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# THE ANIMAL CALLED "MAN"

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## TABLE OF CONTENTS

|   | PAGE |
|---|------|
| INTRODUCTION . . . . .  | 5    |
| MAN IN THE PAST . . . . .   | 10   |
| MAN IN THE PRESENT . . . . .  | 19   |
| MAN IN THE FUTURE . . . . .   | 28   |
| MAN AS AN INTELLECTIVE ANIMAL ( <i>en-<br/>dowed with the faculty of Reason</i> ) . . . . . | 39   |

# The Animal Called “MAN”

*Animal, quem vocamus Hominem*—CICERO

## INTRODUCTION

**T**O-DAY the thesis that Man has slowly ascended through æons of time from lower forms of life is generally conceded, and we have had to carry our search into a period which lies far beyond the limits of written history. And it has become possible to supply these long-lost chapters of Man's ascent because we have learned in recent years how history can be written in a new way. For the earth itself has kept a record of Man's doings and has given us the materials out of which his early history could be written as it was gradually traced backwards into an unknown past ; and to-day the excavator's spade has made it possible to carry the narrative of Man's past, as revealed by the soil, far beyond the oldest records even of Egypt and Mesopotamia ; and the fact is now well established that we can trace back man's lineage until we find it merging into that of wild animals without artificial shelters, clothes, fire, tools, or even speech, and dependent for sustentation on the daily search for food.

Assuming Man to be subject to Natural

Law no less than any other organism we must first assign to him a place in the Animal Kingdom, for now we have to trace prehistoric man back to the Neanthropic sub-man, and then back to the anthropoid man-ape, who was manlike in form and gait but lacked man's power of speech ; furthermore, we must try to see human history as a whole, for it has been clearly shown that the antiquity of Man extends to fully a million years into the past ; and if we would also seek to know ourselves truly—as to what we have been and now are, whatever we may aspire to become—we must first dethrone "Man" from his false position as Lord of Creation, as based upon ancient Hebrew tradition, and then accept the doctrine of "evolution," which was elaborated about eighty years ago ; for, as a working hypothesis, the doctrine of evolution has no effective rival in explaining certain facts which could not be reconciled with orthodox belief. It is now universally held by competent biologists and geologists, among other scientists, that **all organisms, living or extinct**, have arisen from **remote common ancestors** by a process of **gradual change or "evolution,"** for the evidence is overwhelming, whether derived from fossils, vestigial bodily organs, or embryology. And evolution has given us the idea of the possible advancement of the human race in the future. But the inherited capacity for superstition and the inertia of ignorance still strong within us in spite of the spread of education still greatly tend to impede the advance of science.

An animal is an organized being having life, sensation, and voluntary motion. So Man is an animal.

Animals are divided into many categories. Thus the *vertebrata* are always animals which have a skull and a vertebral column (or "backbone").

Man is a vertebrate.

Mammals are warm-blooded vertebrate animals with *hair* (as contrasted with *feathers*, or *scales*) on their outer skin, and bring forth living young which are nourished by milk secreted by the mother. Man is therefore a mammal.

Primates are the highest order of mammals, and this order includes monkeys, apes, and men. Anthropoids are a sub-order of primates having the form of Man, and include only the higher apes and Man. Man therefore is not a being apart in nature, but by his whole organization is continuous with the other zoological species.

Taking all the lines of evidence into consideration—*anatomical, biological, embryological, and geological*—we are led to the conclusion that Man is an aberrant Primate and has evolved from a lower and now extinct form of anthropoid ape; for the points of resemblance are so numerous and so close that such a resemblance could not be a result of mere chance. The presence also of so many vestigial structures in Man's anatomy prove that he has come of an ancestry in which these vestiges were fully grown and useful. For instance, though man has usually twelve ribs on either side of his thorax while the gorilla and the chimpanzee have thirteen pairs, yet a thirteenth rib in man is not

uncommon ; and even now some children are born with a tail. These anomalous malformations or irregular structures cannot be accounted for if Man is looked on as a special creation ; but a rational explanation of them is readily given if we accept evolution and admit that Man has evolved from a lower and now extinct form of ape, therefore being liable to " atavism " or the recurrence of any peculiarity of an ancestor in a later generation.

