, from which it has often been thought that truth is derived, that is the comparisons made between various nations, are altogether sealed up. But what are we to think of those, who, although they consider men to vary in species, nevertheless persist in discoursing of man, as if he were always in all regions and in every place the same?

There is another error which must be noticed here. Whilst authors dispute in this way with each other about *species*, they do not explain what sense they attach to that word. The definition given by Ray, and adopted by Buffon, they reject as refuted, but they give no other in its place. And yet, without in any way defining species, they go on to pronounce the species of men to be different. But this is surely quite unjustifiable, unless the meaning of the word *species* is first of all explained.

As this is the case, in order that others may not make the

¹ *Sketches of the History of Man*, Vol. 1. p. 10.

same objection to us, pray accept our definition of the word *species*, and our idea of the way in which these notions are conceived in the mind.

As all our ideas of everything arise from nature, and its contemplation, so from the same source, and not from the dogmas of the schools, or the disquisitions of logic, is the meaning of the word *species* to be deduced. Whoever looks round the earth, will find it full of animals, everywhere offering themselves to his eyes, and will find amongst some of them an almost perfect resemblance, and a very strong affinity, but amongst more, the greatest possible difference. He who examines this diversity or congruity, will quickly come to distribute animals into various classes, according to their various likenesses or unlikenesses. And since nature, as they say, makes no leaps, it frequently happens, that animals are at the same time so like and so unlike each other, that it is sometimes doubtful to which class any particular one should be referred.

What is to be the rule, or criterion for deciding this? If any two animals, whose likeness to each other is not quite perfect enough to compel one to assign them to the same species, produce an offspring which is either at once like, or afterwards becomes like either parent; then however they may differ from each other in many points, yet they must be considered to be of the same species. And with these preliminary observations, this is the way in which I think species should be defined.

A class of animals, of which the members procreate with each other, and the offspring of which also procreate other animals, which are either like their class, or afterwards become so.

This definition of species may be conveniently illustrated by taking an instance from man, about whom our business now is. Take, of all who bear the name of man, a man and a woman most widely different from each other; let the one be a most beautiful Circassian woman and the other an African born in Guinea, as black and ugly as possible. Take, moreover, as you certainly may, the males and females sprung from this pair, and join the children of the latter in marriage with their maternal race,

and the children of the former with the paternal, and then, if after several generations the offspring of the female becomes in all things to resemble the mother, and the offspring of the male the father, we may come to the definite conclusion that the parents were of the same species. That this is a fact, is proved every day by the unions of the black and the white. And if any one denies the truth of this definition, what order, what certainty does he leave in the animal kingdom? One species may change into another. The ox may become a horse, the ape a man. And if reason and common sense did not revolt from such absurd and monstrous positions, some would eagerly declare that such things might take place. Let a man look round the world, and contemplate nature. What does he find? Does the varied appearance of things supply any proofs by which such a notion can be confirmed? Have not the classes of animals always remained distinct up to this time? and why should they not remain so for ever? A lawless and blind wish has often desired the existence of such mutations, and even of new genera, if it were possible. And many have tried very hard to bring about something of the kind, but no one has yet succeeded in making a new species, or turning one into another. From all which we may conclude that each and every species of animals has been circumscribed within fixed boundaries from the beginning by Divine Wisdom; and no desire, like those which are contrary to the laws of nature, is strong enough to cause nature's divisions, that is, her animals to be commingled, or disordered. And in truth, about most animals there is no doubt, because they are distinguished at the first glance, by external appearance, and manifest tokens; and the sole contention is about man, and a few other species, principally of the domestic animals. As to these there are two reasons, why writers have had doubts about them. First, because every variety and aberration from the general order takes place before our eyes, and is most easily observed. The second and more powerful reason is, because animals, placed under our care, entirely contrary to their instincts, and subjected to duties and modes of life which do not at all suit

them, for this reason especially, and all the more, the more care we take of them, become altered¹.

The varieties of dogs seem almost infinite; for they pass their lives with men, suffer like them, and share their sports and their hearths. If any one should say that the varieties of dogs indicate a diversity of species, would it not be the same thing as to affirm that the dog can carry different species at the same time in its womb? For it is common enough for a bitch to bring forth in the same litter varieties of whelps, which varieties such persons would call species. And to those who think what they call the different and permanent orders of dogs are of great weight in proving them to be of different species, we may answer that no such orders are permanent and constant without the careful interference of man. Who does not know how difficult it is to produce the *Canis Gallicus* (*Gravius* Linn.) or the *Canis Odorus* (*Sagax* Linn¹)?

For these reasons, my opinion is that men must be held to be of the same species. And as in the vegetable kingdom, the same species sometimes comprehends many varieties, which all depend upon the climate, the soil, and cultivation, so to use the language of botanists, the diversities of men are to be considered as varieties of the same species, and, in the same way, to be deduced from natural causes.

No one can be ignorant how much influence events have in affecting and changing men. On these depend almost all disorders, and the numerous changes in the human body. To explain properly their effects and the varieties of the human species, and to show clearly how they take place, not only is an intimate knowledge of human nature required, as far as regards its motions and mutations, and its increase and decrease, but also a deep knowledge is necessary of all things which can affect man, so far as regards their qualities, and mode of action. For to give an explanation of how two bodies act upon each other, the nature of each must be understood. Who possesses this science? Who has explained the nature of the human body?

¹ Buffon, Vol. XII. p. 192; Paris, 1770, 12mo.

Who has investigated the powers of nature? No one. Many things are obscure, which can only be brought to light by great labour, and the united powers of many men in a long space of time. Thus it will easily be understood how difficult is the task I have imposed upon myself. I approach it, however, not from any love of writing, but from a sort of necessity. And so far from being sorry, I shall be glad, if, as I may hope, these my endeavours will call away able men, especially at this time, when natural history is so flourishing, from shells and butterflies, to studies worthy of man.

In order that I may conduct my work on some plan, I have thought it best to divide it into four parts; in the first of which I shall treat of the colour of men; in the second, of stature and form; in the third, of the excess or defect of parts, or other differences; and in the fourth, of the mental faculties. These chapters will comprise almost everything which all the curious investigators of this planet have seen and told.

CHAPTER I.

Of Colour.

