

ART. IV.—THE TWO THEORIES OF MAN'S ORIGIN.

DARWIN AND AGASSIZ.*

“Magis magni clerici non sunt magis sapientes.”

So restless, so quickened, has become the human mind, in this wonderful age, that has marked more changes than has ever taken place in the same space of time since the world's history was placed on record, that new doctrines and theories are daily enunciated, with an ability that astonishes, if it does not convince.

One propagandist maintains his ground with an intellectual skill that, for a time, carries with it conviction. Another and opposing one, advocates his with a degree of plausibility and force that at once undermines your former faith, and suspends the mind, like Mahomet's coffin, between the heaven of faith and the earth of uncertainty, throwing it into such a state of skepticism that the veriest opacity of blind faith is more satisfactory.

We have now new schools of natural history as we have denominations among sectarian Christians; and however zealous each may be in propagating its peculiar doctrines, it is no longer scarcely possible for any one school to claim that truth is exclusively with it. On one side we have those of the school of Darwin, who proclaim the doctrine of transmutation, or, as his opponent, so we shall call him, Agassiz, describes it, “that animals are derived from one another, and that there is a premature cell from which all animals may be evolved.” That all vertebrates are derived from one primitive vertebrate, that all articulates are descended from one primitive articulate, that all mollusses are derived from one primitive molluss, that all radiates are derived from one primitive radiate, and that these four primitive types are derived themselves from one primitive cell, under the influence of light and electricity acting upon matter. Or, in other words, that man, proud man, with his long line of illustrious ancestors, is, after all, sprung from nothing

*“The Origin of the Species,” by means of Natural Selection, by Charles Darwin, M. A. Agassiz's lecture before the Association for the Advancement of Science and Art, New York, February 26th, 1867.

more important than a tadpole, or something even still more insignificant—that what has been so piously inculcated in us, of our origin from that fallen pair, ejected from the Garden of Eden, is all a fable ; that Adam, if he existed at all, was a negro, and but a link in the wonderful chain.

There cannot be a source of much consolatory reflection in this for some of our first families, who pride themselves on their descent. Indeed, we do not know a family, rich or poor, high or low, for we have yet to see one that does not lay claim to some meed of that gentility which mankind put on with his nether garments, who will receive this announcement with any other feeling than that of just indignation.

We would like to see the reception Mr. Darwin would get from Sandy McAlpin, whose naked skin is a standing evidence of the antiquity of his race, and, consequently, of his gentility, should he say to the face of this descendant of a “hundred plundering,” but nevertheless, illustrious “clans,” “McAlpin, my dear fellow, you fancy yourself the descendant, as your name implies, of a ‘son of the mountain,’ but do not lay the flattering unction to your soul ; it is all a mistake ; you are simply the offspring of a tadpole.”

What would be the fate of the philosopher, should he say to Ryan O’Ryan, whose geneology is lost in the mist that arose from the waters of the deluge, “Ryan, my friend, you fancy yourself sprung from ‘the O’Ryan’ who, in turn, claimed descent from Fin McCool. Get rid of such fancies as quick as possible, my friend, for your ancestors, trace them as far back as you may, were negroes, and if I go behind the human family, I will prove them to have been tadpoles.”

Sharing as we do, as an humble member of the human family, in the just indignation such foul aspersions cast upon our species calls forth, we cannot but shudder at the fate that would await the philosopher, should he thus address either the one or the other of these hot-headed celts. Nor should we wonder at it. Show us the man, woman, or child who, if shown a diminutive, insignificant, wriggling tadpole, burrowing in the mud of a dirty pool, and there and then informed that that was the first and most venerable of his or her ancestors, that would not at once contemptuously repudiate so degrading a connection.

The gravely disposed may think we are jesting in a manner unbecoming grave subjects of philosophy. Perhaps we are. But whether we jest or not, no one can say, who estimates at their true value the predilections and prejudices that influence a majority, a great majority, of mankind, that any other result could follow a plain, unvarnished announcement of such a doctrine, undermining, religiously and socially, ages of the world's schooling. If we have laid ourselves open to so grave a charge, it should be borne in mind that fiction and frivolity inoculates the literature of the day, and possibly, we may have caught the infection. Perhaps, without the admixture of some such ingredient, the numbers who, it is to be hoped, will peruse these pages, would be somewhat diminished. And if by such means we seduce one one within the charmed circle of high and ennobling thought—if even one be tempted to drink of the "Pierian Spring," he will plead our excuse. However, perhaps it is better that a grave subject should be dealt with in a correspondingly serious manner. We will, therefore, confine ourselves strictly to the subject in hand.

And yet, as we glance back, retrospectively at the past, we cannot help smiling at the confidence with which some, at least, of those theories are put forth. And if we turn to the future, the smile becomes even broader; for, in all probability, a decade of years will not have run its course before another set of propagandists will loom into existence, equally learned, logical, and respectable, and upset the doctrines of to-day, and in doing so, will, themselves, very likely, conflict with one another, just as Darwin, and Agassiz, and others, are now doing. Even geologists, who have lately come to aid the doctrine of the greater antiquity of man, or rather, we should say, through whose instrumentality man's advent on the earth is put further back thousands of years than we Christians have been taught to believe, are already divided into conflicting schools.

On one side we have Sir Roderick Murchison, who heads what are called the "Convulsionists," or "Cataclymists," while on the other, there is Sir Charles Lyell, who leads the "Uniformitarians."

Nevertheless, it does not follow that useful information, important facts, may not be gleaned from their researches; indeed, it is mainly with this end in view we place "The Two Theories of Man's Origin"

before the reader. The conclusion, however, at which the theorists arrive, is quite another matter. On these we will take the liberty of passing a few remarks, by and by.

Agassiz enunciates the doctrine that it is not only one that was started in the beginning, but many ; and that it was not to one time only that creation has been limited, but that creation has gone on through all ages, and that under the direct influence of creative acts, all the differences which exist in nature have been brought about—that man is not the lineal descendant of tadpoles, or monkeys, but that he is “the chosen production of Divine intellect, and that he is made in the likeness of the Divine image.” This last sentence, which we quote, sounds more in accordance with man's religious predilections ; but as he maintains that the different and distinct species of animals have had separate and independent origin—that the negro owes his origin to his kind, the Caucasian to his, the Mongolian to his, etc., in fact, that all mankind did not spring from Adam, its want of orthodoxy is, of course, at once apparent.

The action of light and electricity upon matter in originating living beings, from which, in a successive chain, man is descended, forms the basis of the German school. Mr. Darwin, whether to satisfy his own religious impulses, or from the fear of shaking those of others—it is to be hoped the former—places an intellectual power behind the light and electricity which gives the first creative impulse.