This ape-like ancestor of mankind is supposed to have evolved about a million years ago, and at first the life of this hairy savage probably differed but slightly from that of his predecessors. He was unable to stand perfectly erect, and probably slouched along—head down—unable to bend his neck ; he had a low forehead and heavy protruding jaws, with a chinless jaw-bone incapable of speech ; his arms were long compared with his legs, and very probably his thumbs were not yet completely opposable to his fingers. He sheltered in caves and possibly had learned to remove the skins of other animals and to dress them for the clothing of his own body. But he had not learned to use fire. Mind and reason were not part of Man's original equipment, but have been slowly acquired and painfully built up, and civilization was only gradually attained. A kind of animal finally appeared on the earth so constructed that he could become civilized, and then Man began to wake from his long intellectual slumber and the Pithecoïd sub-man was slowly ousted by a more intelligent race of kindred beings—more akin to *Homo sapiens*, or present type of Man

—who knew more and could speak and co-operate with their fellows. As civilization slowly dawned Mankind ceased to lead a life which did not differ greatly from those of its predecessors and felt the need for occupations other than the mere feeding and clothing of the body. Man learned the use of fire and of the bow, how to do basket-work and make pottery, and also how to weave. He began to notice the heavenly bodies and their motions, and gradually the various arts and sciences slowly evolved.

The Earth is inhabited by several races of Mankind behind which is a long past, but unheeded and ignored. These races can be roughly divided according to colour—namely, Yellow, White, Black, Brown, and Red—which now amount, collectively, to something like 2,000,000,000 individuals in all. But it is estimated that the Earth could still support a population of treble this number. At the present rate of increase this total of 6,000,000,000 human individuals will be reached about A.D. 2100, or in 160 years from now, when the future struggle for existence will begin in real earnest on an over-populated World and every available acre of land will have to be utilized to the utmost for the production of food to support this enormous population on a World where living space is limited and where the food supply may not always be equal to the demands. In this ceaseless struggle for food and place the race is to the swift and the battle to the strong.



## MAN IN THE PAST

UNTIL the year A.D. 1860 the majority of scientific men, relying on Scriptural authority (as propounded by Archbishop Ussher), believed that Man's existence on Earth covered a span of less than 6,000 years. But in 1847 Boucher de Perthes, of Abbeville, published an account of his discoveries of curiously-fashioned stones, which he had found in the gravel-pits in that neighbourhood. These gravels and sands contained also the bones of extinct animals; he was thus convinced that the stones which he had collected for years were human weapons and implements made by men living when these extinct animals were alive, and thus gave clear evidence that Man's antiquity was very much greater than was then thought. By 1860 a certain group of geologists was convinced that a new system of chronology would have to be devised. A little later Charles Darwin placed the problem of Man's antiquity in a new setting. In his *Origin of Species* he clearly indicated that Man had arisen, as had all other forms of life, by a gradual process of evolution from older types, and prepared the way for the discovery in geological strata of intermediate forms which would link Man to a lower and older form of primate.

The geological records support Darwin's theory of Man's origin and are altogether against the

belief that "Man" appeared suddenly by a special act of creation, for the full anthropoid stage had to be attained before a single human form became possible.

The past is no longer bounded by classical or Jewish writers, for the original documents of an older world have displaced the written record as the sole means of understanding the past. And by slow degrees the past history of Man has been reconstituted entirely from the evidences of his material remains from unrecorded ages, which have caused us to think in facts and objects rather than solely in writing when working out the general record of the human species based on precise information which has been gradually and slowly acquired step by step as we proceeded from the known to the unknown.

Man's history has gradually been traced throughout the whole of the *Pleistocene* geological period by the discovery of his fossil remains and of his stone weapons; and the duration of this period has been estimated by geologists at certainly not less than a million years. And, primitive though the early Pleistocene creatures undoubtedly were, their right to be called "human" cannot be withheld. Moreover, the evidence as it stands points to Man's departure from an anthropoid status even earlier. For while, in recently formed strata of the earth, fossil forms of Man are found, those from the older strata are more ape-like than those from the newer. In still older strata we find fossil fragments of great anthropoids; in still more

ancient strata the remains of small anthropoids. Deeper still in the earth's records no trace of anthropoid has yet been discovered. The most reliable evidence now at our disposal shows that somewhere in the *Miocene Period* the anthropoid's body and limbs had become adapted to a plantigrade posture (as in *Dryopithecus*, for instance), which has caused the differentiation of the animal stem eventually culminating in Man with his erect gait and carriage, for our remote forerunners were men in posture long before they were men in mind. This was due to the reconstruction of the spinal column and pelvis and the specialization of his two pairs of limbs—the fore pair for touching and grasping, the hind pair for walking only. In the *Pliocene Period* the anthropoid's brain underwent expansion (as exemplified by *Pithecanthropus*) and more especially so in the early *Pleistocene*, for here we find a period of rapid evolutionary change. And it is only in the later deposits of this Period that we begin to find the existence of Neanthropic Man with a jaw capable of articulate speech. But the complete transitional forms between the highest form of anthropoid and the lowest type of Man still constitute a great gap. "Man" was certainly in appearance at the beginning of the Pleistocene Period. His body and especially his brain are modelled, part for part, on exactly the same pattern as that of the anthropoid ape; and this statement has the approbation of experienced anthropologists who are also skilled anatomists, and who find that the gorilla and the

chimpanzee are anatomically more akin to Man than any of the other living primates.