THE varieties of colour are wonderful. Thus in men we meet with white, black, brown, copper-colour; lastly, all shades between white and black, some having one, and others another. And in order to show this more clearly, I have subjoined a table of the colours of man, as they differ according to race, which I put forward, not as an absolutely correct history of colours, but only as an example and specimen of varieties.

Table of Colours.

Black.

Africans under the direct rays of the Sun.
Inhabitants of New Guinea, and of New
Batavia.

Sub-black.	The Moors of Northern Africa. The Hottentots, dwelling towards the south of the Continent.
Copper-coloured.	The East-Indians ¹ .
Red.	Americans ² .
Brown.	Tartars. Persians. Arabs. Africans dwelling on the Mediterranean Sea. Chinese ³ .
Light brown.	Southern Europeans. Sicilians. Abyssinians. Spanish. Turks and others. Samoeides and Laplanders.
White.	Almost all the remaining Europeans, as Swedes. Danes. English. Germans. Poles and others. Kabardinski ⁴ . Georgians. Mingrelians ⁵ .

What is the cause of such different colours? To this the answer is difficult. Yet many philosophers have attempted to discover it. Those who borrow their philosophy from Scripture,

¹ These although they vary in colour, as being a little darker or lighter, all more or less approach a copper colour.

² This colour scarcely differs from copper. Those who inhabit the Northern part of America are so much whiter, that they nearly lose the red colour altogether.

³ The Chinese are of all colours between brown and *white*; in the south, brown; towards the north, white.

⁴ Buffon, Tom. v. p. 20.

⁵ Perhaps we ought to put here the inhabitants of some of the islands in the great Pacific Ocean.

and explain by it all the works of nature, consider Cain as the father of the blacks, and deduce all the middle grades of colour from the various mixtures of white and black with each other¹. And yet about this point some stand out very stoutly for Ham², while even Ishmael³ has his supporters. Some take refuge in other causes, as the heat of the sun, thick vapours⁴, and the vicinity of scorching sands. It is not my intention either to support or refute these opinions, but rather to deduce my conclusion from matters of fact.

The seat of colour is without controversy in the skin, though it is not diffused throughout that organ, but only occupies⁵ that part which is called the cuticle, which is made up of the epidermis and the reticulum; and of these two, resides principally in the latter. In the blacks the cuticle is thicker and harder than in the whites to this extent, that in the latter the reticulum is a sort of thin mucus, and in the former a thick membrane⁶. The transparent epidermis of the whites has the appearance of a very thin slice of horn: their reticulum is not very different from coagulated mucus, and the epidermis seems to consist of the same, hardened. And some teach⁷ that this is its real form and material. But although anatomists are by no means agreed on this point, and it is not for me to settle the matter, I am obliged, from the nature of my subject, to say a few words about it.

In the whites, the parts under the skin, or rather the cuticle, which change colour, cause the colour of the body to be changed, on account of the transparency of the cuticle. In jaundice the skin becomes yellow, because the blood is tinged with bile; and the rush of more blood than usual into the vessels of the face causes blushing. And a kind of typhus, nearly peculiar to the West Indies, is called the yellow fever, because from the congestion of yellow serum in the vessels of the skin

¹ *Essai sur la Populat. de l'Amérique*, Tom. iv. liv. 7. c. 19.

² *Id.* cap. 13.

³ *Spectacle de la Nature*.

⁴ *La Bibliothèque impartiale*, Tom. v. Mars et Avril, p. 227.

⁵ Albinus, *de Colore Æthiopum*, p. 6.

⁶ *Ib.* p. 19.

⁷ Haller, *Physiolog.* T. v. p. 7.

this becomes yellow. Moreover, if pigments are applied inside the epidermis, they stamp on it so permanent a colour, that it remains to the end of life. If gunpowder is burnt into the skin, who does not know how long it remains there? And in some such fashion many barbarous nations¹, like our ancestors², used to paint and mark their skin with various figures, for the sake of ornament.

Hence we may draw these conclusions. First, the cuticle must have no vessels, or at all events extremely few. For, if it were furnished with only a few more vessels, it would admit bile mixed with blood to its innermost parts and furthest recesses, and then what would stand in the way of yellowness remaining in it a long time, like any other colour caused by pigments? Moreover, the fact of the condition of the pigment when coloured being fixed, shows that it consists of parts which are very permanent, and therefore are furnished with very few, if any, vessels. Writers do not attribute bones to those parts of the body which abound in vessels; yet these parts, when stained with any colour, do not cease to change all their particles, until they have recovered their original tint. Hence we may conclude for certain that the cuticle is furnished with very few, if any, vessels, and that its component parts scarcely ever change.

So much being premised about colour, and the structure of its seat, we must investigate the causes of it, and, first of all, of blackness. And perhaps it will be worth while to begin by inquiring into the causes of the change of colour in the regions of the epidermis and the reticulum; and this all the more, because nature, in its simplicity, generally uses the same means to effect the same ends.

Air, dirt, and the heat of the sun, the transparency of the cuticle being destroyed, give it a brown colour, and at the same time make it harder.

He who wishes to have his hands shining and white will not find it enough to protect them from the sun and the heat,

¹ Hawkesworth's *Voyages*, Vol. II. p. 191. ² *Cæsar, Comment. Lib. v. cap. x.*

but must also keep them from the air, as is well known to women, who use gloves at all times. Besides, the colour of the face is never so fair as in other parts of the body which are always covered, although it be never exposed to the sun.

Those who have to work hard at manual labour, never have white hands. Gunpowder, as has been said, when introduced below the epidermis, makes the colour black. Dirt and pigments can do the same thing, though in a minor degree. And this seems to be confirmed by the use of washes, with which the blacks besmear themselves, so as to make themselves blacker.

The heat of the sun is the most powerful cause. Its force is shown if you expose to it the whitest possible face, for it will lose all its whiteness in one day, and come out brown or red. It is particularly efficacious in the summer on red-haired persons with light skin; and can affect the whole skin with brown spots, but especially the hands and face, because they are most exposed to it, which Linnæus¹ makes a disorder, and calls *Ephelides*. Nor is there any doubt, that if the heat were kept up long enough, the whole skin would become of the same brown colour.

If then these causes, the air, namely, and the heat of the sun, can cause such changes in these regions where, by means of houses and clothes, we are so much protected from them, at all events we need not be surprised that greater blackness is thereby effected in much hotter regions where men are exposed naked to a burning sun at almost all times.