Here we have three of the most eminent schools of natural philosophy, all differing from each other on this all important subject—the origin of man.

Vigorous intellectual efforts are, we understand, being made by some of the Anglican clergy to reconcile the Bible with Darwin's school. Who shall say the effort will be unsuccessful ? What, with a strong motive behind, will not man's ingenuity accomplish ?

Now-a-days, when naturalists study the anatomy of animals, it appears to be with the sole view of arriving at a knowledge of the origin of man—a knowledge which heretofore it was supposed lay only with God. But we live and learn. Whether we learn *truth*, however, is the question.

When geologists investigate the fossils buried in the earth, it is to the same end. When men investigate the physical differences

which exist among themselves—Mongolian and Caucasian, Caucasian and Negro—it is with a similar end in view. Whether they will ever make the great discovery, is a question we leave others to speculate on—with the full conviction, however, that many, proudly conscious of the ripeness of the age in which we live, will come to the conclusion that they will.

But we forbear for the present further comment. As the reader proceeds, he will find Darwin and Agassiz speaking for themselves. Mr Darwin commenced the investigation of his subject many years ago, when as a naturalist on board Her Britannic Majesty's ship *Beagle*, he visited South America, where "certain facts in the distribution of the inhabitants and its geological relations of the present with the past inhabitants," attracted his observation, and gave birth to his theory.

"These facts," says Mr. Darwin, "seemed to me to throw some light on the origin of species—that mystery of mysteries, as it has been called by one of our greatest philosophers."

Mr. Darwin holds that the various species into which the animal and vegetable kingdoms have been divided by naturalists, are not immutable ; that the theory of separate and independent creation is an error, and that those belonging to the same genera are lineal descendants of some extinct species ; that uniform descent from one animal to another is brought about by what he calls Natural Selection. This Natural Selection is a very different thing from that selection which is made of superior animals for the purpose of crossing them to improve or change the breed. This he calls Methodical Selection. Natural Selection, as the name implies, is the result of natural laws, and is startling for its—we were about to say originality—but substitute the word boldness.

This doctrine, however, for which he gets a large share of well deserved credit, is like many other modern discoveries, by no means a new one. Centuries ago the subject was known and discussed. Mr. Darwin again brings it forward, dressed in a new guise. This, nevertheless, should not detract from its intrinsic merit—modern theories on electricity are not the less truthful because it was known to the ancients.

The domestic pigeon, as more easily illustrating his theory, was selected by him, into whose history and habits, past and present, he

enters with that ardor only known to the naturalist. This very well known bird, it appears, has been domesticated as far back almost as the records of man runneth. Domestic pigeons were known in the fifth Egyptian dynasty, about three thousand years before Christ. Among the Romans, in the time of Pliny, immense prices were paid for them. "Nay, they are come to pass that they can reckon up their pedigree and race." Akber Khan, in India, in the year 1600, was the greatest pigeon fancier, however, of which we have any record, he having at one time as many as twenty thousand.

The diversity of breeds is too great to enumerate here ; yet each one—tumblers, barbs, carriers, pouters, turbets, jacobins, trumpeters, laughers, fantails, and a host of others—is the subject of a special study. The difference of beak of the English carrier and the short-faced tumbler, and the corresponding difference entailed upon the skull, the very long beak of the barb, and the very short, broad one of the carrier, the amazing length of the legs, body, and wings of the pouter, with its inflated crop, the turbet's very short conical beak, with reversed line of feathers down the breast, the feathers so much reversed along the back of the neck of the jacobin, forming a hood, the peculiar coo of the trumpeter and laugher, the number of feathers of the fantail, as compared with the next of the pigeon family, are all clearly delineated, and are but the stepping stones to the corollary at which he aims. The difference in the skeletons are no less strongly marked than the external organization. The period at which perfect plumage is acquired varies. So does the down with which the nestlings are clothed when hatched. The eggs vary in size and shape. Their disposition and voices vary, as well as their manner of flight.

Mr. Darwin mentions that great as are the differences between the breed of pigeons, they have all descended from a single stock, that of the rock pigeon. In this manner he traces all animals, no matter how great their diversity, to a common source.

Commencing from a common origin, how are the innumerable varieties to be accounted for. Habit may account for some effect, as well as the condition of life, climate, location, etc., but are these agencies sufficient to explain the physical differences that exist among animals whose habits, manner of life, etc., may be said to be

similar, such as the lion and the tiger, the wolf and the fox, and so on, by whatever gradation the king of beasts may be traced to that diminutive speck of life to which, for convenience, we give the name of tadpole? Mr. Darwin says yes.

Although naturalists generally admit that the pigeon has a common origin, yet many ornithologists are inclined to regard the different breeds as distinct, well defined species, and possibly belonging to different genera. If they would, they have only to go to the different varieties of the same race of men to establish the same principle. One man may be tall, say six feet in height, proportionately large, straight, fair complexion, light hair, handsome features, powerful voice, well developed head, small hands and feet, in fact, a perfect specimen of a large, handsome man, while his grandson may not be over five feet in height, very dark complexion, weak, squeaking voice, coarse, black hair, broad, crooked nose, large mouth, thick lips, receding forehead and chin, disproportionately long, ungainly limbs, and large, peculiar feet. Here is a difference as great as any one variety of pigeons display from another. Would they say the two men were of different species? True, each would not, as the pigeon is said to do, transmit or reproduce its exact peculiar feature; but Mr. Darwin says they would, in time, and by the operation of Natural Selection. That is, by certain means resulting from condition, climate, manner of life, etc., which the reader will see more fully explained further on.

The theory is, the dark and ill favored are selected, their offspring if still more dark and ill favored again selected, and so on, until the negro is arrived at. Or, to keep more within the order of succession, by selecting the light complexion from the dark, we get a white race. This, of course, is the order by which such results could have been achieved. For if men, in this long line of succession, sprang from the lower animals, whose skins, as a rule, are dark, the Negro, consequently, must have been the first man that walked the earth—the progenitor of the white man, as the monkey is the progenitor of him. And all the “selections” resulting thus, Mr. Darwin says, is effected by natural laws—natural causes producing natural effects. “By the power of accumulative selection many breeds of animals are improved. So, too, on a similar principles, the horticulturalist improves plants and flowers,

though the variations in the plants and flowers are more abrupt."

"The steady increase of the common gooseberry has been the result of successive experiments. The continued selection of slight variations, either in the leaves, the flowers, or the fruit, will produce differences from each other, chiefly in their characters."

