AN EXAMINATION

OF THE

CHARACTERISTICS OF GENERA AND SPECIES

AS APPLICABLE TO THE

DOCTRINE OF THE UNITY OF THE HUMAN RACE.

BY

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MONOGRAPH.

So many advantages are derived from the study of natural history, that at the present day it would be almost superfluous to do more than briefly allude to a fact, that now seems to be admitted by every intelligent mind. The supply of all the temporal wants of man, his food, his dress, the conveniences he enjoys, remind him of a number of animals and plants, on which he is dependent for his comforts. There are others that are injurious to his welfare, and he is compelled to exercise his mind in warding off the danger which is to be apprehended from their pernicious influences. But, apart from the almost necessity thus imposed on him in studying the objects of nature, he finds in this employment the means of enlarging his mind, of disciplining his memory, and of exalting his conceptions of creative power. The study of nature is the study of truth, and he who reads these truths aright is rendered wiser, better and happier. He deems no object unworthy of his attention that is calculated to enlarge the field of knowledge, or that enables him to penetrate into the mighty plans of the Creator.

There is another important subject connected with these investigations. The most enlightened, the purest and the best of mankind, regard the scriptures as the revelation of God's will to mankind. The book of nature has been given by the same omniscient power. His word and works cannot contradict each other. The former, it is true, was principally intended to convey religious truth, and impress on the human heart the doctrines of salvation, but it should be recollected that although the Bible was not given for the purpose of teaching the sciences, it cannot consistently with inspiration, stand in opposition to that other record of the wisdom of the Deity that is given in his works. Hence the necessity of availing ourselves of all those facilities which will enable us to interpret the laws of nature aright. It is the boast of infidelity that, "viewed as a narrative, inspired by the Most High, its conceits would be pitiful and its revelations false, because telescopic astronomy has ruined

its celestial structure; physics have negatived its cosmic organism, and Geology has stultified the fabulous terrestrial mechanism upon which its assumptions are based. How then are its crude and puerile hypotheses about human creation to be received?*" Were this true, then according to Gliddon, the same author, "the developments of science will have rendered any *new translations* (of the scriptures) altogether supererogatory among the educated who are creating *new religions* for themselves."

The question then naturally arises, how are these bold assertions to be met, and to what sources must the human mind apply in order to arrive at truth, and thus solve its doubts and strengthen its religious faith with confidence and hope? Certainly there is no other mode accessible to man than by studying the book of nature with an unprejudiced mind, and with all that preparatory knowledge, that careful analysis, that patient research and unclouded judgment, which is essential in the investigation of so grave a subject. By pursuing this plan of study, we will be enabled to solve the mystery why men, writing on the same subject, have advanced such opposite opinions and pro nounced such contradictory decisions. The authors of the "Types of Mankind" have, with a positiveness which is seldom found among the humble students of nature, pronounced one set of opinions, whilst the greatest naturalists in the world, Linnæus, Blumenbach, Cuvier, the two Humboldts, Owen, Pritchard, Bunsen, Lepsius, and many others, have arrived at conclusions directly the reverse. In searching more closely into the qualifications of the men who have pronounced these opposite opinions, we are not left in doubt as to the causes why they could not arrive at the same conclusions in professing to unfold the leaves of the same book of nature.

Mr. Gliddon candidly informs his readers of the amount of knowledge in the sciences, which enabled him to pronounce so positive and startling a decision, that the sciences had so utterly demolished the "fabulous terrestrial mechanism" of revelation, that a "new translation was supererogatory." On page 716, he tells his readers—"My former pursuits in moslem lands were remote from natural science, and disqualify me from sharing the labours of its votaries," etc. Thus then we have the admission from his own pen and in print, that he is unqualified, from a want of knowledge on the subject, to express an opinion in matters of science, and yet the very sciences about which he professes to know nothing, have (in his opinion) utterly demolished the

* Nott and Gliddon's Types of Mankind, p. 165.
† Do do. do. do. p. 593.

whole structure on which christianity is founded. On the other hand Professor Owen, who has for a whole life studied the sciences, of which Gliddon had not yet read the alphabet, expresses his matured convictions in these words:—"Thus in reference both to the unity of the human species, and to the fact of man being the latest, as he is the highest of all animal forms upon our planet, the interpretations of God's works coincide with what has been revealed to us, as to our origin and zoological relations in the world." "*Man is the sole species of his genus, the sole representative of his order.*" In investigating those preparatory studies, by which these gentlemen considered themselves qualified to pronounce such opposite opinions, we are forcibly reminded of the caution of the poet:

> "A little learning is a dangerous thing,
> Drink deep, or taste not of the Pierian spring;
> These shallow draughts intoxicate the brain,
> But drinking deeply sobers it again."

The sciences in order to be understood must be studied. As there is order in all the works of nature, naturalists have for ages past been engaged in interpreting her laws, and bringing her various productions under a systematic arrangement. By this means the study is simplified. By the co-operation of numbers, each working in his favourite department, a mass of intellectual riches is acquired, which is transmitted to their immediate successors, and through them to posterity.

The natural sciences embrace all those branches of study connected with the investigation of nature in all her departments. Through the labours of Linnæus, Cuvier and a host of their successors, the study has been simplified by their divisions of the animal kingdom under classes, orders, families, genera, species and varieties. The five classes of Cuvier are—I. Mammalia. II. Aves. III. Reptilia. IV. Amphibia. V. Pisces. Other physiologists have modified this arrangement, but the above general division of vertebrated, red and warm blooded animals, is that with which we are more immediately concerned, inasmuch as it includes the mammalia, the class to which we shall generally refer in this investigation—a class which elevates man to an isolated station at the head of the animal kingdom. In his physical organization, but more especially in his mental endowments, he presents characteristics that are befitting a being whose aspirations are not bounded by mortality, who "is made a little lower than the angels crowned with glory and honour," and to whom "has been given dominion over the works of" God's "hands."