As the brain reached the full human status of *Homo sapiens* the coarser outward appearances of the ape-man were shed. Thus the loss of hair over the body generally caused clothing (at first of animal skins, and then of every conceivable material) to be adopted as protection against changes of climate.

Man is also supposed to have adopted the use of stones of a suitable size, at first for weapons of defence and offence; later on he converted stones for use as working tools, and so Neanthropic or Early Modern Man must have had a brain sufficiently advanced to conceive the idea of the use of stone tools and hands sufficiently skilled to fashion them.

For the last hundred years early human history has been arbitrarily divided into three main stages. The earliest of these stages is generally known as the "Stone Age," during which metal was unknown. During the second the smelting of copper alloyed with tin was practised, and therefore this was called the "Bronze Age." The third age was called the "Iron Age," because Mankind had learned to prepare and work this metal.

Although no fixed chronological epoch in the world-history is understood by the world's Stone Age, this term denotes the condition of a people unacquainted with the working of metal, and is a phase of Man's development in his appreciation and use of the materials by which he finds himself surrounded.

20,000 generations back from now Man was still in the *Eolithic* (or very Early Stone) Age. The weapons of a later period, known as *Palæolithic* (or Old Stone) Age, show gradual improvements and developments from the early, roughly-chipped eoliths to the later and more effective flint arrow-heads and spear-heads with a sharper edge. These rough stone implements gave way to the *Neolithic* (or New Stone) Age weapons which were less crudely fashioned and more highly polished by grinding. At first there must have been danger for a long time lest the beasts of the field should prevail over Man; but, as he drew wider apart from them by progress in evolution, more destructive instruments were substituted for the first rude weapons of the savage. The bow and arrow was the cleverest invention of prehistoric days.

Weapons in the form of sticks or hurled stones were probably used by the apes long before the ancestors of primitive Man adopted them. But primitive Man in the Pleistocene or Glacial Period had little chance against the large beasts of prey except by outwitting them—for instance, by constructing cunningly-devised traps to ensnare them.

For isolated families the struggle for existence against wild beasts would be too keen, and thus there probably arose a purely instinctive grouping or self-preservative linkage of families which gave Man a firmer foothold in the struggle for existence from predatory competitors; and thus social habits and instincts developed and early experiments were made in society-forming; also life became more

secure for pioneer thinkers under the society ægis which afterwards developed those more complex groups such as the "clan" and the "tribe."

Man's first rude huts were probably improvements on the shelters or nests with boughs roughly interlaced overhead that ourang-utans still make in trees. His first boats were possibly suggested by learning to float upon a log or an inflated skin, and this happy discovery of flotation was improved upon later by the idea of a raft made of rushes tied together, or of the dug-out tree-trunk which could be propelled by a pole or paddle, and finally by the invention of a built-up canoe with its greater stability, speed, and carrying power of Man and his belongings. It could further be made watertight by caulking or smearing with some resinous material which would be impervious to water. The discovery of the art of spreading a sail to catch the wind and by its means of driving the boat forward without fatiguing labour was the next improvement to be turned to good account.

We must postulate a considerable period for the differentiation of a common ancestral stock into modern races. We cannot yet place with certainty the cradle-land of Mankind—always supposing that Man is one species and not an amalgamation of several that originated in as many distinct regions. The racial cradle-land or cradle-lands of Man—for there may have been several—must be thought of as some areas of intenser struggle and hence of intenser activity, which possibly set their mark once for all in respect to his heredity on the

kind of man produced there. Even now (in A.D. 1940) the inhabitants of the earth still belong to several races. These variations may be primarily due to the effects of environment—sunlight, aridity, humidity, cold, heat, isolation, peril, want, intercrossing of races, etc.—far back in history; and these variations may have become permanent owing to isolation and heredity. For behind the various races of mankind is a long past which has been unheeded and ignored, and the human races as we know them to-day are the products of complex evolutionary forces.