Habit, also, has a decided influence, as in the period of flowering, with plants, when transported from one climate to another. In animals it has a most marked effect; for instance, "in the domestic duck the bones of the wing weigh less, and the bones of the leg more, in proportion to the whole skeleton, than do the same bones in the wild duck; and the change may be safely attributed to the domestic duck flying much less, and walking more, than its wild parent.

"But the effect of what may be called unconscious selection is still more important. This arises from every one trying to possess the best individual animal without reference to the improvement of the stock. A man who intends to keep pointers naturally tries to procure the best dogs, and afterwards breeds from the best in his pack, but without any idea of permanently altering the breed; this process, continued during centuries, could not fail to produce remarkable permanent effects."

"There is reason to believe that the King Charles spaniel has been unconsciously modified to a great extent since the time of that monarch. Many authorities are of the opinion that the setter is directly derived from the spaniel, having been slowly altered from it. The English pointer has been greatly changed within the last century, chiefly by crossing with the fox hound; but in so gradual and unconscious a manner, that though the English pointer came from Spain, there is no native dog that resembles him in that country at present, at least so it is asserted."

In like manner, by a careful process of training and selection, the race horse has come to surpass in fleetness the original Arab stock. The cattle of England have also been greatly improved in size and weight and, possibly, quality, compared with the stock formerly kept.

If the accounts given in the old pigeon treatises of carriers and tumblers are compared with those breeds now existing in Britain, India, and Persia, the different stages through which they have

insensibly passed can be readily traced, and how they came to differ so greatly from the rock pigeon.

“The same gradual improvement through the occasional preservation of the herb plants may be recognized in the increased size and beauty now to be seen in the rose, heartease, pelargonium, dahlia, and other plants, when compared with the old varieties of the parent stock. The seed of the wild heartease will not produce a flower such as is grown in our gardens. Nor will the seed of the wild pear or apple produce such pears or apples as are now of almost common use. Even the pear, although cultivated in classical times, appears to have been of very inferior quality.” The secret of this improvement consists in always cultivating the best known variety, sowing its seed, and when a slightly better variety chances to appear, selecting it, and so onward. “The gardeners of the classical period, no doubt, cultivated the best pear they could procure, though of an inferior quality, and in doing this, laid the foundation of that process by which we obtain the superior fruit of the present day.”

“No one supposes that all the individuals of the same species are cast in the same mould. But the individual differences, such as are known frequently to appear in the offspring from the same parents, afford material for Natural Selection to accumulate in the same manner as man can artificially accumulate individual differences in his domestic productions.”

It is a mistake to suppose that important organs never vary. The varieties, in fact, are so great, that in the flora of special countries drawn up by different botanists, a surprising number of forms have been ranked by one botanist as genuine species, and by another as mere varieties. The same is true of the different animals in different areas. Many of the birds and insects of North America and Europe which differ very slightly from each other, have been ranked by one eminent naturalist as doubtful species, and by another as varieties, or as they are often called, “geographical races.” The term species, accordingly, is regarded by Mr. Darwin as one arbitrarily given for the sake of convenience to a set of individuals closely resembling each other, and not essentially different from the term variety, which is given to less distinct and more fluctuating forms. The term variety, again, in comparison with mere individual differences, is also applied arbitrarily and for the sake of convenience.

How have the exquisite adaptation of one part of the organization to another part, and the condition of life and of one distinct organic being to another being, been perfected? These beautiful adaptations are in every part of the world. They are seen in the relations of the woodpecker and mistletoe; in the humblest parasite which clings to the hairs of the quadruped or the feathers of a bird; in the plumed seed which is wafted by the gentle breeze. How is it again that minute varieties become, ultimately, converted into distinct species, which, in most cases, obviously differ from each other far more than do the varieties of the same species? All these results follow inevitably from the struggle for life. Owing to this struggle and variation, however slight, if it be in any degree profitable to an individual of any species, as in its infinitely complex relation to other organic beings and to external nature, it will tend to the preservation of that individual and will generally be inherited by its offspring. The offspring will also have a better chance of surviving; for of the many individuals of any species which are periodically born, but a small number can survive. The principle by which each slight variation, if useful, is preserved, is called "Natural Selection," in order to mark its relations to man's power of selection. Man, by selection, can produce great results, and adapt organic beings to his own use, through the accumulation of slight, but useful, variations, given to him by the hand of nature. But Natural Selection is a power incessantly ready for action, and is far superior to those of art. And thus man, the chosen image of the Creator, is himself, according to Mr. Darwin, not only subject to the influence of this Natural Selection, but to whatever power of artful selection, or as he calls it, Methodical Selection, that may be brought to bear upon him. And as this Natural Selection is in constant operation, in which the strongest and best is always preserved, it follows that from man, in time, will be produced something higher, and, in fact, something different to what he is at present. But to our subject: "The struggle for existence, which is the foundation of the principle of Natural Selection, includes not only the life of the individual, but success in leaving progeny. Two dogs, in time of dearth, may be said to struggle with each other which shall get food and live. Carry this farther, and you find a plant on the edge of a desert struggling for life against drouth; but a plant that

annually produces a thousand seeds, of which, on an average, only one comes to maturity, may more truly be said to struggle with the plants of the same and other kinds which grow beside it. A struggle for existence inevitably follows from the high rate at which all organic beings tend to increase. Every being which, during its natural lifetime, produces several seeds or eggs, must suffer destruction during some period of its life, which is generally short, otherwise, on the principle of geometrical increase, its numbers would soon become so inordinately great that no country could support the number. Therefore, as more individuals are produced than can possibly survive, there must in every case be a struggle for existence, either one individual with another of the same species, or with the individuals of distinct species, or with the physical condition of life."

"Every single organic being throughout the whole realm of nature, may be said to be striving to increase in numbers; that each lives by a struggle at some period of its life, and heavy destruction inevitably falls either on the young or the old during each generation, or at recurrent intervals. If this destruction is mitigated ever so little, the number of the species will almost instantaneously increase."

The answer as to how this struggle for existence bears upon the principle of Natural Selection, is this: "As variations useful to man have occurred, so we must expect that other variations, useful in some way to each being in the great, and complex battle for life, should also occur, in the course of thousands of generations. If such do occur, it can scarcely be doubted that individuals possessing any advantage, however slight, over others, would have the best chance of surviving and perpetuating their kind. On the other hand, it is evident that any other variations in the least degree injurious, would be rigidly destroyed. Thus, by Natural Selection, the preservation of favorable variations and the rejection of injurious, is kept up."

"Take the case of a country undergoing some physical change of climate. The proportional number of its inhabitants would almost instantly undergo a change, and some species might become extinct. Any change in the numerical proportion of some of the inhabitants, independently of the change of climate itself, would most seriously affect many of the others. If the country were open on its borders,

new forms would immigrate, and this, also, would seriously disturb the relations of some of the former inhabitants. Thus, every slight modification which might chance to arise in the course of ages, and which in any way favored the individuals of any of the species by better adapting them to their altered condition, would tend to be preserved, and Natural Selection would have free scope for the work of improvement."

