

It is of some consequence to attend to this observation; for it may serve to explain a physiological fact that has hitherto been supposed of difficult elucidation.

A certain degree of heat, though less than that of the tropics, appears favourable to increase of stature; and I have already observed, that the tallest tribes we are acquainted with are situated at the back of Cape Horn, and the Cape of Good Hope. On the contrary, the most diminutive we are acquainted with are those that inhabit the coldest regions or the highest mountains in the world: such are the Laplanders and Nova Zemblians in Europe, the Samoeds, Ostiaks, and Tungooses in Asia, and the Greenlanders and Esquimaux in America. Such, too, are the Kimos of Madagascar, if the account of these pigmy people may be depended upon, whose native region is stated to be the central and highest tracts of the island, forming, according to Com-merson, an elevation of not less than sixteen or eighteen hundred fathoms above the level of the sea.

A multitude of distinct tribes have of late years been discovered in the interior of Africa, in the midst of the black tribes, exhibiting nothing more than a red or copper hue, with lank black hair. And, in like manner, around the banks of the lower Orinoco, in Mexico, where the climate is much hotter, there are many clans of a much lighter hue than those around the banks of the Rio Negro, where it is much cooler; and M. Humboldt has hence ventured to assert that we have here a full proof that climate produces no effect upon the colour of the skin. Such an assertion, however, is far too hasty; for he should first have shown that the thickness of the mucous web or colouring material is equally abundant in all these instances. For if it be more abundant (as it probably is) in the tribes that are swarthiest, we have reason to expect that a swarthier colour will be found where there is an equal or even a less exposure to solar light and heat; and we well know that the hair will vary in proportion.*

II. The effects of DIFFERENT KINDS OF FOOD upon the animal system are as extensive and as wonderful as those of different climates. The fineness and coarseness of the wool or hair, the firmness and flavour of the flesh, and in some degree the colour of the skin, and extent of the stature, are all influenced by the nature of the diet. Oils and spirits produce a peculiar excitement of the liver; and like the calorific rays of the sun, usually become the means of throwing an overcharge of bile into the circulation. Hence the sallow and olive hue of many who unduly addict themselves to vinous potation, and who at the same time make use of but little exercise. And hence also the dark and dingy colour of the pigmy people inhabiting high northern latitudes, to whom we have just adverted, and whose usual diet consists of fish and other oils, often rancid and offensive. Though it must be admitted that this colour is in most instances aided by the clouds of smoke in which they sit constantly involved in their wretched cabins, and the filth and grease with which they often besmear their skins. And hence, also, one cause of their diminutive stature; the food they feed on being unassimilating and in-nutritive. Swine and all other animals fed on madder-root, or that of gallium *verum*, or yellow-ladies-bed-straw, have the bones themselves tinged of a deep red, or yellow: and M. Huber of Lausanne, who has of late years made so many valuable discoveries in the natural habits of the honey-bee, has proved himself able by a difference in the food alone, as indeed Debrau had done long before him,† to convert what is commonly, but improperly, called a neuter into a queen bee.

III. It would be superfluous to dwell on the changes of body and percep-tive powers produced in the animal system by a DIFFERENCE IN THE MANNERS AND CUSTOMS. We have the most striking proofs of this effect in all the domestic animals by which we are surrounded. Compare the wild horse with the disciplined; the bison with the ox, which last is usually regarded as

* See Essai Politique sur la Nouvelle Espagne, par Alexandre de Humboldt, &c. p. 84, 85, 4to. Paris, 1808, 1809.

† See Phil. Trans. for 1777, p. 15.

the bison in a state of tameness; and the Siberian argali with the sheep which is said to have sprung from it. Compare the modern Romans with the an-cient; the low cunning and servile temper of too many of the Greek tribes of the present day, that still bend to and kiss the Ottoman rod, with the noble courage and patriotic enthusiasm of their forefathers, who drove back the tyrant of Persia, and his million of men across the Hellespont, and dashed to pieces the proud bridge with which he boasted of having conquered the billows.