But besides the heat of the sun, and the effects of the air, where any one is exposed to it, other causes bring on greater blackness like that of the Africans.

The parts of the cuticle are very rarely changed, as was said before, and all the more rarely the thicker it is. And, therefore, when the same particles are exposed for a long time to great heat, the effect is great, that is, much blackness is necessarily sub-introduced. And, moreover, it is certain that pig-

¹ *Amœnit. Academ.* Vol. VI. p. 483.

ments can do much to increase this, by which, as has been said, their bodies are rendered blacker, or, as they think, more beautiful.

The cuticle of the blacks is said to be thicker and less transparent than that of the whites, and therefore, when the causes of blackness are induced, will also be blacker; if indeed that want of transparency has the effect of putting more particles in the way of the influences which produce blackness. For all, who are skilled in optics, know well, that transparent and coloured plates make colour more vivid and more intense, the more of them there are which are put one above the other: because the rays of light transmitted by the one are reflected by the other, and the brightness of colour is always in proportion to the number of reflected rays. But when the colour of the plates is that of blackness, which consists of the absence of light, the rays which are not suffocated by one are effaced by the other, and so, the light being neither transmitted nor reflected, black colour is produced. If, indeed, it be asked how it is that the cuticle of the blacks is less transparent than that of the whites, although I cannot perfectly explain it, I will and illustrate it in a few words.

The action of the sun and the air is a sort of stimulus to our bodies, and therefore acts according to those laws which regulate stimulants. The effect of this stimulant, burning and irritating the skin, is to render it harder and thicker, as is the case with the hands of labourers, and with the use of all parts of the body which are affected by stimulants. In the same way the air and the rays of the sun, by their stimulating action, render the skin less transparent. The efficient cause, why the skin becomes thicker, is clear, and the way in which it is made thick, whether by the sun or by other irritating subjects, is pretty much the same. The irritation of the parts brings with it a larger influx of humours, and increases the action of the vessels, which are used in their increment or reparation. And as the continuous action of the sun, and other influences which stimulate the skin, display a great resemblance of action, so the progress of the acting power is the same in either case.

Stimulants and irritants, when first applied to a yet tender skin, cause the appearance of many pimples; but after a certain lapse of time, it becomes harder, thicker, and at last callous, and can never afterwards be inflated into pimples by the same causes. And in like manner, although the rays of a southern sun burn our bodies, and cause many pimples to rise on the skin, still bodies accustomed to those regions, or those who have always been in the way of it, are not affected in the same manner.

The fact therefore of the skin being made thicker by the intemperance of the climate and the heat of the sun, and blacker by the direct rays of the sun and by pigments, proves our whole theory of colour.

We must next inquire how far the explanation we have given is supported by facts, and how far it goes towards explaining facts.

Since all blacks are born white¹, and remain so for some little time, it is clear from this that the sun and the air are necessary agents in turning the skin to a black colour. And this is proved besides by the fact, that when blisterings and burnings are applied to the bodies of the blacks, they change such parts so into white, that the black colour is not brought back to the body for some days². Those parts of the body too which are most protected, and defended from the sun and the air, do not lose their original white colour, as is observed in those blacks who have the gland covered with the prepuce³. All the nations which dwell within the torrid zone have their colour more and more verging towards black. This almost universal fact doubtless tends to support the opinion given above. But that such is not the fact is objected by some, because there are no small number of white people in the torrid zone⁴. And although I cannot deny this, still it is quite plain that the inhabitants of the torrid zone are blacker than

¹ *Hist. Générale des Voyages*, par M. l'Abbé Prevost, Tom. IV. p. 590.

² *Ib.* Tom. III. p. 1163.

³ *Hist. de l'Académie des Sciences*, An. 1702, p. 32.

⁴ *Essai sur la Population de l'Amérique*, Tom. IV. liv. 7, c. 14.

any others, and that almost all are of a dark colour approaching to black.

However, since the cause of blackness, as we give it, is by no means simple, and does not entirely depend upon a nearer or greater distance from the Equator, and since when one or other of the efficient causes is absent, the whole effect ceases, it will not be foreign to our purpose, if we inquire whether the fact of the whiter populations of the torrid zone goes to refute or confirm what we have advanced.

To render our labours lighter, some general observations may be premised.

The heat is not always found less or greater in exact proportion to the distance of the respective regions from the Equator.

Islands are not so hot as continents, on account of the vapours which rise from the sea, and of the winds which are constantly blowing from it, both of which tend to refrigerate the soil.

Mountainous countries, or countries in the neighbourhood of mountains, greatly temper the heat. The reason of this will be given immediately.

Besides, the wind, sometimes by increasing, sometimes by diminishing them, variously affects heat and cold: coming from hot countries burnt up by the sun it brings heat; blowing from snowy and cold mountains, cold.

Finally, in places where the heat is the same, the same colour is not always the result; for the different mode of life has a great influence in changing it.

I will illustrate these observations by a few examples. As to the first point: many islands enjoy a very temperate climate, and particularly those which are situate furthest from continents¹. How far their inhabitants preserve their whiteness may be learnt from the instance of those who inhabit the islands of the Southern, or great Pacific ocean². Almost all the East Indies, as they verge towards the south, split up into

¹ Hawkesworth's *Voyages*, Vol. II. p. 246.

² *Ib.* Vol. II. p. 187.

islands or peninsulas; which partly explains why the colour found there is copper or brown, and not black.

As to the other observation: the Abyssinians, although placed under the Equator, still are white. In that country the mercury never stands above twenty finger-breadths high in the barometer; whence it appears that Abyssinia is perhaps the highest part of the world inhabited by man, at least two miles above the level of the sea. No one, who has ever been up a mountain, is unaware how much such an altitude will lessen the heat. Thus some mountains of America, though placed exactly under the Equator, are covered the whole year with deep snow and ice. Even the highest point of Etna is covered with perpetual snow¹. That altitude therefore moderates heat is a fact, and is proved by these examples, nor is the explanation difficult. And although I cannot go into the matter at full length, yet I will say a few words about it.