In the Pleistocene Period, moreover, the distribution of land and water was changing all the while as well as the climate, and Man pushed backwards and forwards according to the geography of the moment; for geology shows that in many areas there has been an alternation of land and sea, often many times repeated. At one time there was no English Channel, for England and France were continuous and the Thames was a tributary river of the Rhine. The Dogger Bank, now covered by the waters of the North Sea, was then forested land uniting Denmark with the eastern coast of England. Also the Mediterranean Sea was formerly a chain of lakes; but this Mediterranean region is now a collapsed basin in a sunken area between the Alpine and the Atlas systems of mountains. Environment may be regarded on the whole as the passive condition, while race and culture are the active conditions of survival through superior adjustment. Intelligence, which

is the measure of genuine activity, was less marked in very early times; and life, in proportion as it gradually became more intelligent, tempered necessity with a certain freedom of choice. So long as culture remained backward the stress of natural selection was bound to fall mainly on the body, and if any physical advantage was of help in the struggle with the ethnic types (e.g., a dark-coloured skin, or a thick skull, as a protection against the sun), then its lucky possessor would forge ahead. But when culture became sufficiently advanced Man could control his environment more than his environment controlled him. So long as Man was the land animal which Nature intended him to be, he had to rough it with the other land animals and be subject to geographic control; but, given a boat, he became practically amphibious, and to that extent made free with geography and compulsory environment in his struggle for existence; and life and civilization progressed on evolutionary lines by the elimination of the less fit.

The taming and domestication of animals made possible a more settled life for Man in his early history. The ownership of the land on which the flocks and herds fed soon followed, and formed the foundation for the acquisition of landed property. Cattle of all kinds formed the wealth of the early races of Mankind. (The identity of cattle and property in early times is illustrated by the word "pecuniary"; this Latin word relating to money comes from *pecua*, or cattle of all kinds—cattle forming the wealth of early races.)



Cultivation of the land soon followed, and cultivation of the soil is believed to be the oldest of the arts, and in its elementary form consisted only in sowing the seed after the land had been cleared of its natural vegetation. Even Neolithic Man had only rude implements of wood, stone, or stag-horn; but nonetheless the tillage of the land rendered possible the political organization of mankind. Definite centres of civilization appeared eventually in Irak, Chaldæa, Egypt, China, and very possibly elsewhere, many millenniums ago; and intercommunication of races introduced an exchange of knowledge and the spread of barter and commerce.

## MAN IN THE PRESENT

THE earth to-day is inhabited by several races of Mankind behind which is a long past. During this period, of which we still know only very little, Neanthropic Man had slowly developed into *Homo sapiens* and had become divided up into very diverse forms of race with an extraordinary diversity and number of languages. The chief races of mankind nowadays are best distinguished by the colour of their skin and the characteristics of their hair, as exemplified by the wavy-haired fair Caucasian, the smooth-haired yellow Mongolian, and the woolly-haired Negro. The division into these three main races is now generally accepted. But the main racial divisions according to skin-colour and hair characteristics have been greatly complicated by racial mixture, for the human races are very fertile *inter se* and many hybrids have resulted from intermarriage among the several racial varieties of Mankind. The Andamanese are probably the only human group which can be considered a "pure" race, as they have been isolated for a long period and, until comparatively recently, were not in contact with any other race.

The white nations during the last four centuries, although they number only one-third of the inhabitants of the earth, have shown the greatest capacity for initiative and have established their dominion

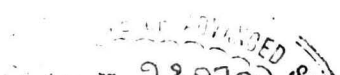
and rule over most of the habitable land of the earth; but this may be only temporary, as already there are signs of reaction against European domination, and of the uprising of national sentiment among the other races on this earth.

In spite of all-powerful opposition which, while it may have delayed, yet entirely failed to arrest the progress of inquiry after the truth, Man is now beginning to understand the universe and his position in it, and his carefully proved observations have been catastrophic to erroneous ideas based upon early Hebrew literature as to the beginnings and destiny of the human race. For the commonly-accepted story of Creation is only a borrowed legend.

It is now an accepted fact that, owing to the unremitting struggle for existence ever since the dawn of life on this planet, Man has very slowly progressed from an ape-like status to that of a more or less intelligent creature, and that he is also now apparently on his way to becoming, eventually, even a more intelligent being. During the last 400 years he has managed to explore the surface of the earth and to find out many of Nature's carefully guarded secrets, although most of them are still awaiting discovery.