The class mammalia is subdivided into nine orders, of which that of the bimana is by most naturalists restricted to man alone.

Genera are subdivisions of the families in the several orders. They are formed from the number and distribution of the teeth, number of toes, the possession or the absence of cheek pouches, character of the nails, etc. Thus the Genus Equus is composed of several species—the horse, ass, quagga, zebra, etc., all characterized by the same number and formation of teeth (40); feet with a single apparent toe, covered with a thick hoof; mammæ two, inguinal; stomach simple and membranaceous—these are different species, but they have so many characteristics in common, that naturalists have arranged them under the same genus. Thus the many species in the Genus Canis—the dogs, wolves, etc., have 42 teeth; all similarly arranged. The Genus Felis, the cats 30 teeth and retractile nails. All the species in each genus must have the essential characters that belong to the genus.

It has sometimes been urged as an argument in favor of the existence of several species of men, that as there are many species among other genera, we have reason to look for a similar arrangement and distribution in the human race. The facts, when carefully investigated, will prove that this, instead of being an argument against the theory of the unity of the human race, is rather in favor of it. The Creator carries on his own designs in his own way, regardless of the systems of imperfect men. Why he should have placed on the Eastern Continent sixty species of Antelopes and not one in America,* why he should have given the immense number of species of squirrel in America and only one in Europe, or why he should have multiplied the almost countless species of humming birds in America and withheld even a single species from every other quarter of the world, is best known to him "whose ways are past finding out." Let it suffice, however, to state that in the arrangement of the wise Creator, it was far from a universal rule to create more than one species in a genus. There is but one species of Beaver in the Genus (Castor fiber). There is but one species of Musk-rat (Fiber Zibetticus). One species only in the Genus Leo—the Lion. One only in the American Sewellel (Aplodontia leporina). One only in the Sea Otter (Enhydra marina). One species of Giraffe (Camelopardilis giraffa). One species of Musk Ox (Ovibos moschatus)—being intermediate between the sheep and the cow. We could enumerate many others among quadrupeds. Among birds they are still more numerous, and we are

* The prong horned Antelope of America belongs to another genus Antilocapra.

prepared to give the list of at least fifty species in which there is but a single species in each genus. We will only instance our familiar acquaintance, the wild turkey. There is but one species in the genus (Meleagris gallopavo). The so called ocellated turkey of Honduras, it is now ascertained, is not a turkey, but belongs to a different genus breeding on trees, &c. Our wild turkey, composed of one species and one genus, has, like man, become domesticated, and like man exists under all colours, white, grey, red and black, and under different latitudes, in every portion of the civilized world; the only difference is, that whilst the turkey has been carried to different countries by man, the latter, by his intelligence and cosmopolite propensities, has carried himself. In a vast number of genera among reptiles, fishes and plants, there is but a single species in the genus. The existence of man, therefore, as the sole representative in the genus Homo is not an exception to a rule, but is in accordance with the plans of the Creator, in other departments of nature.

We should regard it as a work of supererogation to occupy any space in this article by proving that however numerous may be the varieties—or races—or species in the human family, they must all by the rules of science, be included under one genus. The notions of Brock and others who divided the human family into several sub-genera are altogether inadmissible, according to all the laws of Zoological science.

We are now brought to a consideration of species. The characters by which species are formed are natural and not artificial. Linnæus says: "In his classis et ordo est sapientiae, genus et species naturae opus; omnis vera cognitio est specialis, solida autem generalis.* "In this arrangement the classes and orders are arbitrary, the genera and species are natural. All true knowledge refers to the species, all solid knowledge to the genus."

Cuvier says: "We are under the necessity of admitting the *existence of certain forms* which have perpetuated themselves from the beginning of the world, without exceeding the limits first prescribed. All the individuals belonging to one of these forms constitute a species."

Decandole says: "We unite under the designation of species all those individuals who mutually bear to each other so close a resemblance as to allow of our supposing that they may have proceeded originally from a single being or a single pair." * * * "It happens not unfrequently that two individuals belonging really to the same

* Linne. systema naturae tom. 1, p. 13. Edit. 12.

species, differ more among themselves in appearance than do others of distinct species. Thus the spaniel and the Danish dog are, as to their exterior, more different from each other than the dog and the wolf. And the varieties of our fruit trees offer greater apparent differences than many species."*

In the elements of mammalogy by Milne Edwards and Achille Comte, used as a text book in the Colleges of France, the following definition of species is given :

"The name species is applied to an assemblage of individuals which bear a strong resemblance to each other, and which are perpetuated with the same essential qualities. Thus man, the dog, the horse, constitute to the eye of the Zoologist so many distinct species." p. 11.