The action of this principle is thus illustrated: "A wolf preys on various animals, securing some by craft, some by strength, and some by fleetness. Suppose the fleetest prey, a deer, for instance, had, from any change in the country, increased in numbers during that season of the year when the wolf is hardest pressed for food, can it be doubted that the swiftest and slimmest wolves would have the best chance of surviving, and so be preserved or selected, provided that they retain sufficient strength to master their prey, when they might be compelled to depend on some other animals. Even without any change in the proportional number of animals on which the wolf preyed, a cub might be born with an innate tendency to pursue certain kinds of prey. This cannot be deemed improbable, when such great differences are observed in the natural tendencies of domestic animals; one cat, for instance, taking to catch rats, another mice; one bringing home winged game, another hares and rabbits, and another hunting in marshy ground and almost nightly catching woodcocks or snipe. Now, if any slight innate change of habit or structure benefited an individual wolf, it would have the best chance of surviving and of leaving offspring. Some of its young would probably inherit the same habits or structure, and by the repetition of this process a new variety might be formed, which would either supplant or coexist with the parent form of wolf."

From four, or at most, from five progenitors, Mr. Darwin argues, animals have descended, and plants from an equally limited number. He further contends that analogy would lead still farther, and that all animals, and even plants, have descended from one common prototype. "In the chemical composition of all living things there is much in common, as well as in their germinal vesicles, their cellular structure and their laws of growth and reproduction. Plants and animals are often similarly affected by the same poisons. The poison secreted by the gall-fly produces monstrous growths on the wild

rose or oak tree." Mr. Darwin, therefore, infers from analogy that all organic beings which have ever lived on the earth have descended from some one primordial form into which life was first breathed. The period he takes for the perfecture of his theory is so great, that our world's history from the beginning is but a mere fragment of time, compared to the ages upon ages which must have elapsed since the "first speck of life," from which plants and animals alike have sprung, became animated.

Such, briefly, is the elucidation of Mr. Darwin's theory of the origin of man. Turn we now to the antagonistic doctrine of Professor Agassiz.

The ancients, according to Mr. Agassiz, made no comparison between monkeys and men, any more than between other animals. Aristotle, two thousand years ago, discusses the structure of man in connection with other animals, but in his work no comparison is found between men and monkeys any more than between men and other warm-blooded animals. The reason of this appears to be that there were only three classes of monkeys then known : the common monkey of northern Africa, the red monkey, and the baboon, of which representations are to be seen on the ancient Egyptian monuments. Neither of these monkeys, he thinks, has anything about them particularly human. The baboon has a head not unlike that of a bulldog, and was called by the ancients *canocephalus*, or dog-head, on account of the peculiar features of the head.

When, however, the passage round the Cape of Good Hope to the East Indies was discovered, naturalists became acquainted with other varieties of monkeys from the west coast of Africa, and other places, which were of a different species from those known to the ancients. It was then the chimpanzee of Senegal and the coast of Guinea became known, as well as the ourang-outang of Borneo and Sumatra, and the resemblance in the higher form of the head which they bore to humanity induced naturalists to make the comparison which has been continued in all treatises on natural history.

Recently, a third kind of monkey, closely allied to the chimpanzee and ourang-outang, has been discovered in the lagoons of the more southern part of Africa, to which has been given the name of gorilla. This animal, it appears, was known to the Greeks ; not however as a beast, for allusion is found in their literature to a kind of small,

hairy man observed on the west coast of Africa, which could not speak, and was savage and untameable.*

“Now, the question is,” says Agassiz, “what are the structural relations which exist between those monkeys and other kinds of monkeys, and all monkeys together and mankind. In the first place, as a natural group, distinct among other mammalia, monkeys are characterized by anatomical feet, which is very striking. They have all four hands, while other animals have four feet, and man has two hands and two feet; and the difference which characterizes a hand and a foot is very obvious. A limb terminated with fingers, which are all on one level, and which all bend in the same direction, is a foot. A limb which has a number of fingers bending in the same direction, while one finger may be opposite to the others, and successively be brought into contact with each of the fingers, is a hand. The thumb, as a part of the hand, is flexible in another direction from the fingers, and the thumb may be brought into juxtaposition successively with each of the fingers, while this is utterly impossible with the toes of the foot. They all bend in the same direction, the largest as well as the others, and the large toe cannot be brought into position successively with the other toes. Now, then,

*Paul B. DuChaillu thus describes his first meeting with the gorilla: “While we were yet creeping along cautiously, the woods were suddenly filled and re-echoed with the tremendous barking noise or roar of the gorilla. Then the underbrush swayed about rapidly just ahead of us, and presently before us stood a gigantic gorilla. He had gone through the jungle on his all-fours, but when he saw our party he reared himself upon his hind legs and looked us boldly in the face. It was a sight I shall never forget. Nearly six feet high, with an immense body, huge chest, and great muscular arms, an intensely black physiognomy, with fiercely glaring, large grey eyes, and the most hellish expression of face, like a nightmare vision, stood before me the king of the African forest. He was not afraid of us, for he stood there and beat his breast with his fists until it sounded like a large kettle drum through the forest, which I found to be his mode of giving defiance to his foes, all the while uttering his loud, barking roar. The roar of the gorilla is the most singular and awful noise heard in these African woods. It begins like the sharp bark of an angry dog, then glides into a deep bass roll, which literally and closely resembles the roll of distant thunder along the sky; so deep is it that it seems to proceed less from the mouth than from the deep chest and vast paunch of the animal. His eyes began to flash fiercer and fiercer as we stood there before him on the defensive, and the crest of his short hair, which lay on his forehead, began to twitch rapidly up and down, while his powerful canine teeth were shown as he sent forth a thundering roar. He reminded me of nothing but some hellish dream creature, a being of that hideous order, half man, half beast! He advanced a few steps, then stopped to utter that horrid roar once more; advanced again, and beat his chest, and finally stopped when at a distance of about six yards from us, and here, just as he began another of his roars, beating his chest again in impotent fury, I shot and killed him. With a groan that had something terribly human in it, and yet was brutish, he fell forward on his face; the body shook convulsively for a few moments, the limbs moved about in a struggling manner, and then all was quiet.”

all animals which have feet at the extremity of their four limbs are quadrupeds, and all animals which have four hands, and not feet, are monkeys. This is, perhaps, the most characteristic feature of monkeys. I must, however, say there are some slight modifications in this respect among the monkeys, in as far as there are some in which the thumb is so short that it cannot readily be brought into juxtaposition with the other fingers, as in the hand of man, and there are monkeys in which the thumb is merely rudimental, so that four fingers are only developed. Then, again, what constitutes the finger is the position of the nail on the termination. The last joint of the finger in a perfect hand, the last joint of every finger, has a flat nail, covering only the upper portion of the joint, and not extending forward or bending over the joint. Now, this is the case with all the nails on our hands, and is also the case with the nails of our feet, but not with those of the animal, though we find there an imperfect hand, perhaps, where the thumb, or one or two fingers may have a perfect nail and the others may have curved nails, bending over the termination of the fingers. This is the case often among some of the monkeys."