Heat is caused by the rays of the sun, when they fall either directly or by refraction upon anything. But it is not found to be the same in every substance, on which the rays happen to fall: as when they fall on a transparent body, they do not cause the same heat as when they fall on an opaque one. This is most clearly shown by the fact, that when the focus of a concave metal mirror, opposed to the sun's rays, is thrown upon water, it does not boil, or show any sense of heat; although if copper, or any other metal, is opposed to the mirror, it liquefies, or evaporates, in a moment. And since in the passage of light through a transparent body, a smaller quantity of heat is thrown out, in proportion to the thinness or transparency of the body, but the air is more rarefied as it is higher above the earth; so it on that account transmits light more easily, and almost without any obstacle. For light seems to cause the more heat in proportion to the obstacles to its progress. But enough has been said on this point.

How much influence the wind has in altering heat, may be seen from the instance of America, where, when the north wind

¹ Brydon's *Letters*; Vol. I. Lett. 10.

blows, the cold becomes so great that in one night the rivers become frozen and unnavigable. The same thing is shown in Africa, where the winds, sweeping over and rolling about burning sands for many miles, stir up an almost intolerable heat.

I will now point out the effects of the mode of life. Those who are always clothed, and generally live in-doors, are seldom exposed to the causes which produce a change of colour, and so retain their whiteness. This happens to Europeans who inhabit hot countries, who retain their original mode of life, and continue to wear their clothes; whereas the aborigines¹ are always naked, and exposed to the force of the sun and the winds. But if any of them never do expose themselves to the air and the sun, as often happens to the women², they come off better in the way of colour than the rest.

As to the objection, that white men are to be found in hot regions, where the observations above collected do not explain their whiteness in any way, and that it is a fact, that in Abyssinia, and in the islands of Java and Madagascar³, white and black men are found together, that must be explained otherwise. For it must be observed that these black and white men are of different origin, and differ not only in colour but in mode of living, and in many other external circumstances. For it is certain, and has been discovered, that those differences have not crept in among those who have always inhabited those countries from the beginning, but have come from elsewhere out of countries whose temperature was more favourable to whiteness or blackness, with the original inhabitants of such regions. And let no one suppose this can be contradicted. For so far their similarity is of importance, because you can easily in consequence of it trace the origin of individuals to some neighbouring nation; and thus you may gather that the black inhabitants of Abyssinia came thither from other neighbouring parts of Africa. And in the same way

¹ *Hist. Gén. des Voyages*, par M. l'Abbé Prevost, Tom. IV. p. 411.

² Buffon, *Hist. Naturelle*, Tom. V. pp. 40, 49, 70, 82, 90, &c.

³ *Ib.* pp. 42, 160.

people as black as the Africans and as white as the Europeans inhabit the islands of the great Pacific ocean¹: of whom the former have without doubt emigrated from the countries called New Guinea; and the latter, as is likely, from those tracts of Asia which trend more towards the north.

It may still be objected to my view, that two nations, differing at the outset, when they come to inhabit the same regions, although they are exposed to the same external causes, still remain different. But on this point two things are to be considered, namely, that different nations by no means live in the same, but, on the contrary, in very different ways. And it is by no means necessary to have causes so strong, or influences so energetic, to preserve an effect when it is once done, as to produce the same originally. In this way, although in the islands of the Pacific ocean above mentioned, the heat of the sun cannot change the colour from white to black; yet when that is once done, it can keep it so.

Brown colour, diverging from white, is by no means confined to the torrid zone; for the men of northern Europe and Asia, where cold and frost and snow reign in perpetual junction, are of a brown colour². They lead a most wretched life; their food consists of fish and wild beasts. For bread, they dig up roots out of the earth. In winter they hide in hovels, except when compelled to go out by hunger. They construct their hovels under the earth, which is necessary, on account of the intolerable cold. This mode of life is no doubt very unfavourable towards causing or preserving whiteness. And whilst they are catching fish, or hunting wild beasts, they must needs be a great deal exposed to the intemperance of the air. And this inclemency of the air and constant fish-diet have the greatest possible influence in making the skin harder and thicker; and living in dwellings always filled with smoke is certainly no remedy. This is an example of how far the severity of a climate may of itself go to change the colour.

¹ Hawkes. *Voyages*, Vol. I. p. 568, Vol. II. p. 178.

² *Hist. Gén. des Voy.* par M. l'Abbé Prevost, Vol. XIX. p. 65.

So much then I have to say about colour, in general terms, it is true, because the limits of this little treatise did not permit me to speak more fully or copiously: still, I hope there is enough to tend somewhat towards the explanation of colour in all instances.

CHAP. II.

Of Stature and Form.

THE differences of human stature are far from being small. The inhabitants of some part of South America grow to a height of seven feet¹; whilst the inhabitants of the frigid zone scarcely attain the height of four or five feet². The islands called *Huacheine* and *Marianne* produce men of six or even seven feet high³; on the other hand, the inhabitants of the promontory of South America, called Cape Horn, are of small stature⁴. But why should I say more, when one sees almost always one and the same country producing men of all kinds of heights? What is the reason of this?

The way in which aliment is taken up into our bodies has scarcely yet been thoroughly investigated, nor are the laws found out by which they grow. But although such is the case, still, until some greater light is thrown on the matter, I may be allowed to say what I think is true, or at least probable.

Growth seems to be due to the action of the heart, by whose renewed pulsations our fibres are rendered longer, and are amplified, and directed to all parts. This is illustrated by the unfolding of the whole human body, and especially of the womb. But the action of the heart is not a cause of itself; nor do men and plants share the same nature. The latter have no power of locomotion, and merely increase and grow to a certain height;

¹ Hawkesworth's *Voy.* Vol. I. p. 31.

² *Hist. Gén. des Voy.* par l'Abbé Prevost, Tom. XIX. p. 65.

³ Hawkesworth, Vol. II. p. 254. Buffon, Tom. v. p. 52.

⁴ Hawkes. Vol. I. p. 391.

but it is different with man, who can scarcely come to perfection without movement and action. The action and movement of the body must therefore be conjoined with the reiterated pulsations of the heart, which increase, by a sort of distention, all our parts, both in length and size. How extremely important this cause is will be clear to every one, who has observed the singular increase of every part when much exercised, the very unnatural size which comes, as in many tumours, from distracting causes, and that well-known increase of the ears, which is caused by earrings of great weight¹; increase, therefore, will be in proportion to the actions of the heart and the motions of the body. But though these may be perpetually continued, the body does not go on for ever increasing, because the great rigidity which is the effect of the action of the muscular fibres puts an end sometimes not only to increase, but to life itself. That this rigidity depends upon the amount of action is proved by this, that if any one, when young, uses immoderate exercise, he scarcely ever attains the full size of a man; and those who are obliged always to labour, and to lead a hard life, do not arrive at old age, or even the confines of it, but perish before their time; and though early in years, still with the appearance and constitution of old men. In this way the causes of growth come at last to neutralize themselves.