Although the Human Race is but an ephemeral form of organic life and a thing of yesterday, yet Man is a very important personage in his own estimation, and believes that he is the end and aim of all creation, and is generally so wrapped up with his own mundane existence that he fails

to realize his own actual insignificance even in the inconspicuous little World on which he lives. But although Man generally is still, more or less, in the intellectual infancy of an unreasoning semi-savage and is still unduly imbued with fetichism and other very primitive ideas, yet some of his species—say, one or two per million of the Earth's total population—can nonetheless be wonderful. This latter exceptional form of almost "Superman," with a higher mental structure than that of the average human being, although his ancestors were all earth-born and he himself has to pass all his life cooped on one insignificant Planet, yet has somehow managed to eat of the Tree of Celestial Knowledge. He is gradually solving many of the esoteric mysteries of the universe, such as that the earth is not the centre of the cosmos, and that Man is not a special creation but only an ephemeral form of organic life which has slowly evolved from a far less highly organized anthropoid animal. For the real significance of evolution lies in Man's future. Also on the earth itself some men have shown great capabilities; they have suppressed isthmuses which divided huge continents, and thus have greatly shortened the times for long ocean voyages; they have pierced high mountain ranges with tunnels which have materially caused much saving of time and diminution of distance for land transport between neighbouring countries. Man can now fly through the air across the entire world quicker than the fastest bird. He can talk and communicate his



ideas and wishes through the atmosphere to the uttermost parts of the earth. He can navigate beneath the surface of the oceans in submarine vessels, and also explore their depths. He can travel at great speeds over the surface of the globe, both by land and sea, and for very long distances. He is unravelling the past histories of nations which have long disappeared from off the face of the earth ; and civilizations of which only the name remained, and sometimes not even the name, have been recalled to light ; and thus a long-forgotten past has been resuscitated and reconstructed as it probably was. He has analysed the crust of the earth and discovered many of the elements that help to form it, and has found them to be the same as those which enter into the composition of the stars. He has pieced together with fair precision from the geological records a complete series of forms describing the evolution not only of Man but also of other animals, notably that of the horse, the elephant, the camel, and the dog. Not satisfied with the eyes provided by Nature, he has constructed artificial ones which have not only increased his light-grasping power more than 100,000 times, but have also extended the sensitiveness of his retina to an incalculable degree, thus enabling him to measure the depths of space and to estimate very closely the sizes and distances of many of the stars, of which 50,000 millions have already been discovered ; while every increase of his giant telescopes reveals myriads upon myriads of these heavenly self-luminous bodies, to

which there seems to be no end and of which the number is utterly incalculable. He weighs and analyses suns as though they were in his laboratory, and he is finding out their life-history. He watches the stars so closely that millions cannot move without his knowledge. The infinitely great and the infinitely small are alike compelled to submit to his scrutiny. He photographs celestial objects so distant that they are invisible even with his largest telescopes, and observes the minutest terrestrial objects, equally invisible to the naked eye, by the aid of very powerful microscopes. He is gradually solving even the mystic "Riddle of the Universe." So that the actual achievements of modern Man already vastly surpass those fabulously attributed to the gods and heroes of antiquity. Thus, while realizing the general insignificance of man in the universe, we can still perceive great possibilities of future achievements by a few of the higher specimens of the human race—far grander than we can well imagine in our present state of knowledge.

Human anatomy has for its object a knowledge of the form and relationship of the various structures of the human body in health, and needs a knowledge of the allied sciences of embryology, phylogeny, histology, and anthropology. But the subject will be treated briefly here only from the morphological point of view by mentioning some of the causes which brought about the existing structures of Man.

In every system of organs in Man there are

rudimentary or surplus organs which are only "worthless heirlooms," such as the scanty hairs on our body, which are the remains of the hairy covering of our remote ancestors. Among several other muscle vestiges of ancestors the present external ear muscles are useless. The nictitating membrane, or third eyelid—still often found in birds, reptiles, amphibians, marsupials, the walrus, etc., and most useful to them—is useless to man and exists only as a crescentic fold of skin at the inner corner of the eye. The vermiform appendix is of no use in Man except to form calcareous products which set up inflammation and ulceration and often cause death. The pineal body in Man is merely a vestigial organ and only the remains of a once functional third eye. The pineal body, the pituitary gland, and the cervical and semilunar ganglia in Man are now degenerate organs. The human embryo still passes through stages represented by lower forms of life, because its various ancestors did actually have these forms. For instance, in the embryos of Man and of the anthropoids an external jointed tail is produced in the fifth week of development, the tail being actually longer than the hind limbs; but in Man by the end of the eighth week the tail has shrivelled and become submerged, leaving a dimple in the skin at the point of the caudal region where the tail has shrunk below the surface. This is only one of the remarkable similarities which link the embryological history of Man with that of the anthropoid apes. And even nowadays a human baby is

occasionally born with a tail—varying in length from half an inch to four inches—of which the growth was not in due season arrested in its development.