It is in reality from long and deeply rooted habit alone that the black, red, and olive colour of the Ethiopian, American, and Moguls is continued in the future lineage for so many generations after their removal into other parts of the world; and that nothing will, in general, restore the skin to its original fairness but a long succession of intermixtures with the European variety. It is a singular circumstance that the black colour appears to form a less per-manent habit than the red or olive; or, in other words, the colour chiefly pro-duced by the action of the sun's calorific rays, than that produced by the action of its calorific rays: for the children of olive and copper-coloured parents exhibit the parental hue from the moment of birth; but in those of blacks it is usually six, eight, or ten months before the black pigment is fully secreted. We also sometimes find this not secreted at all, whence the anomaly of white negroes: and sometimes only in interrupted lines or patches, whence the anomaly of spotted negroes; and we have even a few rare cases of negroes in America who, in consequence of very severe illness, have had the whole of the black pigment absorbed and carried off, and a white pigment diffused in its stead. In other words, we have instances of a black man being sud-denly bleached into a white man. These instances are indeed of rare occur-rence: but they are sufficient to show the absurdity of the argument for a plurality of human stocks or species, from a mere difference in the colour of the skin; an argument thus proved to be altogether superficial, and which we may gravely assert to be not more than *skin-deep*.

It is in consequence of this power in the system, of secreting a dark-co-loured pigment under particular circumstances, that we not unfrequently see the skin of a very fair woman, when in a state of pregnancy, changed to a deep tawny, and almost to a black; and it is hence that the black pigment of the eye is perpetually maintained and replenished.*

Dr. Wells gave a paper to the Royal Society, which was read April 1, 1813, containing an account of a woman (Harriet Tresh) "whose left shoulder, arm, and hand are as black as the blackest African's, while all the rest of the skin is very white. She is a native of Sussex, and the cause she assigns is, that her mother set her foot upon a lobster during her pregnancy." So that we have not only instances of blacks being suddenly bleached, but of whites being made more or less black. In like manner, confined birds sometimes become wholly black; and are said to become so occasionally in the course of a single night. So the male kestrel, from being barred on the tail feathers, becomes wholly ash-coloured except at the end; and the heron, gull, and others, whose tail is white when matured, are for the first two years mottled.

IV. But it is probable that a very great part of the more striking distinc-tions we have noticed, and almost all the subordinate variations occasionally to be met with, are the result of a MORBID AND HEREDITARY AFFECTION. The vast influence which this recondite but active cause possesses over both the body and the mind are known in some degree to every one from facts that are daily presenting themselves to us. We see gout, consumption, scro-fula, leprosy, propagated on various occasions, and madness and fatuity and hypochondriacal affections as frequently. Hence the unhappy race of Albi-noes, and whole pedigrees of white negroes; hence the pigmy stature of some families, and the gigantic size of others.

Even when accident, or a cause we cannot discover, has produced a preter-natural conformation or defect in a particular organ, it is astonishing to

* Camper's Lect. on Comp. Anat. in regard to the art of Drawing.

behold how readily it is often copied by the generative principle, and how tenaciously it adheres to the future lineage. A preternatural defect of the hand or foot has been propagated for many generations, and has in numerous instances laid a foundation for the family name. The names of Varus and Plautus among the ancient Romans afford familiar exemplifications. Hence, hornless sheep and hornless oxen produce an equally hornless offspring; the broad-tailed Asiatic sheep yields a progeny with a tail equally monstrous, and often of not less than half a hundred pounds' weight; and dogs and cats with mutilated tails not unfrequently propagate the casual deficiency.

There is a very peculiar variety of the sheep kind given in the Philosophical Transactions for 1813, by Colonel Humphreys of America, and which the American naturalists have called from its bowed or elbowy legs, *ovis Ancon*: but the common people "the otter breed," from its resemblance to the general form of the otter, and a rumour that it was at first produced by an unnatural intercourse between individuals of the two distinct kinds. Its size is small; the full weight being about 45lb., with loose articulations, crooked fore-legs, and great feebleness of power; whence it walks with difficulty, and is therefore quiet, and not fond of rambling. Accident seems to have produced this kind first, but the form has been most correctly preserved in the progeny; and so tenaciously, that if a common sheep and ancon sheep of either sex unite, the young will be either a perfect ancon, or have no trace of it; and if two are lambed at the same time, and one be of one variety and the other of the other, each is found to be perfect in its way, without any amalgamation.