This, then, being the immediate cause of man's growth, that is to say, the action of the heart and the movement of the body, and the rigidity of the parts the cause of the stoppage of that effect, we must now find out what are the remote external causes which affect the proximate one, and explain the varieties of human stature.

Of these the principal are climate, food, exercise, and labour. Climate acts either by heat or cold.

Heat, which is almost the origin of many animals, is necessary to all growing bodies; and in ourselves, if it is not the cause of motion and sense, at all events these faculties to some extent, and our other actions, cannot be deprived of it for a

¹ Buffon, Tom. VI. p. 34. Dampier, Vol. I. p. 32. Hawkesworth, Vol. I. p. 311.

moment without injury. By stimulating the heart, it greatly increases the sharpness of all our senses, and the mobility of the human body. Hence the inhabitants of warm regions very soon reach their full size, and those who are unrestrained in every way arrive at maturity much later than those who live in warm regions. In the eighth, ninth, or tenth year, women become menstruous, in the twelfth the men are fit for venery¹; whereas in cold regions, the menses do not appear before the fourteenth, sixteenth, and sometimes the twentieth year: nor are they fit for marriage before the eighteenth or sometimes the twentieth year. Heat too does not seem able to increase the human body, or diminish it much; for both in hot and in temperate countries, small and large men are equally produced. And if it has anything to do with growth, it would seem as if it would be more likely to diminish it, because that violent action of the heart, and great movement of the body, on one side make the increase rapid, and on the other, at the same time, accelerate the rigidity, or rather the firmness of the fibres. And in fact, the inhabitants of hot countries generally yield in stature to those of the temperate zone.

Cold, the exact opposite of heat, or to speak more accurately, the absence of heat², the force in which it consists abating, by diminishing all motions and all irritability, and blunting every stimulus, tends to lessen the size of the body. In all very cold regions, torpor is induced; the action of the body, especially in infants, is small: and therefore little adapted to extend or increase it. So that almost all the increase of the body is carried on by the action of the heart. For which reason, since the effect of action and exercise is to make the body beautiful and elegant, it is not to be wondered at, if the men in very cold countries are neither tall nor elegant. And this is confirmed by the observations of writers about the inhabitants of Greenland, and other parts of Northern Europe and Asia³. Cold, as it confines all other things in nature, so it does our

¹ Buffon, Tom. v. p. 60.

² *Praelect.*, Dr. Black, Prof. Chem.

³ Buffon, Tom. v. p. 3.

bodies, but not in the same way, that is, not by taking away the heat. For its principal action is on the fibres which serve for sense and motion, which are in consequence compelled to contract themselves more; for the heat of the human body is almost exactly the same in all countries, however different the climate may be: that constriction, therefore, will stand in the way of every force which tends to increase the parts of our bodies in length or breadth. The contrary relaxation, which comes from heat, and about which I meant to speak, when I was speaking about heat as a cause of rapid growth, produces also this effect, by acting on the fibres of motion.

Exercise and labour must both be treated of under the title of corporeal motion; for they both consist in the action of the body, and only differ in this, that volition can command the former, but the latter demands the use of reason.

Bodily motion may be violent, moderate, or slight.

Violent action, by the stiffness which follows too frequent exertion, and the exhaustion of the vital force, retards and impedes the growth. Slight motion, or rest, does not impart sufficient strength to the organs to enable them to fulfil their functions; nor can it endow the body with that firmness, or the limbs with that solidity, which action alone can produce. But it is worthy of remark, that those results of motion and rest take place most in tender years before use and custom have formed the body, which is then still unchanged by the powers of nature. For labour is a good thing for adult bodies, or rarely does them harm, and in them rest may create or increase plethora.

The condition of artisans as far as their stature is concerned, confirms, unless I am mistaken, what I have just said. They being obliged to exercise their respective occupations from infancy, pass their lives in work-shops. Bowed down to the ground, and crushed with toil, they turn out deformed, almost dwarfs, hunchbacked, and never arrive at the full stature or size of a man; so that those lines of Martial may well be applied to them:

Judged by his head, the man a Hector is,
But an Astyanax judged by his phiz;—

and in fact they generally have large heads. Those who inhabit countries very much to the north or to the south¹, are like them, and partly from the same cause, because, in tender years, both have too much repose.

Between these extremes a mean, or moderate exercise, which is the principal means of increasing the body, should without doubt be chosen. But what is moderate, is difficult to define: its latitude, to use the words of those who lay down rules of health, may be so great.

I now pass on to that cause which has the greatest influence in augmenting or diminishing the stature and magnitude of man, I mean diet. Food, although the first necessary for human life, still varies much in the quantity which is convenient for sound health, being one amount for one, another for another. When it is scanty, it is clear small stature will be the result; for the body cannot grow and be enlarged, if part of the material necessary for supporting it be taken away. On the other hand, the first effect of frequent and ample diet is to increase the body. Every herdsman knows of how much importance food is towards improving cattle and other beasts. Oxen brought forth on the barren mountains and plains of Scotland, and afterwards brought up in the more fertile fields of England, grow to double the size.

But there are diversities not only in the quantity, but the quality of food. Thus flesh and vegetables are by no means of the same importance in nourishing the human body. Sometimes when spices are added to some aliments, as flesh, wine, fish, there is more stimulus in them. This makes the increase more rapid, but, in such a way, that the body much sooner decays, worn out as it were by continual stimulus. Food prepared partly from flesh, partly from farinaceous matters, as it can be digested more easily than any other, so does it accelerate the growth more than any other.

So much for the causes of growth treated separately; now it would seem that I ought to speak about them in conjunction,

¹ Buffon, Tom. v. p. 3. Hawkesworth, *Voyages*, Vol. i. pp. 391-2.

and that all the more, because in almost every case they act in conjunction. But since the limits of my paper forbid me to speak of that subject, and to apply the conclusions to the various nations of men, therefore I omit them, and go on to the next point.