Martin, in his recent work, gives the following definition, being one of the most concise and satisfactory we have seen : "Species are fixed and permanent forms of being, exhibiting indeed certain modes of variation, of which they may be more or less susceptible; but maintaining throughout those modifications, a sameness of structural essentials transmitted from generation to generation, and never lost by the influence of causes, which otherwise produce obvious effects. Varieties are either accidental or the result of the care and culture of man."†

Agassiz says :‡ "The species is founded upon less important distinctions" (than the genus) "such as colour, size, proportions, sculpture, &c. Thus we have different kinds or species of duck, different species of squirrel, different species of monkey, &c., varying from each other in some trivial circumstance, while those of each group agree in all their general structure. The specific name is the lowest term to which we descend, if we except certain peculiarities, generally induced by some modification of native habits, such as are seen in domestic animals. These are called varieties, and seldom endure beyond the causes which o casioned them."

The following definition of the terms species and varieties—as received by naturalists, who, although they did not use the same words, expressed the same thoughts—was published by us a few years ago.

"Species we define as applying to those individuals resembling each other in dentition and general structure. In wild animals as a general rule they must approach the same size; but both in wild and domesticated animals they must have the same duration of life, the same period of utro-gestation, the same average number of progeny, the same habits

* M. de Candole physiologie vegetale tom. ii : p. 68.

† Nat. Hist. man and monkey, p. 16.

‡ Principles of Zoology by Agassiz & Gould. 1848. p. 14. Introduction.

and instincts, in a word, they belong to one stock that produce fertile offspring by association."

"Varieties are those that are produced within the limits of a particular species, and have not existed from its first origin. They sometimes originate in wild species, especially those that have a wide geographical range and are thus exposed to change of climate, temperature, &c." * * * "Permanent varieties are such as having once taken place are propagated in perpetuity, and do not change their characteristics unless they breed with other varieties."*

On comparing these definitions as given by various naturalists, each in his own language, it will be perceived that there is no essential difference in the views they have expressed in regard to the characters by which a species is designated. They all regard it as "the lowest term to which we descend with the exception of varieties, such as are seen in domestic animals." They are to examine the internal and external organization of the animal or plant—they are to compare it with kindred species, and if by this examination it is found to possess permanent characters, differing from those of other species, it proves itself to be a distinct species. When this fact is satisfactorily ascertained, and the specimen is not found to be a domestic species in which varieties always occur, presumptive evidence is afforded of its having had a primordial existence. We infer this from the fact that no species is the production of a blind chance, and that within the knowledge of history, no true species, but varieties only, whose origin can be distinctly traced to existing and well known species, have made their appearance in the world. This then is the only means within the knowledge of man by which any species of plant or animal can be shown to be primordial. The peculiar form and characters designated the species, and its origin was a necessary inference derived from the characters stamped on it by the hand of the Creator.

In accordance with this definition of species and varieties every naturalist has been governed in his descriptions and designation of species, Hamilton Smith, Dr. Morton and Professor Agassiz included. The naturalists of the world, without a solitary exception, have adopted the binary system of Linnæus in the designation of genera and species, and according to this understanding of the term species, every thing in nature from man to the mollusca, and from the sturdy oak to the minutest cryptogam has received its specific name.

According to this universally received definition of species, all the individuals in the human race are proved to be of one species, even by the admission of Agassiz himself—and the "varieties," according to the

* Doctrine of the unity of the human race, pp. 19, 20.

same author, "are induced by some modification of some native habit, such as are seen in domestic animals."

In the number of separate bones composing the human skeleton—amounting to 240—in the peculiar structure of the breast-bone, there being eight pieces in infancy, three in youth and but one in old age; in the dropping out of the milk teeth, between the sixth and fourteenth year, which are replaced by thirty-two permanent teeth, there is a perfect uniformity in every variety of man. So also in the period of gestation—the number of young at a birth, generally one, and very rarely two; the period of longevity, &c., the different varieties of men present a perfect similarity. They all possess those high prerogatives of man, the attributes of speech and the faculties of the mind, with capacities of transmitting any improvement to their descendants. In all there is a capacity to acquire the languages and songs of other tribes, whilst they may forget those of their forefathers. Thus whole nations have forgotten their languages and adopted those of other nations. But no species of quadruped or biped, has ever lost its native notes and adopted the notes of another species. In all we discover the same instincts; in all, the power of conscience, the recognition of truth, and a sense of right and wrong; in all, some sentiment of religion, some recognition of a higher power; in all, the hope of immortality; in all, the idea of a happier life, and the dread of punishment beyond the grave. Positive atheism is excluded from the creed of all nations.

All the varieties of the human species are known to increase and multiply with each other—thus forming new varieties, which have continued to propagate from the earliest periods on record through every succeeding age up to the present time. Our neighbours of Mexico, and the mulattoes in the United States—the latter now numbering according to the last census, 405,751—give sufficient evidence that they are far removed from the characteristic condition that belong to hybrids. In fact such has been the blending of nations, that if the theory of the believers in the plurality of the human species (from two to a hundred, as they cannot designate the number of species and are all found to disagree in this particular,) be true, it is evident that the whole world must by this time be made up of hybrids, and we in America might even tremble lest the prediction of their admired champion, Knox, might be fulfilled—that we already evidence "symptoms of premature decay" and will soon "die, out and out." Very different has been the result in the production of hybrids between two species of animals or birds, however nearly allied. No new race has ever been produced. It is in this way that the Creator of species asserts His prerogative in prevent-

ing a scene of confusion, and an unnatural blending together of different species in the animal world. We invite any true naturalist among the believers in the plurality of species in man, to produce a single race among animals now existing in the world which it can be distinctly proved has been perpetuated by the union of two distinct species. The diversities of colour, and of hair or feathers, among the varieties that are known to exist in the same species of domestic quadrupeds and poultry, are also as great as are seen in the colour and structure of hair in the varieties of the human family.