In like manner, in all probability, from some primary accident resulted the peculiar shape of the head and face in most nations as well as in most families; and hence, too, those enormous prominences on the hinder parts of one or two of the nations at the back of the Cape of Good Hope, of which an instance was not long since exhibited in this country with some degree of outrage on moral feeling.

Man, then, is not the only animal in which such variations of form and feature occur; nor the animal in which they occur either most frequently or in the most extraordinary and extravagant manner.

M. Blumenbach, who has pursued this interesting subject with a liveliness the most entertaining, and a chain of argument the most convincing, has selected the swine genus from among many other quadrupeds that would have answered as well, especially the dog and the sheep, in order to institute a comparison of this very kind; and he has completely succeeded in showing that the swine, even in countries where we have historical and undeniable proofs, as especially in America, of its being derived from one common and imported stock, exhibits, in its different varieties, distinctions not only as numerous and astonishing, but, so far as relates to the exterior frame, of the very same kind as are to be met with in the different varieties of the human species.

In regard to size the Cuba swine, well known, as he observes, to have been imported into that island from Europe, are at the present day double the height and magnitude of the stock from which they were bred. Whence we may well laugh at every argument in favour of more than one human stock or species drawn from the difference of stature in different nations of man. In regard to colour they display at least as great a diversity. In Piedmont the swine are black; in Bavaria, reddish-brown; in Normandy, white. Human hair, observes M. Blumenbach, is somewhat different from swine's bristles; yet in the present point of view they may be compared with each other. Fair hair is soft, and of a silky texture; black hair is coarser, and often woolly. In like manner, among the white swine in Normandy, the bristles on the body are longer and softer than among other swine; and even those on the back, which are usually stouter than the rest, are flaccid, and cannot be employed by the brush-makers.

The whole difference between the cranium of a negro and that of a European is in no respect greater than that which exists between the cranium of the wild boar and that of the domestic swine. Those who are in possession of Daubenton's drawings of the two, must be sensible of this the first mo-

ment they compare them together. The peculiarity among the Hindoos of having the bone of the leg remarkably long, meets a precise parallel in the swine of Normandy, which stand so high on their hind quarters, that the back forms an inclined plane to the head; and as the head itself partakes of the same direction, the snout is but little removed from the ground.

In some countries, indeed, the swine have degenerated into races that in singularity far exceed the most extravagant variations that have been found among the human species. What can differ more widely than a cloven foot and a solid hoof? yet swine are found with both: the variety with a solid hoof was known to the ancients, and still exists in Hungary and Sweden: and even the common sort that were carried by the Spaniards to the isle of Cuba, in 1509, have since degenerated into a variety with a hoof of the same solid kind, and of the enormous size of not less than half a span in diameter.

How absurd, then, to contend that the distinctions in the different varieties of the human race must have proceeded from a plurality of species, while we are compelled to admit that distinctions of a similar kind, but more numerous and more extravagant, have proceeded from a single species in other animals!

It may appear singular, perhaps, that I have taken no notice of the wide difference which is supposed to exist in the intellectual faculties of the different varieties of man. To confess the truth, I have purposely omitted it; because of all the arguments that have ever been offered to support the doctrine of different species, this appears to me the feeblest and most superficial. It may suit the narrow purpose of a slave-merchant,—of a trafficker in human nerves and muscles,—of a wretch who, in equal defiance of the feelings and the laws of the day, has the impudence to offer for sale on the polluted shores of our own country, in one and the same lot, as was the case not long since, a dead cameleopard and a living Hottentot woman:—it may suit their purpose to introduce such a distinction into their creed, and to let it constitute the whole of their creed, but it is a distinction too trifling and evanescent to claim the notice of a physiologist for a moment.