I must now speak of the varieties of form. They are in fact as numerous as men. For who has not a face, form, and aspect of countenance peculiar to himself, and which can be distinguished from all others? And besides these which every one has of his own, signs and marks peculiar to each race and nation are not wanting; thus a depressed nose, thick lips, small or large eyes, and other marks common to thousands of individuals, distinguish one race from another. What are the causes of this? That these diversities have nothing to do with diversity of species is clear from this, that this same depression of the nose, or thickness of the lips is frequently to be seen amongst ourselves. Many¹ attribute the depressed nose of the Negroes not to nature, but to art; and, allow it to be the work of art, difficulties, not easy to be overcome, still remain. At least, as far as I am concerned, I confess that I cannot understand how the forms of men and the lineaments of the face come to be so diverse from each other as they are. But when such effects have once been produced, I shall have an occasion of showing, when I come to treat of generation, how they may be retained.

CHAP. III.

On the defect or excess of parts of the Human Body.

IF any one is ready to trust the reports of writers, he would find ample material on this subject to deal with. Thus we read

¹ Buffon, Tom. v. p. 132. *Hist. Gén. des Voy.* par M. l'Abbé Prevost, Tom. III. p. 157.

of the Arimaspi, who are remarkable for having but one eye, and that in the forehead; of the Androgyni, who are male and female joined in one; of men with dogs' heads, and men who have no neck and carry their heads on their shoulders¹. The stature of the Patagonians, which a few years ago, as we used to hear, was scarcely set so low as twelve feet, has now been reduced to seven. But everybody will easily see that all these things are beyond all belief.

And even those who tell more probable stories differ in their testimony so from one another, one denying that which another says he has seen, ever was or could be seen, that it becomes quite uncertain which we ought to believe most, and which not at all. And since I found it at first so very difficult to decide which were true or the contrary, I selected some of the more reliable and better examined varieties to deal with for my present purpose. I am not therefore going to inquire whether there are any men furnished with legs much thicker than others, or with one leg much thicker than the other², or tails as some still believe³; because these stories are not confirmed by any facts or observations worthy of credit, by which we might find a way to explain, or propose some theory about them.

So the defects or excesses about which our business is, are of this kind; namely, the beardless chin, hanging breasts, or prominent pudenda.

The beard among ourselves, though sometimes more scanty and sometimes thicker, is scarcely ever wanting altogether. So, as to those nations, to whom almost all the writers had declared that no beard was given by nature, in most cases more recent testimonies show that the beard had not been denied by nature, but was plucked out by the people themselves⁴. This

¹ C. Plin. *Nat. Hist. Lib.* vii. cap. 2.

² Buffon, Vol. v. p. 64.

³ *Origin and Progress of Language*, Vol. iv. p. 259, 2nd ed. Edin. 1774.

⁴ Dampier, Vol. i. p. 407. *Hist. Gén. des Voy.* par M. l'Abbé Prevost, Tom. xviii. p. 503. Hawkesworth's *Voyages*, Vol. i. p. 608. Buffon, Tom. v. p. 204. Charlevoix, III. p. 179.

therefore is no more a defect, than the long beard of other nations is an excess, and each is only a matter of custom.

Nor have I any doubt as to the mammæ, but what their length and pendulosity¹ among some nations is due to the peculiar way in which the women offer milk to their infants. For if a part becomes bigger than all others by distension or distraction, as has been observed above, is it wonderful that the mammæ, which we are now talking about, when flung over the shoulders, and very eagerly drawn away by infants desirous of milk should become longer?

There has been much angry discussion about the pudenda of the women of the extreme south of Africa; some declare that they are furnished with a ligament stretched under the naturalia, whilst others contend that they have nothing beyond the ordinary nature of women. These miracles, or rather monstrosities, if they exist at all, seem by the most recent testimonies to be reduced to this, that in that country the nymphæ are a little more turgid and prominent, a defect the less to be astonished at in that country, because it is certain that it sometimes occurs in this².

Differences of the hair. Hair differs, especially in colour: between which too and the skin there seems to be some connexion. In all countries black hair always accompanies a dark colour of skin, or one which diverges from white. And, on the other hand, red or white hair is joined with white skin. And the colour of both, that is of the skin and the hair, seems to depend upon the same causes, that is, the exposure to air and heat. A proof of which is that the more or less hair is exposed to these causes, the more or less black its colour is. Thus the hair which is not exposed is always less dark than what is.

As to the texture of hair, there seems to be a great difference, for that of some is soft and curly like wool, and that of others harsh and dense. What the cause of this may be, since physiologists are as yet by no means agreed as to the nature

¹ Buffon, Tom. v. pp. 4, 55.

² Hawk. *Voy.* Vol. III. p. 792.

of hair, I dare not give any decided opinion, and must be content with one or two conjectures.

Since the hairs are situated on the surface of the body, therefore whatever affects the body, affects them; besides perhaps other influences, so especially does the conflux thither of humours; and in this way, in proportion as the conflux is greater or smaller, so is their increase greater or less. Hence, as is known to all hair-cutters, the hairs grow more in summer than in winter. And this may be observed more frequently in the case of the beard. Therefore the hair grows more luxuriously in hot countries than in cold, and on that account will be thicker and stronger; which, in fact, happens in almost all countries, as in the West and East Indies.

Still, exceptions to this are not wanting. Thus in Africa, the hottest of all countries, and where therefore the hair ought to be thickest, on the contrary, it is scanty, and something like wool. This, although I cannot explain, still I may illustrate by a comparison. In many cutaneous disorders, little ulcers throw out a great deal of matter, which shows that there is a rush of humours to some of the vessels of the skin. And these sorts of disorders are often cured by remedies which cause perspiration. How is this? When a quantity of humour is excreted in the shape of sweat through healthy vessels, thus the excess is averted from the diseased vessels. And thus the little ulcers, which before were moist, become dried up, and crusts are formed, which afterwards fall off, and then show the sound skin underneath. In this way, a rush towards the skin being made in the first instance, the hairs increase in growth; and when this becomes greater and greater, and the humours are more easily eliminated through the vessels of perspiration from the body, the quantity which serves to make the hair increase is diminished, and the attenuated hairs come out like wool. What seems to confirm this opinion is, that in the negroes, whose hair is like wool, the bulbs or roots of the hair are attenuated and small¹, as if through deficiency of nourishment:

¹ Haller, *El. Physiolog.* Tom. v. p. 33.

and it is only in the case of those who inhabit the hottest regions, or who are born elsewhere from the natives of such, that the hair becomes almost a kind of wool.