Seeing that there were no characteristics that could on the long settled and universally received definition of species, separate the varieties of men and divide them into different species, the advocates for the doctrine of a plurality in the species of men, have been driven as a last resort, to the necessity of inventing a new definition for the word species, to accommodate their new theory. This we will now proceed to examine.

In the "Types of Mankind, by Nott & Gliddon," p. 375, we find published the following definition of species, as given by Dr. Morton, extracted from the proceedings of the Academy of Natural Sciences, September, 1850.

"As the result of much observation and reflection, I now submit a definition, which I hope will obviate at least some of the objections to which I have alluded.

"*Species. A primordial organic form.* It will be justly remarked that a difficulty presents itself, at the outset, in determining what forms are primordial; but independently of various other sources of evidence, we may be greatly assisted in the inquiry, by those monumental records, both of Egypt and Assyria, of which we are now happily possessed of the proximate dates. My view may be briefly explained by saying, that if certain existing organic types can be traced back into the 'night of time,' as dissimilar as we now see them, is it not more reasonable to regard them as aboriginal, than to suppose them the mere accidental derivations of an isolated patriarchal stem, of which we know nothing, &c. Hence, for example, I believe the dog family not to have originated from one primitive form, but in many forms. Again, what I call a species may be regarded by some naturalists as a primitive variety; but as the difference is only in name and no way influences the zoological question, it is unnecessary to notice it further."

To this definition of species Prof. Agassiz gives in his adhesion in the following words:

"The only definition of species meeting all these difficulties is that of

Dr. Morton who characterises them as *primordial organic forms.* Species are thus distinct forms of organic life, the origin of which is lost in the primitive establishment of the state of things now existing, and varieties are such modifications of the species as may return to the typical form under temporary influences."*

In this grave discussion, the inquiry in regard to the time when this short definition of the term species—the most important in the whole range of science—was published, must not be overlooked. Morton had published his two articles on hybridity in Silliman's Journal, in 1847. The many errors he had committed in those two papers were commented on in May and March, 1850. Before that discussion had come to a close, he publicly and in this journal, acknowledged many of the errors he had committed in those very cases, which had the most important bearing on the subject under discussion; but as a set off presented some new cases of hybridity, which will be examined in due time. In Sept. 1850, three months after our review of his articles, he published the above definition of the term species. Agassiz commenced his attack on the doctrine of the unity of the human race in his two letters in the Christian Examiner, March and July, 1850. They were immediately answered from several quarters, and, now in 1854, he sends in his adhesion to Morton's definition of species. The discussion had become animated and exciting—the case was already in court—the briefs had all been made out—the arguments of counsel had in part been heard on both sides, when to the astonishment of the court and jury, the parties that had commenced the attack and were now on the defensive, constitute themselves into a congress of legislators, concoct and promulgate a new law, and insist that their case which had been so long on the docket should be decided, not by the existing and universally acknowledged laws that governed the nations of naturalists, but by that which they had framed to suit the emergencies of their own case which was now in considerable jeopardy. The opposing parties enter a demurrer, and declare it a cunning device, and to all intents and purposes a post factum law, which cannot be applied to the present case under any circumstance, and which cannot fail to be pronounced illegitimate and unconstitutional.

Let us, however, examine this definition of species as being characterized by "a primordial organic form." Here a prominence is given to that which is not even a characteristic of the species—its primordial existence being only an inference, whilst the characters stamped on the

* Nott & Gliddon's Types, p. 74.

species are the only tests which will enable any naturalist to pronounce a decision.

Let us first inquire in regard to wild species. What means do we possess that will aid us in designating the species, by searching on the monuments to determine whether they were primordial, or, in other words, had existed from the beginning? We have now in the United States nearly seven hundred species of birds, and a little more than half that number of quadrupeds, that are named and described. Is there, we ask, a single figure extant, carved on stone or earthen ware, or painted on rocks, by the ancient Indians of our country, that would enable us to decide on a single species in the land? More especially is the difficulty increased where, as is often the case, there are many species in each genus that require the closest scrutiny, to enable the naturalist to pronounce a satisfactory decision. We possess a much better guide in the designation of species, than that which could be given us by the rude stone chissel, or the painted daubs of the ancient lords of our forests. We possess the species themselves, with the characters impressed on them by the hand of the Creator, and from these we are enabled to decide on their identity, and from this identity we infer their primordial origin. All the fishes, and every species named by Agassiz, were described from the characters they presented in nature, without resorting to the unprofitable, and impracticable search after their primordial existence. Among the few species described by Dr. Morton, the last, as far as we know, was a new hippopotamus, found in Western Africa, and described from two skulls, sent him by Dr. Goheen. He adopted the mode pursued by all naturalists; scrutinized the teeth and the skulls—compared them with the other existing species of river horse, and also compared the skulls, which were the only portions of the animals received, with the fossil remains of extinct species of the same genus. As a still further precaution he, as he informs us, "sent the specimens by the hands of Sir Charles Lyell, to London, to be examined by those distinguished comparative anatomists, Professor Owen, of the Royal College of Surgeons, and Dr. Hugh Falconer, author of the Fauna Sivalensis."* Here was the cautions, straight forward, and scientific mode of deciding on a species, which all true naturalists ought to pursue. But he could not have thought of searching "the monumental records of Egypt or Assyria," to enable him to decide on the name (Hippopotamus Liberienses) by which he designated this new species.