Great variety exists in the size of the monkeys, some of them being as small as squirrels, while others approach man in stature.

What naturalists term the facial angle in intellectual man, is known as the right angle, and is formed by a line passing from the upper jaw, which meets with another line passing along the base of the skull. The ancients understood this line so well that when they wanted to make in their statues the intellectual organs of man particularly prominent, they exaggerated this line so as to give an overhanging or protruding forehead. To their great representative of creative power, Jupiter, they gave great prominence to the forehead, going even beyond the right angle, which, according to Mr. Agassiz, is, in this particular, retrograding. Thus the characteristic features which represent man's higher mental capacities, and upon which phrenology is founded, were long known before Lavater or Gall. The phrenological development of the monkey in its near approach to this angle, shows that he stands closer to man than any other animal, and the young ourang-outang, particularly, approaches nearer the characteristics of children than the older monkey to the older man. It appears that at an early age, when the features are

not yet as strongly marked with that rigidity apparent in the adult animals that are closely related to one another, they resemble each other more closely. Hence the great resemblance between young monkeys of a higher type and young children, than between adults. The nose is another great feature in all animals of the higher type. But in man, as well as in monkey, there is a marked difference between the representatives of the different types of either—the aquiline nose of the white man, the shape of the nostrils, which are open from backwards to forwards, and not sideways, so that the nostrils open from the side out, as with the lower types. Again, numbers of them are destitute of tails; the higher types, such as the chimpanzee, the ourang-outang, gorilla, are destitute of tails. Then the monkey is found only in the tropics where the palm tree grows. In Australia there are none, yet they abound in the adjoining islands. From these facts, Agassiz argues :

“That all differences which exist among animals cannot be ascribed to climatic influences, or that, at all events, climate, simply and of itself, does not produce animals which are akin to each other; for though Australia, which exhibits all the climatic productions of the tropical and temperate zones, has neither monkeys nor carnivorous animals, nor ruminants; neither deer, nor elk, antelopes nor elephants, nor rhinoceros, nor hippopotamus, nor tapirs, nor any of the other large quadrupeds which inhabit everywhere else the tropical regions of the earth—no giraffes, no camels, no bears, no weasels, no foxes, no dogs, no wolves, no cats, tigers, or lions; but the whole of the continent is peopled by quadrupeds of a peculiar kind—the *marsupial*, the kangaroo family—all remarkable for the peculiarity of having, like our opossum, a paunch to carry its young, the only genus found on this continent. All these animals of the *marsupial* genus have under the abdomen a paunch where their young, born in an immature condition, are transferred, and where they remain till they reach a greater progress in development. That *marsupial* group is a peculiar group of quadrupeds only known to Australia, and in their various forms they ape all the other families as are common in other parts of the world.”

“All I want to impress upon you,” says the Professor, “in this connection, is the fact that in every part of the world there are peculiar tribes of animals, and that these tribes do exhibit such close

relations to the climatic condition that we cannot, with any kind of satisfactory evidence, ascribe these peculiarities to other than climatic influences under which they live."

The ourang-outang, the gorilla and chimpanzee, from similarity of structure in hands, teeth, etc., are considered one group. The name by which these higher monkeys are known is *Anthropophagi*, or man monkey. The baboon presents features more like the lower animals, having a very prominent and large snout like a dog, tail short, limbs stout and body large and strongly made. Among them one other variety, "differing in size and color, length of hair over head and neck, in the mane, and so-forth." Another species of monkeys are characterized by long tails, slender forms, prominent snout, peculiar teeth, etc. And in South America monkeys are found with what are called prehensile tails, but in which the tail is covered with hair. Then there are howling monkeys, the lower end of whose tails are entirely destitute of hair, and whose throats are so enlarged that they produce reverberating sounds.

"Now, then, says Agassiz, "what do we find among men? Similar conditions. For men have not the same complexion, nor do they exhibit all the same characteristic features. And let me urge this fact, for one cannot consider the relations of mankind to monkeys unless we are aware how widely men differ from one another. While they are men, and while they have all the characteristics of humanity, there are yet among them differences about as striking as the differences which distinguish some of those genera of monkeys from one another—as striking, unquestionably, as the difference which distinguishes some species of monkeys. And unless we recognize these differences among men, and recognize the identity of these differences with differences which exist among animals, we are not true to our subject. And whatever be the origin of these differences, they are there at the same time. If it is ever proved that all men have a common origin, then it will be at the same time proved that all monkeys have a common origin; and it will be by the same evidence proved that men and monkeys cannot have a different origin. There is the appalling feature of the subject—that the characteristics which distinguish the different races of men are of the same nature as are the characteristics which distinguish the different kinds of monkeys. And it was for that reason that early I mentioned that

the different races of men must have independent origins, because I saw the time coming when the question of the origin of man would be mixed up with the question of the origin of animals. Now, I hold the idea of the community of origin of men and monkeys, and other quadrupeds is a fallacy, the foundation of which I shall try to explain presently.