CHAP. IV.

On Generation.

THUS the causes are explained which change the colour, induce a large or small stature, and affect the hair and other parts. It may be objected that they are in no respect efficient causes, and that men are to be distinguished by the marks and varieties just mentioned, as soon as they are born, or at all events that such appear, long before they can be attributed to external causes. And this also, no doubt, is true. And how then is it to be explained? For either our explanations are idle and futile, or many properties which have been acquired by the parent are transferred to the offspring. Are they then so transferred? It would certainly seem so. Thus the father begets a son like himself in every way in form of body, expression of countenance, colour of hair, and sound of voice. The temperament too descends from the father to the son. So also peculiar marks long continue to distinguish the same family of men. But this is particularly shown by the history of disorders; of which there are instances known to all in the cases of gout, scrofula, and madness. Again, diarrhœa and unnatural dilatations of the arch of the aorta long infest the same family. These diseased conditions must be looked on in the same light as other mutations of the corporeal condition. And to speak of both from the same point of view, surely that change which is the origin of the production of black skin may just as easily be communicated by the parent to its offspring, and is no more difficult to explain, than that by which gout is handed down in the same way. Nor is it at all more difficult

to understand, why the skin begins to grow black a certain time after birth, than why some years afterwards the offspring of scrofulous parents is infested with ulcers.

Still all the same it is a fact which we cannot explain; and yet there is no manner of doubt that peculiarities acquired by men do descend to their posterity.

Thus the fact being once established, it will be no longer obscure why men undergo, from the causes induced, such great changes of colour, stature, and the other matters we have mentioned. The black colour of the parent may become blacker in the son, if he is exposed to the same external influences, and so in the course of ages may approach more and more to actual blackness; and in that way at last great effects may flow from causes so small as to escape our notice, if each generation contributes something to increase them.

Why one form of appearance and countenance becomes permanent in one nation, and one in another, is explained by this, that parents always produce offspring like themselves.

It would however be difficult to say, how many centuries it takes to change the skin from white to black, or in any other way. But if we may conjecture at all from the sudden effect of the sun and the air in changing the skin, a long time is not necessary. But that Europeans who inhabit hot regions do not acquire even after a very long time a brown or black colour, and that negroes after being a long time in Europe do not grow white, may be for this reason; that the former never try those modes and ways of life, and other external circumstances, which we have said are so powerful in effecting change; and if they do suffer from necessity or adverse fortune, then they do change colour¹; and that the latter wretched mortals never are able to enjoy that easy kind of life, by which whiteness is so greatly brought about.

Moreover, the way in which the remote causes of whiteness and blackness act is somewhat different; and dark colour is much more easily impressed, and much longer retained, than

¹ Hawks. Vol. III. p. 751.

clear colour. Thus the fierceness of one day of sun will inflict a greater amount of brownness than can be effaced by fit precautions taken for a long time to get rid of its effects. And this observation, in the way that those who after having acquired peculiar marks in any region retain them, when removed to another, may be applied so as to make it easy to understand how blackness may still remain in permanence even when its causes are taken away.

Thus then the question, how those marks which distinguish individuals may be transferred by parents to their children, is answered. And now recurs the other, how those marks differ from the ones which are not so transferred, and what is the reason why some marks peculiar to the parent are transferred, and others are not. I must confess this is one I cannot answer. For the Creator has hidden the business of generation in the deepest recesses of nature, and has kept all its processes sunk and overwhelmed in the deepest darkness, never perhaps to be brought to light. And therefore to explain things depending upon such a cause would be a vain and idle undertaking.

But, although this may be so, still I cannot help making mention of some things relating to generation, which, though wonderful, are nevertheless true.

White men are sometimes born amongst the negroes¹, and I have no doubt that other whites are propagated from them.

We only know of one instance of a black being born amongst the whites²; and according to the account of James Lind, a clever man, a physician, and an investigator of facts, who says he saw it with his own eyes, this man begot a son like himself.

I indeed am unwilling to appear to compel all nature to my opinion; but these observations, as they show that diversity of species is not necessary for causing blackness of colour,

¹ *Hist. Gen. de Voy.* par M. l'Abbe Prevost, Tom. IV. p. 590. Hawks. Vol. II. p. 188. Maupertuis, Tom. II. p. 116.

² *Phil. Trans.* No. 424.

and that this property, like others, may be acquired through external circumstances, and so descend from father to son, so also do they in some way confirm the doctrine about colour I have laid down.

The skin of those white men amongst the negroes is, as it were, scurfy¹; that is, the cuticle peels off in scales, and does not remain long enough to become quite black. The skin of the black man among the whites, as also that of his son, was thick and hard², which fact shows that thickness has a great deal to do with causing colour, and is in favour of my opinion.

CHAP. V.

On the Varieties of Mind.

THE mental varieties seem equal to and sometimes greater than the bodily varieties of man. And on this point I meant to say little, as it seems to be part of our subject.

This chapter seems as if it ought properly to be divided into two parts: in one of which reason and prudence, and in the other manners, should be dealt with. And, in order that my notion may be more easily understood, I will illustrate both by an example before I begin to deal with either. If one man is sharp, and of an acute and docile genius, and another heavy, stupid, and averse to all discipline, that must be referred to the difference of reason and prudence. But if one is sanguine, vivacious, alert and happy, and his opposite is sad, sorrowful and wretched, we call that an affair of manners.

In the former division, the question instantly occurs to the mind, What is the cause of difference? Is it to be referred to God? and is it credible that a Deity who is just and equi-

¹ Hawk. Vol. II. p. 188.

² *Phil. Trans.* No. 424.

table to all should have formed men so different in mind, as to create one foolish, another wise; one brave, another cowardly? Certainly not, in my opinion; and it is more true and more equitable to attribute to natural causes the differences of mind which we see.

To investigate the matter briefly: men's minds do not seem to me to differ so much by the fortune of birth as by the use and exercise of reason, and the faculties of the mind come out smaller or greater by use, almost in the same way as those of the body. And as there are several reasons for this exercise, I will consider them under three heads; position, education, and affections of the mind.