Let us now proceed to apply this new test of *primordial* origin, in

*Morton's Observations on a new living species of Hippopotamus. Philad. 1849.

deciding on the species and varieties of domestic animals and of men, to the practical experience of naturalists.

From the opportunities we have enjoyed in the examination of the varieties in the species of domesticated quadrupeds and birds, we have never found any difficulty in deciding on the species to which these varieties belong. We all know the variations that occur in the descendants of all species subjected to man's control. They have multiplied races, which, in succession, have submitted to his will. In a few generations they exhibited varieties deviating, in a lesser or higher degree, from the original types. The elephant, it has sometimes been said, is an exception to this rule. To this, it must be replied, individual elephants are tamed, but their predecessors were not tamed before them. The elephant does not breed in its state of surveillance; and until it multiplies, like the horse, the cow, and other animals under man's subjection, no varieties will be produced. When the elephant dies, he is replaced, not by his progeny for he leaves none, but by others captured from the woods. There is, however, not a single species, that may be regarded as truly domesticated, which, under the influences of the changes of climate, of food, or other causes with which we are, at present, unacquainted, does not vary much more, in form or in colour, than the varieties of men. These varieties, when left in the localities where they were produced, become as permanent as the species themselves. We have seen the successors of the wild turkey, reared from eggs taken from the woods, losing their metallic colours from year to year, and becoming spotted with white in the third generation. The wild instinct which caused the young of the first generation to dart off from their domestic mother, conceal themselves in the grass, and, many of them, to stray away and die, whilst those of the tame breed allowed you to handle them, disappeared gradually, from generation to generation, until they finally acquired all the docility—the dependence and stupidity of the common domesticated breeds. The descendants of the formidable wild boar, still existing in the forests of Germany, submit still more readily to domestication; and, among these, varieties have sprung up under the very eyes of naturalists; hence, no naturalist would hazard his reputation in the dangerous assertion that the numerous and very striking varieties of the hog, were indebted to any other parentage than that of the wild denizen of the forests of the Eastern continent; sus scrophus.

Knowing, then, that such is the process of nature, in every species brought under man's subjection, we are, in looking for characters among domesticated species, to take into consideration those peculiarities which, it is known and admitted, have been produced in the altered circum-

stances in the life of the animal: Hence, colour, which is a specific character in the designation of a large majority of wild species of quadrupeds and birds, must be entirely disregarded in our examination of those varieties which have originated among domestic species; every one of these—the horse, cow, goat, sheep, swine, dog, cat, rabbit, turkey, the common fowl, goose, musk duck, mallard, pigeon, canary bird, and even the little guinea pig, are found of every variety of colour, and through all shades, from black to the purest white. In size and form, it is well known, the varieties among domesticated species differ much more than the varieties in the human family. There are breeds among the horse, cow, and all the other domestic races, down to the common fowl and pigeon, that are larger than other varieties in the same species. The difference in form is still more striking, which may be observed on comparing the Arabian courser with the heavy and gigantic dray horse and the diminutive Shetland poney; or the common cow with the Brahmin, the Durhams, or any of the imported breeds:—or the greyhound with the mastiff—the spaniel with the lap dog. The texture of the hair, which in wild species is a characteristic, although of secondary importance, cannot be depended on in the examination of domesticated varieties. There is found, among the different breeds of sheep and goat, every kind of hair, from the coarsest texture to the finest wool.

Admitting, then, that colour, size, some variations in form, and the texture of the hair afford us no characteristics in the designation of the species in domesticated breeds, it will be inquired what is left to the naturalist, to guide him in those researches which will enable him to decide between a variety and a true species? After all, may he not be obliged to resort to the "primordial" theory, and make a pilgrimage to Egypt and Assyria, to satisfy his doubts? We answer, we have still characters sufficient for all the purposes of science—characters of primary importance, whilst those, that are subject to change, are only secondary—characters that are unchangeable under all the influences of domestication. These we shall now proceed to point out.

In zoological science there exist what naturalists term essential characters—there are others, of less importance, which serve still further to elucidate the species, but are not regarded as essential. We will, for the sake of comparison, refer to a single well known domesticated species, which will serve as an example for all others; inasmuch as they are all similarly constituted in the production and perpetuation of varieties.

The wild boar, (Sus scrophus,) in addition to its generic characters of fifty-four teeth, its elongated cartilagenous nose furnished with a particu-

lar bone, and its thick hide covered with stiff hair, possesses, also, specific characters, which distinguish it from all other wild and undomesticated species of the genus. Its tusks are strong, triangular, and directed almost latterally, and this form of the tusks is found in all its varieties, whilst the tusks of the babyrussa—a kindred species—are not so thick, are more elongated, and those on the upper jaw curl upwards and nearly meet in front of the eyes. Another species, the masked boar, (Sus larvatus,) is distingushed by a fleshy prominence on the fore part of the head, entirely enveloping the upper half, like a mask, thus presenting the appearance of two heads, the half of the one being, as it were, enclosed in the other. There are many other permanent characters, in other species of the genus, which draw a line of distinction between them and any varieties of the common hog. Col. C. Hamilton Smith, an authority to which our opponents will not object, has enumerated ten distinctly marked varieties of the common hog;* and we could add six or seven others that have appeared since he wrote in 1827. He says: "There can be no doubt that this species is the root of our domestic hog." Thus, Smith has given two more varieties of the hog, than Agassiz has of men—which the latter divides into eight originally "created nations." They both agree that all the varieties of the hog, black, brown, grey, and white, that are now found in all countries, where man has taken up his residence, from the tropics to the poles, have their parentage in the wild hog.† This being admitted, we invite the advocates of plurality in the human species, to show wherein these varieties are less striking than their eight originally "created nations." An original creation is, according to the language of science, a species. A variety is not an original creation, but only one of the branches that are developed from an original creation, and is, therefore, not a species. There are no "primitive varieties" in nature. Here their new theory, of "*a primordial organic form*," is brought in to their assistance. They are aware that the wild hog had its many and permanent varieties during those dark ages in which there was no Herodotus, Virgil, Columella, or Mago, and no Linnæus or Cuvier, to record its history. And how has the discovery been made, that all these permanent races are mere varieties, and not "originally created" species, or "primitive varieties?" Simply because the naturalists of Germany, finding that the original wild hog still exists in their forests, have, in a thousand instances, reclaimed them from the woods. By this means they have discovered that their descendants, after a few generations, lose their ferocity—as-