“ All men agree in having four limbs, one pair terminating in feet, the other in hands. All men are endowed with the ability of standing erect, and their constitution is such that an erect position is not an acquirement resulting from education, and is not the result of the ‘ successive chain,’ but is one of the constituted peculiarities of the human frame. The whole of the back-bone is so organized that man can carry with ease his heavy, broad head only in a vertical position. He has not, as animals have, a ligament with which he may support the head in a horizontal position with ease, but the head must be balanced on top of the vertical column, in order that it may rest and move with facility in every direction. Then man has limbs on the sides of the chest, so organized that he can move them in every direction, and touch every part of his body ; and that pair of limbs terminate with the most perfect pair of hands known in nature, and that hand is constituted as readily to carry out the mandates of the mind. It is brought into the service of the intellect and is no longer an organ of locomotion, as is the case in the monkey. All these peculiarities are characteristic of men ; and between monkey and man there is no structural transition. There is no gradation from the highest monkey to the lowest race of man. All these attempts at bringing man closer to the monkey by the lower types of humanity overlook these fundamental conditions which exist among men, both in structure and attainments. In the first place, in color, the difference is obvious, but they are of comparatively slight importance. Next, in hair there is a marked difference. The flowing, straight hair of the white is very different from the stiff and wiry hair of the Indian, and when we begin to compare that hair with the hair of the Australian, or with that of the Malay, or with that of the Feejean Islander, or still more striking, with that of the Negro, we find differences which are most marked. The hair of the white race is cylindrical ; the hair of the Negro is flat, it is woolly, it is curly ; and these peculiarities are peculiarities not brought

about by climate, for the two races have been known to exist side by side on the earth, and the white man has not assumed the woolly hair of the Negro, nor the Negro the straight hair of the white race. Then there is a difference in the dentation, and a very marked one. All the white race have their teeth vertical, the jaw short, and the manner in which the teeth fit one upon another is perpendicular ; so that when we close the mouth we bring the lower teeth against the upper teeth in such juxtaposition that the two stand vertically, one above the other. While there are other races, among them, all the inhabitants of Africa, and South Atlas, and the South Sea Islands, who have their front teeth inclined, so that the upper and lower teeth, when brought against each other, form an angle, and the mouth is more prominent ; and all the races of men with protruding jaws have also thicker lips. They have, also, the flat nose, which I have already described, with broad partitions between the nostrils opening sideways. All these differences have been known among them since men have been observed by man. On the ancient monuments of Egypt there are figures of Negroes, there are figures of Egyptians, there are figures of Jews, and there are figures of white men, as characteristic in all these particulars as we see them now ; so that for at least as long a time as these monuments have been in existence, these features of humanity have remained what they were then, and have retained their peculiarities."

"How were these peculiarities brought about?" he asks. "Are they innate? That is, are they primordial, or are they the result of change?"

If these conditions are the result of change, then he argues, that the differences that are observed among monkeys are the result also of change. And if change as great takes place, why should not changes a little greater occur? And why not, therefore, all the conditions which exist among living beings be the result of successive changes? In fact, whether we are descendants of monkeys or men; "*whether we are the result of a natural evolution, or the expression of a specific act of the Creator?*" He does not directly charge those of Darwin's school with denying the intervention of God in nature, but he charges them with denying the immediate and direct interposition in the production of these differences. Man, he contends, is related in the animal kingdom in a manner that makes

it impossible to separate the classes which relate to his existence from those which relate to the animal kingdom. In the order of succession, through all geological time, is found, from the beginning to the end, a definite relation to something higher. And as man was introduced in the last geological epoch, so man, as the highest in the succession of living races, is seen to be announced from the beginning. This conclusion he bases on the scientific results of the comparisons of all races ; and that upon the plan on which the animals living on the earth are constructed, there is no possibility of a higher being than himself. This is regarded as one of the most important points of his subject. Let us, however, hear him in his own words :

“Suppose this to be the brain of the fish, (illustrating,) we have here, as in all brains, a front swelling from which arise the nerves which go to the nostrils, a middle swelling from which arise the nerves which go to the eyes, and a third swelling from which arise the nerve which goes to the ear, and then other nerves that go to different parts, about which I need not trouble you. These three swellings are so constituted that the uppermost is the smallest, those that occupy the middle position and the hindmost the largest. In reptiles we find that these swellings have about the same dimensions ; the front swelling begins to rise so as to stand on a level with the middle swelling, which itself is about as large as the hind swelling, which is raised in dimensions from the other. This is properly the hemisphere of the brain, (illustrating,) this is the occipital portion and this is the cerebellum. In birds we find that the front part is so far developed as already to cover, in a measure, the middle swelling, but leaves the hind swelling uncovered. And from the bird we arise to the quadruped, and find that the front swelling covers the middle swelling completely, though it does not cover the hind swelling at all. And when we come to man, we find that not only is the middle swelling, but the hind swelling also covered in such a manner, and the position so changed, that instead of extending on the same plane, or rising slightly, as is the case in the reptile, or slanting, as is the case with the bird or mammalia, in man the brain is brought to stand at right angles with the spinal marrow, which extends through the back-bone, along the vertebral column. Beyond this, you see, there is no progress possible.

“Here we have the anterior part of the brain, which extends over the middle posterior region of the middle and hind parts of the brain, in a perfectly harmonious manner, and the whole commands the entire system in a manner which to be exceeded would lead to a retrograde movement, and not an onward progress. Take the different forms of brain we have among men, you will find the forehead a little more or less developed. Pass from them to the monkeys, you will find that the cerebellum will be uncovered very slightly and then more and more. In fact, we have a complete series, which shows that between men and monkeys, and monkeys and quadrupeds and reptiles, and reptiles and fish, there is an uninterrupted gradation of more or less complicated structure ; but with this remarkable peculiarity, that the distance from one to the other is unequal.”

Then we have another cardinal point in his doctrine : “In the order of succession of animals,” he says, “will be found something singular.”

“Most of the animals which existed in all geological periods exist now in their original type, though a more perfect type at the present time exist beside them. In the oldest formations, nearly all radiates, mollusks and lower forms of life are found. The first insect belongs to the carboniferous period—they cannot be found before. Among the vertebrates, fishes are found from the beginning. The reptiles from the carboniferous period onward. Birds we have from the Jurassic period,” “though that,” says Agassiz,” is somewhat questionable. “Mammalia also dates from that period.”

“Thus is seen how many classes have existed from the beginning contemporaneous with one another. This is a matter of fact—information on record.”

Can it be admitted that contemporaries are descendants of one another, and animals which have appeared together at the same time are derived from one another ? “Certainly not,” responds the Professor. And here we pass to the third cardinal point : Are the different classes, though they may have appeared together—though their position, or apparent position, warrants the conclusion—are they really contemporaries ? This is a question the solution of which would settle the question between the two opposing theories one way or the other.

However, let us see what further Mr. Agassiz has to say on the subject: "Certainly not," says the Professor, "we have at least representatives of these different classes in the earlier strata; but this is not all. The polypes at the earliest period were among the lowest, while we have polypes of a much higher grade now living; and so with nearly all the lower types of beings. It seems as if these types had been improving, as if they had undergone changes, and as if these changes had led successively to something higher. So it seems, but it is not so; for while we have polypes now that are superior to those that lived in the earlier periods, we have by the side of them polypes as low as the first known—as low as those of the oldest time. What imparted to those simple forms the desire, and gave them the capacity to become something higher, and go on producing something higher, and at the same time to remain themselves as they were at first?"