May not these vestigial remains be regarded as landmarks left for our instruction, by which alone we have become able to understand the mystery of the past and by which our intellects have been guided to unravel the secret history of Nature—rather than that we should ignorantly ascribe to “special creation” the existence of an imperfect finite being, which in the course of long ages is only slowly getting rid of anomalous and useless organs? One explanation shows the majestic creative power of Nature, the other is only an assumption of wilful human ignorance. If Man was created a “perfect being,” why does his body bear evidence of superfluities of structure not necessary for his existence? How is it that his body in every stage of development is gradually that of a higher type of animal and that the unnecessary parts are merely the “heirlooms” of his animal descent? If Man had an independent creation without initiatory preparation the rudimentary organs which have been briefly alluded to are incomprehensible enigmas.

It is possible that Man has now reached his limit of development and that the Man of the future will not differ materially from the present, except perhaps that his body may gradually exhibit fewer traces of his ancestral origins, till at last all trace is obliterated.



"Civilization" is no longer contrasted with barbarity, rusticity, or simplicity, but with Man's purely animal heritage—for modern men are still animals as regards much of their physical structure, such as their breathing, digestion, and circulation of their blood; they have to eat, sleep, defend themselves against foes and the inclemency of the weather, and to rear a new generation to perpetuate their species. Civilization is the story of human achievement in all its bewildering developments and presupposes much accumulated experience and shows what men during hundreds of thousands of years have been learning about themselves—whether as regards languages, religion, beliefs, morals, arts and sciences, and other manifestations of the human mind and reason. These superior manifestations can be transmitted to a new generation only by imitation or instruction, and must be assimilated anew by each individual. Man's brain, with its complex cerebral cortex and its special mysterious functionings which develop as the child grows up, enables him to initiate and perpetuate the arts and sciences as a special heritage of the human species.

Life and civilization on this planet must progress on evolutionary lines, and the only sensible way of solving all social, racial, and international problems, both satisfactorily and equitably, is that, as all men are not born with the same amount of intellectual brain-power or mental energy (for human brain-power, not mere brute force, has secured to modern man the mastery of the world), some brains are

consequently far more intelligent both in degree and range than others, and are therefore better fitted for posts requiring a higher amount of skilled knowledge. There would thus be an Aristocracy of Intellect or Mind, which would all be for the betterment of mankind generally and for the harmonious working of the world as an international unit. Thus a few individuals whose mental abilities might be of a riper and exceptionally high order, or showing great capacity for undertaking heavy responsibilities, would be specially trained to be directors of useful and necessary institutions, such as astronomical observatories and first-rate museums of every branch of science, which would then be utilized to an unprecedented degree for visual education ; and no pains should be spared to secure accuracy of detail as well as beauty of design in the erection of these buildings. And in addition to our time-honoured university chairs—say, in the “ humane letters,” literature, history, etc.—professorships should also be founded for experts in every other branch of useful knowledge.

## MAN IN THE FUTURE

THE total superficial area of the earth has been carefully estimated to be 196,500,000 square miles, of which 141,000,000 square miles are covered by water ; from the remaining 55,500,000 square miles of land above the ocean level at least one-fifth has to be deducted as being unfavourable for human habitation owing to snow-fields, glaciers, lofty mountains, sandy deserts, marshes, lakes, and great rivers. Thus only about 44,000,000 square miles of land, or roughly only one quarter of the total superficies of the globe, is available for Man's normal accommodation.

Actually at the present time (A.D. 1940) large tracts of territory on our little world are still unexplored or only imperfectly so. These territories awaiting future reclamation and thorough examination are situated in Africa, Central Asia, Australia, and the two American continents, and these uncharted lands will be required in the not very distant future to accommodate our descendants.

The total population of the earth is now calculated to be 2,000,000,000 ; and it has been very carefully estimated that the earth could not support a population of more than treble this number. At the present rate of increase this total of six thousand millions of human individuals will be reached about A.D. 2100, or only 160 years from

now. Every available acre of the earth's surface will then have to be utilized to the utmost for the production of food to sustain this enormous number of people.

Even now the outlook for the human race is none too hopeful, for the reign of millennial peace appears further off than ever, and the destruction of European and Asiatic civilization seems rapidly becoming possible by the eruption of savages within their own circles and the reduction of the nations in the long run to the life of the jungle. Already Europe is a welter of racial problems which still play a decisive part in shaping the political conditions of this continent. Asia is firmly held by the Mongolians and dark Caucasians. Africa is mainly the home of the Negro. The two Americas have been greatly re-peopled from Europe, and these immigrants have practically ousted the original inhabitants. The same may be said of Australia.