* Griffith's Cuvier, vol. 3rd., pp. 405–6.

† Agassiz, in Nott & Gliddon's Types of Mankind, p. 67.

sume all colours, and produce those very varieties which existed in bygone ages, "in the night of time," from which no facts in natural history have been handed down to us. The mere accidental, or providential fact, then, of the present existence of the wild hog in the forests of Europe, Asia, and Africa,—and hence the opportunities afforded naturalists to observe the varieties which it has produced in domestication,—has caused them to pronounce all these widely separated breeds as mere varieties, descended from a "primordial *organic form*." Here, according to their theory, they have been brought to a correct conclusion, by an accident. Suppose, however, that the wild hog had long been exterminated from the world, as the Dodo has been from the Island of Mauritius, where it was, (to use a recently introduced word,) an "autochthon," and beyond which it never strayed; what then, according to their system, would have been their guide in arriving at truth? They would have been compelled, according to their "primordial" definition of species, to have described all these varieties as distinct species, and thus would have committed a gross error, the result of having adopted a theory which, on the very outset, proves itself utterly incapable of guiding us in our researches and investigations of the laws of nature. According to this definition, the varieties in the horse would all be regarded as distinct species, because, if the wild horse, in the deserts of Mongolia, should be proved to have escaped from domestication and became wild, his origin could not be traced. The goats, cashmere, Maltese, &c., would be mere varieties, because their parents may be found in a wild state in the mountains of Persia and Caucassus; and the various breed of cows would be all species, because there is yet some doubt whether the existing wild Urus is the parent. When that point is settled they will become varieties. The varieties in the common cat, which, for ages, could not be traced to the European wild cat, must, according to this principle, have all been distinct species, until, by a lucky accident, Rüppel discovered it in a wild state, inhabiting the rocky and bushy regions west of the Nile, when, all at once, these, hitherto, new species became varieties. The various breeds in our tame turkey, white, brown, and black, are now only varieties, because the wild turkey still exists. But since Temminck could not, satisfactorily, trace the various breeds of our common fowl to a wild parentage, he made, according to Morton, ten distinct species, the silk fowl and the rumpless fowl included. All the varieties of the tame pigeon, which are more remarkable than in any other species domesticated by man—the little tumbler, the fan-tail, the hairy pigeon, the powter, the runt, and numberless others, they admit, are mere varieies of one species. The only evidence they can offer for this distinction

is, because, we are so fortunate as to have the original rock dove, in its wild state, breeding in Europe, and, because, when it is now domesticated, it produces these same varieties. But should the rock dove have been exterminated—and no longer exist in a wild state—then, according to their newly invented theory, all these striking varieties of the pigeon would be elevated into true species.

Because the species man, possessed of intelligence—restless, enterprising, and migratory—can no longer be traced up to the time of his creation by many centuries—because his form cannot be traced "into the night of time," and since he was not created as a wild man, who subsequently became tamed and domesticated; therefore, according to this strange definition of species, there must be a plurality of species, or at least a plural creation of nations. Some have, accordingly, divided him into two species—some into three—some into five—one into eight separate creations—and one, more enthusiastic than all the rest, can see no reason why "there were not, originally, an hundred species."* We have barely space to inquire where, in this case, they would place the intermediate varieties? Of the numerous tribes of American Indians, Dr. Morton says, in his last publications :† "He who has seen one tribe of Indians, has seen all." Thus, the miserable Fuegian—the tall Patagonian—the brave Iroquois, the intelligent Cherokee—the fierce and cruel Blackfeet—the thieving Camanches, or Apaches—and the flat heads; the latter, their champions, Smith & Knox, pronounce a distinct species, are all included under one race. Humbolt informs us of white tribes of Indians, on the upper Oronoco. He says of them: "The individuals of the fair tribes, whom we examined, have the features, the stature, and the smooth, straight, black hair which characterises other Indians. It would be impossible to take them for a mixed race, like the descendants of natives and Europeans, and they are neither feeble nor albinos." Dr. Morton informs us of other races of American Indians that are black: "The Charruas, who are almost black, inhabit the 50° of South latitude, and the yet blacker Californians, are 25° North of the Equator."‡ Catlin says, of the Mandans, of the Upper Mississippi: "There are many of these people whose complexions are as light as half breeds; and, among the women especially, there are many whose skins are almost white, with the most pleasing symmetry and perfection of features, with hazel, with gray, and with blue eyes."§ And, in regard to their hair, he says that it is, generally, "as fine and as soft as silk." Most of the

* Nott's Biblical Hist. p. 33.

† Schoolcrafts's Hist. American Indians, part 2, p. 316.—See, also, Morton's inedited MSS., Nott & Gliddon's Types, p. 324.