As to the first; If one be in a place where insuperable impediments, or none at all, are placed in the way of action, in the first case he gives himself up to despair, in the other to idleness, and equally in either case does nothing. And, in fact, the Samoeides and the negroes seem placed in similar circumstances. If, on the contrary, all the necessaries of life are uncertain to any one on account of the climate, the soil, or some other reason, what does he do? Instantly he struggles to make them more secure by art and industry. He looks out for cattle. Hence plenty, and with that offspring increase. Fields have to be cultivated to provide food, and now abundance ensues. And as you will say the desires of the human mind are not satisfied with this, he adds comfort to necessaries; then seeks elegance, and lastly luxury. With an increasing cultivation of life, arts always, and often sciences, increase. Observe the man, first wild, and then carried to the highest pitch of cultivation and polish, how much the same man differs from himself? Look back upon the steps by which he has progressed. In no two successive steps can a greater exercise of reason and prudence be observed than in the Samoeide constructing his hut below the earth against the cold, or in the negro fabricating an umbrella to protect himself from the heat.

Besides, sometimes a great difference is seen between men placed under the same circumstances. What an interval be-

tween Isaac Newton and Bacon, and almost all their contemporaries! And yet they never considered that they were possessed of any particular faculty, which others had not, by which they could comprehend science. They observed nature more accurately, and reasoned better on their observations than others. That was not a natural power, but acquired only by use and custom. What however contributed to form that fortunate habit, no one but themselves could easily say, nor is it necessary to do so; and the matter is so subtle a one, that it might easily escape themselves; since we see every day that many small things create a habit, without those being conscious who are affected by it. In fact, many who have happily promoted the sciences by their labour, confess that they were led by mere accident to give their minds up to it. Since then the force of circumstances is so powerful to excite and amplify the reason, so also the affections of the mind, and especially the desires, are of great influence towards the same end.

What has not been done for science and knowledge, especially in the government and administration of public affairs, through benevolence, or emulation, or envy, ambition, and glory?

No one doubts the important part that education and discipline play in forming and stimulating the mind. But that discipline is by far the best, which not only delivers precepts, but also exercises the faculties of the mind, and compels it as it were to anticipate commands¹. So also the teachers of youth stimulate the mind to learn by emulation, curiosity, blandishments, and very often by fear. Which influence is the more powerful, let others decide.

Has conformation any thing to do with the increase or diminution of the mental faculties? If the operations of the mind do not altogether depend upon the nervous system, especially the brain, as those think who deny that the mind is anything without matter, still there is no doubt they are most intimately connected with it, and vary with its variations. This is proved by the variations of the mind of the same man,

¹ Rousseau, *Emil*. Liv. III.

according as he is in health, or sickness; sanguine, or depressed. When the skull is broken, or the brain suffers compression, he who previously gave utterance to the most shrewd observations, now seems almost destitute of reason and sense. And who ever doubted, from these instances, that when the condition of the brain is changed, the mind changes also?

It is a question also whether any peculiar condition of this brain, affecting the mind, can be handed down from parent to son? It has been said above that temperament at all events is so communicated. But different temperaments are so connected with different tones and conditions of mind, that, in common parlance, they are referred to mind alone. Therefore, if certain conditions of the brain, from which some operations of the mind proceed, are transmitted by the accident of birth, what is to prevent the peculiar condition of that part of the brain, which is appropriated to reason, being transmitted in a similar way? And this will appear much more probable to one who considers that a diseased condition, like that of madness, is propagated from father to son in the same family for generations.

What has been said goes then to show that something must be attributed to congenital conformation and stamina, but more to exertion, so far as calls are made for it by position, mental affections, and education, in the matter of reason and prudence.

Travellers have exaggerated the mental varieties far beyond the truth, who have denied good qualities to the inhabitants of other countries, because their mode of life, manners, and customs have been excessively different from their own. For they have never considered, that when the Tartar tames his horse, and the Indian erects his wig-wam, he exhibits the same ingenuity which an European general does in manœuvring his army, or Inigo Jones in building a palace.

There is nothing in which men differ so much as in their customs. They are of innumerable origins. Climate¹, soil²,

¹ *Esprit des Lois*, Liv. 14, 15, 16, 17.

² *Ib.* Liv. 18.

diet¹, occupations, laws, religion, individual men, government, the institution of monarchy, or a republic², with a thousand other things, create and alter their customs in a marvellous way.

As for climate, let me quote the words of a distinguished man. "Under the extremes of heat or of cold, the active range of the human soul appears to be limited, and men are of inferior importance, either as friends or as enemies. In the one extreme, they are dull and slow, moderate in their desires, regular and pacific in their manner of life; in the other, they are feverish in their passions, weak in their judgments, and addicted by temperament to animal pleasure³."

Many instances of the effects which come from the causes mentioned are palpable, but my time does not allow me to mention all. And therefore I shall be content with one or two examples, which clearly show how much influence one man may have. The laws and customs of Lycurgus, the former being taken into exile along with him, which were not instituted for pleasure, but for the sake of public and private utility, and to produce an austere virtue, lasted for the space of seven hundred years. So also Peter, justly called the Great, Emperor of the Russians, who bestowed politeness and cultivation on a nation barbarous, rude, and unheard of, or neglected, and, in the teeth of their most deep-seated prejudices, adorned them with customs, amended their laws, and handed down to posterity an empire which is an object of fear to one nation long very powerful, and of suspicion to other peoples and nations, is another splendid instance of the same thing.

However various the causes may be, which create and alter the customs of men, there is but one which can make them lasting, stable and, as it were, eternal. This is imitation, the most powerful principle in man. By this we acquire customs, manners, and almost everything. Sometimes indeed its power

¹ *Hist. des Indes*, Tom. I. p. 66.

² *Ib.* Liv. 4, 5, 7.

³ Ferguson's *Essay on the History of Civil Society*, P. III. s. 1.

is such that against our will we are compelled to imitate others. From this source depends the resemblance of customs in the family, the city, or in the whole nation. This was well known to the poet, who had seen through the whole range of the human mind. "*Falstaff*. It is a wonderful thing to see the semblable coherence of his men's spirits and his: they, by observing of him, do bear themselves like foolish justices: he, by conversing with them, is turned into a justice-like serving man. Their spirits are so married in conjunction, with the participation of society, that they flock together in consent, like so many wild geese. It is certain, that either wise bearing or ignorant carriage is caught, as men take diseases, one of another." Shakespeare, *K. Henry IV*.

They are truly few, who judge for themselves what customs are right or wrong, and they are still fewer who, whilst they think for themselves, and differ from the mob, go on to accommodate and alter their customs according to their own opinions.