"While we have certain lowest forms in the earliest time, and have gradually higher and higher, we have the lowest form side by side with the highest at the same time, so that we should have, according to the transmutation doctrine, the polypes incapable of remaining themselves, and at the same time not changing. This is not logic. And I think that a doctrine that has facts against it so glaringly, is not a true interpretation of nature. I do not know a physical force—I do not know a natural fact—which is capable of producing such results. But I know that mind can do it; I know that an author, when he attempts to record the process of his own mind, can do it up to the highest degree of perfection of which he is capable, and he can do it in such a manner that what he records may be successively the evidence of his gradual progress, and in the end, may be the evidence of his highest culture, and at the same time he may recall, if it be only for memory's sake, the doings of his early days, and place them side by side with the productions of his maturer years. And it is just that which we read in nature. We have an early manifestation of creative power, we have a later and higher production, and we have by the side of this latter a manifest reproduction of what had been in the beginning."

The fact that insects began in the carboniferous period, he adduces as another striking indication of the work of mind in the progress. The whole of the earth's surface, during the earliest period

of its history, was covered with water. There was no room for terrestrial animals. When land appeared above the surface of the water, and vegetation began to flourish, then the first indication of land animals presented themselves in the shape of insects. "Is it," he asks, "because nature has undergone successive changes that animals and plants have made their appearance? And is it physical changes that called them into existence living beings, or have these physical changes taken place and been directed in such a manner as to prepare a home on which living beings can be distributed?" Has the physical world, in all its changes, been productive of the organic world? Has the inorganic produced the organic? Has the inanimate produced the animate, or has there been an intellectual power superintending the whole in such a manner that the physical conditions should be brought about by which living beings should find an appropriate home for their growth?

These are the very important questions which he asks, satisfactory answers to which the Professor thinks he gives, one of which will be found in the order of succession in the vertebrates. Fishes only have existed as long as the surface of the earth was under the condition during which aquatic animals could exist. As soon as sufficient land rose above the sea, reptiles were called into being, and those large marsh reptiles found a home in the marshes and swamps of the earliest period. Next we find birds introduced, when the atmosphere was deprived of the gases and rendered purer, so as to enable them to exist. The accumulation of coal in the beds of the carboniferous period freed the air from those elements which accumulated in it, and enabled the higher warm-blooded animals to live. Again, he asks: "Has the freeing of the atmosphere of that carbon been the cause of the coming of the birds and mammalia, or has the process of nature been so directed by superior intellect, that at a certain time the atmosphere should be freed of those impure elements, so that higher forms of beings should be called into existence."

"In the beginning the same physical causes existed, the same chemical agencies operated as now. In the character of the rocks of the oldest and more recent formations, there is evidence of this. There is evidence of it in chemical identity of the materials of which the celestial bodies are made. 'The physical world, in fact,' remains the same."

Are the animals that existed at different times, differing as they have in the most varied manner, the result of causes that do not vary, which do not change in the same manner? "Diversified results," says the Professor, "cannot be ascribed to uniform causes." But one possible cause can be seen by him for this diversity—the intervention of mind.

And here we come to the fourth cardinal point, which brings us fairly round the compass of this important subject.

"There are," says Agassiz, "several hundred thousand different kinds of animals living on the globe of all types of the animal kingdom. Now, every one of them has its line of development, and each pass through a certain number of changes. Every sparrow begins with the egg, goes through the changes which are characteristic of sparrow life, until it is capable of reproducing itself in eggs, which will go through the same changes. Every butterfly arises from an egg, which produces a caterpillar, that caterpillar becomes a chrysalis, and that in turn becomes a butterfly—thus changes until it becomes a perfect animal, capable of producing another egg. So it is with every living being. There are those which are low and those which are high; in fact the animal kingdom as it is now, is constantly undergoing greater changes every year than the whole animal kingdom has passed through since the beginning until now; and yet no one has ever seen one of these animals swerve from the line appointed and change into something that is not like itself. That is the great fact. Every living thing reproduces itself under conditions which are the same now as they were in the beginning of the world, till now, and yet they do not change. Why? Because by nature they are not changeable, and do not pass from one into another, though they represent all the changes that animals can pass, through, is it logical to assume that those of an earlier period were other than what we see them now, in consequence of changes, and that the laws of nature have changed in such a manner that that which does not take place now should have taken place in earlier times? I say just as much as the cycle which every animal passes through in undergoing its development from the egg to its perfect condition, progresses according to its appointed law impressed upon it by the Creator."

An abstract of the two theories is now before the reader, which

will enable him to judge, to a certain extent, of the merits of each. The struggle for existence among animals, man included, which is one of the features of Mr. Darwin's theory, is pretty evident even to one who would not rank as a close observer; but whether this struggle for life is the production of Natural Selection, is not quite so certain.

No one who has read that interesting and very suggestive work, "The Vicissitudes of Families," by Sir Bernard Burke, but must see in the rise and fall of families an evidence of the operation of this law even on the highest type of civilized man.

Some of the descendants of the most powerful Norman barons, to whose force of character and corporeal strength the conquest of Great Britain and Ireland is owing, whose families were both numerous and potential, the very embodiment of material durability, are to-day, according to this authority, cobbling shoes in a garret, or some other equally humble employment, alone, neglected and forgotten, on the lowest round of the social ladder, from which they either drop off, die out, or ascend again, or their progeny, owing, perhaps, to the energy engendered by their necessities, and in time the offspring of the cobbler in turn find themselves again strong and numerous, at the top, placed there by that vigor which luxury originally sapped in their ancestors.

Whatever results grow out of Natural Selection, it is doubtful whether, on the whole, benefit occurs from what Mr. Darwin calls "Methodical," or artificial selection—the crossing of breeds differing from each other. If fast horses and fat cattle are produced by this means, fecundity decreases and diseases increase. And artificial interference with the laws of nature, whatever benefit may be effected by it in one direction, will result in a proportional injury in another. Just as we see the artificial embankment of a river causes the tide or water to flow or encroach in some other direction.

Sterility is the bane of horticulturalists, who are constantly interfering with, crossing, the operations of nature. How many cultivated plants which display the utmost vigor, yet rarely ever seed?

A recent writer in *Blackwood's Magazine*, alluding to the subject of Natural Selection, says:

"As to the phrase 'Natural Selection,' we are not surprised that it has called forth some objection. It seems to imply that the struggle

for existence really selects which kind of animal is to continue and which is to disappear ; whereas the struggle for existence only carries into execution a selection that was made when the stronger or the more favorably endowed animal was called into existence. Setting aside the claims of theology for a moment, and overlooking the inappropriateness of applying the term selection to the operations of nature, it is the progressive law of development that has really decided what kind of animal shall survive. For it surely cannot be the method of nature to give out, blindly, as it were, from time to time, all possible varieties, without any law of successive or progressive development, (a law in harmony with the rest of creation,) and leave it simply to the actual state of things to decide which of her new forms shall hold its ground. The expression ' Natural Selection ' becomes still more irrelevant when we refer to this law of progressive development, to the creative intelligence which alone can really have *selected*. But the expression as used by Mr. Darwin does not necessarily imply any more than this, that the struggle for existence carries out a selection already made ; the stronger or more ingenious, or the better adapted animal *come prepared to win*.