‡ Morton's Crania, p. 69.

§ Catlin's Customs, vol. 1, p. 94.

other tribes are characterised by rigid, coarse hair. In multiplying the species of men, the great difficulty with them appears to be, in knowing where they are to draw the line of demarcation between the supposed species. The perplexity is equally great in endeavouring to preserve, in their purity and distinctness, the ever-mingling breeds of domesticated animals, who are found to show no repugnance to a familiar intercourse.

A correct understanding of the laws of Nature in the creation of species would, we apprehend, enable us to interpret her works with much greater certainty by an examination of the species and varieties she has produced, than by resorting to the monumental records of Egypt, Assyria, or of Central America. In characterizing man either as species or varieties, we must subject his physical form to the same rule that governs us in characterizing any of the lower animals.

Returning then to the domesticated hog, which we have selected for elucidation, as one among the many domesticated animals—all of which being parallel cases—we inquire in what mode would naturalists proceed in ascertaining whether its many breeds, so different in form and colour, and, when not intermixed, preserving their peculiarity of form to the end of time, were true species or only varieties? We will suppose that the original wild hog had been entirely extirpated from the world, as it, together with the wolf, the bear, the beaver, and the wood grouse have disappeared from Great Britain. We would now have no ancient history, no monumental records, and no tradition to guide us. The *primordial* theory would, therefore, be of no avail, since their savage forefathers had all been exterminated, and left no geneological records by which their pedigree might be traced.

We would be governed in our investigations by those very rules which science has laid down for the designation of species and varieties—rules which governed Linnæus and Cuvier, and every other naturalist, down to Agassiz and Morton, in their descriptions of every species published to the world.

We would first inquire whether these animals, with all their peculiarities of forms, belonged to the domesticated species. This being self-evident, we would next inquire whether they all possessed the characteristics of the Genus (Sus.) This being easily ascertained from the number and form of the teeth, structure of the body, etc., we would thus feel assured that they all belonged to the same genus. We would next examine their internal and external structure, in order to ascertain whether there were a sufficient number of permanent characters to warrant us in throwing them into different species. We would pay no

regard to colour, to size, or to some peculiarities of form, inasmuch as these phenomena are invariably observed in all domesticated species. Having ascertained that in those essential characters that constitute a species they all agreed, we would next endeavour to ascertain the period of gestation. This differs even among species belonging to the same genus:—In the elephant it endures for twenty-three months; in the horse eleven; in the camel twelve; in the giraffe fifteen; in the cow nine; in the large red deer of Europe eight months; in our Virginia deer seven months; in the common sow, which produces a numerous litter, only four months; in the sheep five months; in the beaver four months; in our common grey rabbit thirty-three days; in the squirrel four weeks; in the bear eight months; in the lion one hundred and eight days; in our cougar seventy-nine days; in the dog sixty-three days; in the wolf, sixty-three days, etc. Having ascertained that they were constituted alike in regard to the time of gestation, and the average number of young, we would next inquire into their voice—these are so peculiar in each species that they may be easily distinguished by their notes of recognition, as well as those of pleasure and of pain. Martin says of the monkeys:—

"The voices of the simiadæ are very various in the several groups, and different tones are uttered by each species, under the excitement of different passions. Moaning, whining, a hoarse gutteral barking, squeaking, screaming and chattering, are heard by turns, wherever these animals are congregated, according as they are influenced by grief, pain love or anger."

We have frequently listened to these noisy monkey concerts in the monkey houses of London and Paris, and can testify to the truth of the author's statement, that "different tones are uttered by each species." The note of recognition of the hog is a peculiar gutteral grunt, and that of pain is a shrill and angry squeel. To strengthen and confirm our convictions beyond a doubt, we would apply the last and crowning test. We would ascertain whether these different breeds of swine had no repugnance to each other, associated readily, and produced prolific offspring, which in their turn would multiply and perpetuate their stock, without the necessity of mingling with the varieties from which they sprang. Having been satisfied that in all their characteristics they corresponded with each other in these rigid, scientific tests, we would unhesitatingly pronounce them all varities of one and the same species, and from these natural as well as scientific tests, we would infer their primordial origin.

Let us now apply these tests in the definition of species—a definition

which was received by all naturalists before this discussion took place, and is at this moment practically received by all, in investigating the claims of the different varieties of men.

We would respectfully inquire—Is there a single characteristic in the numerous varieties of the swine, (the various breeds being admitted by all naturalists as varieties of one species) that will not apply with equal force to every variety in the human family? So strikingly similar are the characteristics in all these varieties of men, that Professor Agassiz himself has been compelled to admit that "man is everywhere the one identical species." Although, in his last published opinions, he assumes, without giving any satisfactory reasons, that there might originally have been eight created nations, yet he is very cautious in not calling them species—and, in great doubt and uncertainty, adds:—"I still hesitate to assign to each (race) an independent origin." We are encouraged to hope, therefore, that he who has always appeared to us as a searcher after truth, and who is courteous in his language, and scientific in his pursuits, is not so hopelessly committed to an erroneous theory, as not to be induced to review the whole subject again. In the lower departments of zoology, he ranks at the head of the naturalists of our country, and we are not without a hope, that after having carefully studied those higher forms of animal life, which prepare us to form an unbiassed judgment in regard to man and his varieties, he may return to his original views. If we look for those characteristics that are essential to a species, they are found in every tribe of men on the whole earth. If we compare man with every variety in the species of domesticated animals, his variations present the same phenomena; if we ascend higher and examine his instincts, the powers of his mind, and his longings after immortality, we cannot but perceive that these gleams of intelligence and of hope exist, however partially developed, even among the most degraded and barbarous nations.