The variable talents of the mind are as propagable as the variable features of the body,—how, or by what means, we know not,—but the fact is incontrovertible. Wit and dulness, genius and idiotism, run in direct streams from generation to generation; and hence the moral character of families, of tribes, of whole nations. The understanding of the negro race, it is admitted, is in many tribes strikingly and habitually obtuse. It has thus, indeed, been propagated for a long succession of ages; and, till the negro mind receives a new turn, till it becomes cultivated and called forth into action by some such benevolent stimulus as that which is now abroad generally, and especially such as is afforded it by the African Institution of our own country (an establishment that ought never to be mentioned without reverence), the same obtuseness must necessarily continue, and by a prolongation of the habit, may, perhaps, even increase. But let the man who would argue from this single fact, that the race of negroes must be necessarily an inferior species, distinct from all the rest of the world, compare the taste, the talents, the genius, the erudition, that have at different periods blazed forth in different individuals of this despised people, when placed under the fostering providence of kindness and cultivation, with his own or those of the generality of his own countrymen, and let him blush for the mistake he has made, and the injury he has committed.

Freidig, of Vienna, was an excellent architect, and a capital performer on the violin; Hannibal was not only a colonel of artillery in the Russian service, but deeply skilled in the mathematical and physical sciences; so, too, was Lislet, of the Isle of France, who was in consequence made a member of the French Academy; and Arno, who was honoured with a diploma of doctor of philosophy by the university of Wurtemberg, in 1734. Let us add to these the names of Vasa and Ignatius Sancho, whose taste and genius have enriched the polite literature of our own country; and, with such examples

of negro powers before us, is it possible to do otherwise than adopt the very just observation of a very quaint orator, who has told us that the "negro, like the white man, is still God's image, although carved in ebony?"

Nor is it to a few casual individuals among the black tribes, appearing in distant countries, and at distant eras, that we have to look for the clearest proofs of human intelligence. At this moment, scattered like their own oases, their islands of beautiful verdure, over the eastern and western deserts of Africa, multitudes of little principalities of negroes are still existing,—multitudes that have, of late years, been detected and are still detecting, whose national virtues would do honour to the most polished states of Europe: while at Timbuctoo, stretching deepest towards the east of these principalities, from the western coast, we meet, if we may credit the accounts we have received, with one of the wealthiest, perhaps one of the most populous and best governed cities in the world; its sovereign a negro, its army negroes, its people negroes; a city which is the general mart for the commerce of western Africa, and where trade and manufactures seem to be equally esteemed and protected.*

We know not the antiquity of this kingdom: but there can be no doubt of its having a just claim to a very high origin: and it is possible that, at the very period in which our own ancestors, as described by Julius Cæsar, were naked and smeared over with paint, or merely clothed with the skins of wild beasts, living in huts, and worshipping the misletoe, the black kingdom of Bambarra, of which Timbuctoo is the capital, was as completely established and flourishing as at the present moment.

What has produced the difference we now behold? What has kept the Bambareens, like the Chinese, nearly in a stationary state for, perhaps, upwards of two thousand years, and has enabled the rude and painted Britons to become the first people of the world—the most renowned for arts and for arms—for the best virtues of the heart and the best faculties of the understanding? Not a difference in the colour of the skin;—but, first, the peculiar favour of the Almighty: next, a political constitution, which was sighed for, and in some degree prefigured, by Plato and Tully, but regarded as a masterpiece, beyond the power of human accomplishment; and, lastly, a fond and fostering cultivation of science, in every ramification and department.

Amid the uproar and ruin of the world around us, these are blessings which we still possess; and which we possess almost exclusively.† Let us prize them as they deserve; let us endeavour to be worthy of them. To the great benefit resulting from literature and mental cultivation the age is, indeed, thoroughly awake; and it is consolatory to turn from the sickening scenes of the Continent, and fix the eye in this point of view upon our own native spot; to behold the ingenuous minds of multitudes labouring with the desire of useful knowledge; to contemplate the numerous temples that are rising all around us, devoted to taste, to genius, to learning, to the liberal arts; and to mark the generous confederacies, by which they are supported and embellished.