" There is a race of red Indians living upon game. On the same soil is introduced a race of men more prospective in their thoughts, more observant and ingenious, who cultivate the earth. These cut down the forest and grow wheat. The red man disappears. Is it the struggle for existence that has selected which of these two shall possess the soil ? The selection was made when the more intelligent race was introduced. Yet, in common parlance, and without any disparagement to this, the real selection, we may still speak of the struggle for existence between deciding which shall remain and which shall depart."

There are four points embraced in this philosophic dispute, the establishment or refutation of any one of which by either of the controversery, according to either's peculiar views, is sufficient to turn the other three against his antagonist. These are : First, whether in the gradations of structure which has taken place—and are still taking place—in animals, from the lowest to the highest, there is an unequal distance, or break, between the man and the monkey ? Second, are the different classes of animals which have

appeared together at different periods contemporaries? Third, does man stand at the head of creative things, or can anything higher than man be evolved from him? Fourth, does every living thing reproduce itself, under conditions that do not alter, the same now as in the beginning of creation?

"Man," says Agassiz, "is related in the animal kingdom in a manner that makes it impossible to separate the classes which relate to the animal kingdom. In the order of succession, through all geological times, is found from the beginning to the end, a definite relation to something higher. And as man was introduced in the last geological epoch, so man, as the highest in the succession of living beings, is seen to be announced from the beginning."

Again, he says: "In fact, we have a complete series, which shows that between men and monkeys, monkeys and quadrupeds, quadrupeds and reptiles, reptiles and fishes, there is an *uninterrupted gradation* (the italics are our own) of more or less complicated structure." This quotation sounds as if Darwin, and not Agassiz, were pleading his case, but the continuance of the quotation shows it to be otherwise: "but with this remarkable difference, *that the distance from one to the other is unequal.*"

Now Mr. Darwin might very consistently ask him: How is it, if there is an uninterrupted gradation in the structure of animals from the lowest to the highest, that an unequal distance occurs? Where there is *uninterrupted gradation* there cannot be unequal distance; for gradation means "regular advance, step by step." "Regular progress *from one degree to another.*" If Mr. Agassiz calls him illogical, surely there is fair ground for Mr. Darwin to return the compliment. And as he introduces mathematics to prove what has been heretofore considered a self evident fact—that man stands at the head of created things—he might remind him that mathematics does not teach that where there is uninterrupted gradation there can be unequal distance; and he might add, that it was well characterized when it was called "a remarkable difference." What are we to infer when it is considered that this important point, this uninterrupted gradation in animal structure is, so to speak, the "right bower" of one and the "kedge anchor" of the other, without which the first—Darwin—would be totally wrecked and the second—Agassiz—set a drift.

Again, he might ask : “ If, as you admit, there is an uninterrupted gradation in the structure of animals, from the lowest to the highest, have I not, on the whole, a more tangible basis for my theory than you have for yours ?”

Indeed, we might take the liberty ourselves of asking both, consecutively : How is it that out of the constantly operating Natural Selection from which Mr. Darwin contends that something higher and different is constantly evolving, there has not evolved from man something higher and different from what he is presented to us to-day ?

Man is the same now he was five thousand years ago ; the structure of the skulls found in strata of earth denoting periods of time far more remote, is the same as our own, and indicate just as high mental faculties as the skulls dug from a modern graveyard.

That something higher evolves from man we all know. But it is when he dies and goes to Heaven that this most advantageous evolution takes place.

“ The doctrine of several domestic races,” says Mr. Darmin, “ from several aboriginal stocks, has been carried to an absurd extreme by some authors. They believe that every race which *breeds true*, let the distinction of character be ever so slight, has had its wild prototype. At this rate there must have existed at least a score of wild cattle, as many sheep, and several goats in Europe alone.” And why not, we would ask ? If the words we italicise, *breeds true*, have any meaning—that is, every animal truly reproducing its kind—a plurality of origin is the logical consequence. And yet, he says : “ Even in the domestic dogs of the Old World, which I fully admit have probably descended from several wild species.” Upon what principle does he give a plurality of origin to dogs, while he denies it to cattle or pigeons which differ from each other, as has been shown, just as much as dogs ? How can he consistently talk of several species at all while contending that all animals alike descend from one origin.

The law of “ Natural Selection,” if it exist at all, operates upon one species as well as on another, and would produce the different existing varieties of dogs or cattle from one common origin as well as it would pigeons. If there is, as Mr. Agassiz asserts, a separate and distinct creation for many living things, and that from the com-

mon rock pigeon the many varieties of pigeons we now see have sprung—this most naturalists admit—why may not the different varieties of men be produced in a corresponding manner?

As man has an immortal soul, which the other animals have not, and which fact we don't think Mr. Agassiz will deny—at all events, he does not hesitate to attribute the *mysteries*, so we consider them, of creation to the power of the Almighty, whose intention he endeavors to unveil—we shall, therefore, take the liberty of asking one more simple question: If the Almighty created different races of men at different times and separate places, did He also give them different and distinct souls, each set of souls differing so as to suit the organism, high and low, of the separate races? To carry out consistently to the end his hypothesis, he must say yes.

ART. V.—MARITIME EDUCATION.

BY WM. M. BURWELL.

The new era which is upon the South renders it necessary to adapt the pursuits of our people to the exigency of the change. We have impressed upon our readers the necessity of utilizing all the interests and enterprise of the country, by mixing the industries and assigning to each individual the duty of sustaining Southern society by such service as she or he may be able to render. We have urged upon our colleges the duty of establishing polytechnic departments of science as applied to the practical arts. We are gratified to know that General Lee has constituted such a department in the Washington College of Virginia, thus adding to the influence of similar schools established by the University of Virginia, the Virginia Military Institute, and other colleges in the Carolinas and Georgia the weight of his venerated example.

We have copied the report of the Board of Visitors of the Naval Academy at Annapolis to call the attention of Southern legislators to the importance of organizing a maritime interest, and of providing for an appropriate education. Why the apothegm of Mr. Jefferson, that the ocean is a scene of strife, and that it becomes a powerful republic to abstain from its conflicts, should have been regarded as an oracle beyond appeal, we have never been able to imagine.