In the coming struggle for existence on an overpopulated earth, where living-space is strictly limited and where the food-supply may be a varying one and not always equal to the demands, the Natural Law of "the Survival of the Fittest" will be enforced by Nature herself, and the weaker and more degenerate nations will have to make way for the healthier and stronger ones. Also those which survive in the struggle will have to adopt strong eugenic measures in order to keep themselves fit for carrying on the arduous struggle for bare existence necessitated by the keen com-

petition for survival among the various kingdoms, principalities, dominions, states, republics, commonwealths, or other provisional forms of local government in this world. States and Governments are merely experimental efforts to meet the changes and expansions of temporary human needs, and the question of ascendancy will ever arise as to "Who is to dominate the earth?"

When the calculated limit of the earth's total population has been reached, what may seem to us now to be somewhat harsh measures will be absolutely necessary two centuries hence to keep the limit of numbers within reasonable bounds on an over-crowded earth where living space is strictly limited, and especially where the food supply may be a variable one and not always equal to the demands.

We are at present in the early days of an evolving social ethics. New moral problems have evolved with the growth of civilization, and the desirable improvement of the human breed may possibly sometimes conflict with our present moral sentiments and ethical ideas. False so-called "humanitarian" ethics have introduced many dysgenic factors which may lead to disastrous national consequences, and the activities of blatant pacifists and ignorant moralists should be curtailed before they succeed in undermining the common-sense of the nation and the morale of the manhood of our country. When a nation becomes too weak or too indolent to resist the encroachments of another nation it may be taken for granted that its end is

drawing near, especially when the manhood of the country is openly dissuaded from engaging in its defence.

The orderly life of the State brings with it an increase of population. Increase of population means expansion, and expansion means more space. Then the growing State seeks to enlarge its boundaries. If the land beyond its borders is the property of another State its occupation will probably be resisted, and there will be war. Every State, therefore, has its armed forces as organs for war, which are subject to discipline, which is more or less a Draconic code sanctioned by military law and accepted by patriotism or true love of one's fatherland. Its numbers are limited only by the size and growth of the State and by the degree of the pressure of rivalry. The number of men with the colours during peace is only a fraction of those that will be required in case of war.

War is the great examiner of humanity and has ever been so since the dawn of history ; and it will remain the *ultima ratio* in the way of argument of peoples, for might alone is the supreme court for a strong and powerful State. The struggles of nations are the commonplace of history, and in the strife of former man-to-man combats lay the probable source of their progress. The facts of history can be interpreted mainly in the light of progress by inter-racial struggle, for in the strife of war lies the advance of nations in intelligence, organization, and physique, and thus becomes the stage whereon the drama of civilization

and evolution is played out and its main problems solved. And, even while the possible conversion of the whole earth into a single world-wide State would no doubt be the end of international wars, they would almost certainly reappear as civil wars.

Nature is all for health, but is a wasteful bungler; and she is not strictly ethical as regards animal life, for more organisms are born into the world than can live on it, and their selection value depends on the intensity of the struggle at the moment. So in the inexorable struggle for existence the result is merely the survival of the most suitable for the actual conditions at the time and not necessarily of the best in any sense; thus the process of evolution may be retrogressive as well as progressive—and retrogressions are easy. And Nature's laws are fixed and relentless, and the Law of the Jungle—"Kill or be killed"—is the sternest of them all. Otherwise epidemics of serious illnesses, plague, famines, floods, etc., will devastate the population of the whole world more effectually than any military operations, so dreaded by unenlightened would-be lovers of peace who prefer to think only in terms of bygone centuries and shut their eyes to any form of modern knowledge and progress of thought.

Unless a brake is put on population now, war, disease, or famine will do it for us. But those nations that shout for *lebensraum* are the very ones that are seeking to breed like rabbits, chiefly with a view to world-dominion. If sentimentalists object to the elimination of the unfit by euthanasia, then

these unfortunates must be sterilized by surgical means.

It is of no use to attempt to draw a veil of cloudy phrases over the face of realities, for juggling with words never really helped and never will. In two hundred years from now hospitals will exist only for the treatment of reasonably curable cases, but those for all deformed children, incurables, lunatics, criminals, etc., will have disappeared, there being no longer any need for them, the elimination of the useless and unfit having been painlessly carried out by euthanasia. Also cremation of the dead and scattering of their ashes will dispense with the need for cemeteries, as these burial-grounds will be urgently required for growing food for the living.