In this little school of philosophy, surrounded by walls that were once en-

* I follow Mr. Jackson's description, which is added to his "Account of the Empire of Morocco," as by far the most circumstantial and authoritative we have hitherto received. According to him, "the city is situated on a plain, surrounded by a sandy eminence, about twelve miles north of the Nile El Abeade, or Nile of the blacks; and three days' journey (erhellat) from the confines of Sahara; about twelve miles in circumference, but without walls. The town of Kabra, situated on the banks of the river, is its commercial depot or port. The king is the sovereign of Bambarra; the name of this potentate, in 1800, was Woolo: he is a black and a native of the country he governs. His usual place of residence is Jimnie, though he has three palaces in Timbuctoo, which are said to contain an immense quantity of gold." The present military appointments are, it seems, entirely from the negroes of Bambarra; the inhabitants are also for the most part negroes, who possess much of the Arab hospitality, and pride themselves on being attentive to strangers. By means of a water-carrage, east and west of Kabra, great facility is given to the trade of Timbuctoo, which is very extensive, as well in European as in Barbary manufactures. The various costumes, indeed, exhibited in the market-places and in the streets, sufficiently indicate this, each individual being habited in the dress of his respective country. There is a perfect toleration in matters of religion, except as to Jews. The police is extolled as surpassing any thing of the kind on this side the Desert: robberies and house-breaking are scarcely known. The government of the city is intrusted to a divan of twelve slemma or magistrates; and the civil jurisprudence superintended by a learned Cadl.

† The Lecture was delivered in 1812.

riched with the choicest collections, and the rarest curiosities of nature,* but which, from a concurrence of adverse circumstances, must have fallen into ruins, had not you, with laudable patronage, interposed, redecored the sinking edifice, and made it once more echo to the voice of instruction and study;—here, where the genius of Science has resumed the possession of his simple throne, and is once more thronged by a numerous train of attentive votaries—here more especially may I address these observations without incurring the charge of rhapsody or extravagance.—Long may so promising an Institution flourish! soundly may it be cultivated! and of sterling value be the harvests that it produces!

LECTURE IV.

ON INSTINCT.

THERE are various actions, and trains of actions, occasionally to be met with among mankind, but more frequently and more strikingly among other animals, which indicate the employment of definite means to obtain a definite end, without the intervention of that chain of thought which characterizes *reason*, and which have hence been ascribed to a distinct principle, that has been distinguished by the name of *instinct*.

Such, in the new-born infant, and, indeed, in the young of all mammalian animals, is the act of hunting out for the mother's milky food, and of sucking with a perfection which can never be acquired in subsequent life. Such is the whole process of nestling or nidification among birds; the periodical change of salt for fresh water among the sturgeon, salmon, and other fishes; and, among insects, the formation of the exquisite decoy-lines of the spider, and the nice masonry of the bee, and of the termes *bellicosus* or white ant.

The common fact admits of no dispute; the modes of accounting for it have been various, and in the utmost degree unsatisfactory. In a general survey they may be resolved into three classes: first, those hypotheses which ascribe the whole to the operation of body alone; secondly, those which ascribe it to mind alone; and, thirdly, those which derive it from a substance of a mediate nature between the two, or attribute it partly to the one and partly to the other.

In pursuing this highly interesting subject, I shall first briefly notice the principal opinions which have been offered upon it, in the order thus laid down, and point out their irrelevancy: and then propose a new theory, and explain the grounds upon which it is founded.

I. It was the opinion of Des Cartes that brutes are mere mechanical machines: that they have neither ideas nor sensation; neither pain nor pleasure; and that their outcries under punishment, and their alacrity in pursuing an enemy or devouring a meal are produced by the very same sort of force, which, exerted upon the different keys of an organ, compels its respective pipes to give forth different sounds. And a great part of the Cardinal Polignac's very elegant Latin poem, entitled *Anti-Lucretius*, is written in direct support of this most whimsical hypothesis. I shall, perhaps, have occasion to examine it somewhat more at large in a subsequent study: for the present it may be sufficient to observe that, in spite of all the philosophy in the world, the coachman to this hour has whipped, and will yet continue to whip, his horses, the huntsman to halloo his hounds, and the bird-trainer to sing or whistle to his bullfinches; though if the whole were mere mecha-

* Formerly celebrated as the Leverian Museum, and erected for that purpose.