Returning, however, to the aids which these naturalists encourage us to hope may be derived by searching the "monumental records of Egypt and Assyria," we may ask what assistance can these afford us in the designation of closely allied species or varieties of animals? The figures on these monuments have long been before the public in several valuable works. They are of interest, as affording evidences of the habits and customs of eastern nations, the state of art, etc. They may aid us in a slight degree in studying the varieties in the human race, but the figures of the lower animals are too imperfect for scientific evidence. The reduced figures of dogs in Nott and Gliddon, we have not compared with the original. Taking them, however, just as they are presented to the

reader, and presuming them to be faithful copies, we have no hesitation in asserting that for all the purposes of the naturalist in the designation of species or varieties, the figures of animals on the monuments, are entirely valueless, and cannot advance him a single step in a science which requires the closest accuracy. Even if they were exact copies from original living specimens, (which is very far from being the case,) the naturalist would prefer a shrivelled skin with a perfect skeleton, to the most exact represention which could be produced by the chisel or the brush. The drawings given for the purpose of illustrating the monumental history of dogs, are in themseves sufficient to convince the naturalist that he must look to other sources than the monuments to aid him in his scientific inquiries. Let us only look at the figures on the single page 388 of "Nott & Gliddon's Types," and then inqure what lights these would afford us in the designation of species or varieties? If the upper figure is a greyhound, as is stated, it must be not only a new species but a new genus, since we have evidently nothing in nature at the present day to correspond with it. If this is an accurate representation of the greyhound as it then existed, (with a short tail turned upwards like that of the rabbit) it affords one of the strongest evidences of the changes which time has effected, since no such variety of greyhound exists in our day. As we have several species of hyena and wolf, the naturalist would look in vain to these figures to assist him in the designation of any particular species. The figure on the same page of a supposed jackal is a curiosity in itself. We feel convinced that the ancient artists were no naturalists, and are inclined to the belief that they had no specimens before them to aid them in their delineations;—that with them, a dog was a dog, and it now requires the aid of imagination to enable us to decide on the variety. We feel no disposition in this place to enter on an investigation of these caricatures of dogs, as we are fully aware that the book of nature is a much safer guide to the naturalist in the investigation of species, than the very imperfect and unsatisfactory figures on the monuments. We are advocating the doctrine of the Unity of the Human Race simply on scientific principles. We care not to make issues on points that have no legitimate bearing on the subject to which we are restricted in this discussion. Those with whom we intend to have no controversy have nothing to apprehend from our criticisms. We may, however, here observe that the figures of dogs and of men (the latter only are of any scientific value,) on the eastern monuments, have been carefully studied and delineated by master minds—men, at whose feet Mr. Gliddon has set as an humble copyist. They have commenced giving to the world the result

of their scientific researches. Both Lepsius and Bunsen have already proclaimed their belief in the doctrine of the Unity of the Human Race, and the former, as we are informed is now engaged in a work, in which he will offer reasons for the faith that is in him. Thus these monumental records, which caused Gliddon to pronounce in the language of scorn and obloquy a tirade against the scriptures, convinced the minds of Lepsius and Bunsen of their truth, and filled them with humility, reverence and awe. Their scientific researches satisfied them of the doctrines proclaimed by Moses, and confirmed by Paul.

"And (God) hath made of one blood all nations of men for to dwell on the face of the earth, and hath determined the times before appointed, and the bounds of their habitation." Acts 17 ch. 26 v.

These distinguished naturalists both arrived at the conclusion, from these very monuments, that the negro races had only been developed in the course of ages within the African tropics and were derived from Egypt. The minds of men are differently constituted, and we here perceive what opposite impressions are made on different minds in visiting the same localities, and in investigating the same subjects.

Our object in the present article has been to show—1st. That the newly proposed definition of the term species, as "*a primordial organic form*," was opposed to all the operations of nature and the judgment of naturalists of all ages, that it was arbitrarily framed to suit a recently adopted theory—that it was substituting tradition, and uncertain history in the room of these characteristics which are impressed on the species by the hand of the Creator. 2dly. That naturalists in all ages had, with a remarkable unanimity, laid down a rule of interpretation for species, founded on the characters by which species could be distinguished—that this rule had always been satisfactory, and that by it every species in the world had been described by naturalists—including the individuals who proposed it to the world—and that without its observance no species can be described. 3dly. That according to this definition of species, man, regarding him as a domesticated being, must be characterised by those rules which govern naturalists in their examination of domesticated animals, and that by this rule, man is proved to be one species, composed of many varieties. It may farther be stated, as we have shown elsewhere, that every species has had a central birth place, and that in the wide range of creation no species has ever been found which afforded satisfactory evidence that it had separate creations, viz: the species created in one locality, and a variety of the same species in another. We have also shown that this rule was uniform in every species of animal and plant, and that where the same species was widely

diffused, its mode of migration or diffusion could easily be traced. Hence it would be found contrary to a law of nature, which is universal in every other department, to find the same species of "man created in nations" in different quarters of the globe, and that hence, like all other species, having had a central birth place, his diffusion must be accounted for, on the ordinary principles of migration, for which he has been physically and intellectually well qualified, and that his varieties in the different quarters of the world, must have had their origin in the same law which regulates the production of varieties in every species domesticated by man.