Although these suggested methods may perhaps at the present time appear to be somewhat Spartan and even Draconic in character, yet they will have to be put in force in the not very distant future. And this they will be by any self-respecting nation which has the will to survive and is not content just to fade placidly away and remain merely as a name in the world's history. For the human family may yet meet with the fate of other species of the world's animal population which failed in some way to react with their environment, and as a result passed off from the stage of the world's history. If the present human race fails to react with its future environment, it may yet pass away from the state of *Homo sapiens*. This does not necessarily mean that the *Genus Homo* will become extinct, but that it will revert to a type more like



that of the Sub-man variety, whose main characteristics will be strength, cunning, and unscrupulousness, which qualities are far more suitable for the life of the jungle than the more humane feelings which are now supposed to be the hall-mark of humanized mankind. For then only those nations which are strong, cunning, or unscrupulous could survive as being those fittest to carry on the terrible struggle.

When the total population of the earth amounts to 6,000,000,000 this will give an average of 140 inhabitants to every square mile of habitable land ; but this square mile will also have to provide their total food-supply in addition to their housing accommodation. A farm of one square mile in area would be hard pressed to supply the total requirements of 140 people, including housing, clothing, meat, bread, milk, vegetables, fruit, eggs, groceries, barns, cattle-sheds, workshops, roads, etc. But some mitigation of the difficulty might be obtained if several of these farms—say ten—entered into friendly co-operation and together formed themselves into a fair-sized village or parish with a population averaging 1,400 inhabitants and divided the various means of supplying the general requirements such as houses, public buildings, factories, shops, schools, grazing fields, cornfields, vegetable gardens, fowl runs, vineyards, tea-, coffee-, and sugar-plantations, and so on. On a scale of ten times the size of this village, or say of a small township of 14,000 inhabitants, which might be adopted as the unit, the division of labour

or specialization of tasks among a strict maximum of the unit's 14,000 inhabitants would work more economically and profitably, and the work could be suitably apportioned to everybody in that unit; for two hundred years hence *everybody* would have to justify their privilege of existence, as there would then be no idle, leisured, or financial classes to upset the economic life of the unit, which would thus be transmuted into an orderly system of well-regulated co-operation where self-interest would be barred and banned. All land, or landed property, must actually belong to the State of which the unit forms a part; this is the first essential for the better organization of the community's economic life, and the production, distribution, and consumption of its wealth.

The unit, which might be supposed to be represented by the small town, again can serve as the common multiple for still larger determinate quantities of inhabitants, such as cities, counties, states, countries, dominions, continents. Thus, *approximately* :—

|                                |                           |
|--------------------------------|---------------------------|
| 1 Unit (of 14,000 inhabitants) | = 1 small Township        |
| 10 Townships.....              | = 1 City                  |
| 10 Cities.....                 | = 1 County                |
| 10 Counties.....               | = 1 State                 |
| 10 States.....                 | = 1 Country               |
| 10 Countries.....              | = 1 Dominion or Continent |
| 6 Dominions or Continents      | = 1 Commonwealth          |

The whole world would thus, roughly, be divided into about 4,300,000 parishes (each averaging

1,400 inhabitants), or 430,000 small townships, or 43,000 cities, or 4,300 counties, or 430 states, or forty-three countries, or six dominions, all forming one international commonwealth. States and Governments are merely provisional arrangements, and must be modified to meet the change and expansions of human needs as they arise.

The six dominions or continents might be known as Europe, Asia, Africa, Australia, and the two Americas. For general administrative purposes they would all be under the nominal supreme control of the International Commonwealth of the World, of which the chairman would be elected annually by the dominions of the whole earth, and solely on his own merits and special fitness for the position, and not by any sort of hereditary right or privilege.

This is the only possibility for a pacific advance towards a world-wide prosperity and happiness on a healthful, if overcrowded, earth inhabited by a few but sane, healthy, and rational races of mankind.

Immense engineering enterprises could then also be undertaken by the combined efforts of the different countries of the world working in close co-operation as an international commonwealth for discussing problems of common interest and of general world-wide utility.

Everything is passing on. A thousand years hence, in that far-off Utopian epoch when there will be neither England nor Germany, no France or Italy, probably not even Europe or America,

and when none of the foreign languages of to-day will be spoken, and there will be only one world-wide form of speech,\* our humble planet may then possibly be populated by ideal and intelligent human beings who will be as superior to our present many-coloured race as we are above the man-apes of the early Pleistocene Period, and who will be able to treat the world as one, and all its inhabitants as belonging to a single unit, just as we now think of Mars and its inhabitants.

In matters of religion there will be the widest latitude and the most perfect liberty of faith and worship, and then everyone may spontaneously follow the path which appears to him to be the way of spiritual truth. But there will be one special World-wide Official State Festival, when all mankind will join in the celebration of the greatest natural phenomenon which marks the rhythm of the earth. The sun is truly the Father of all that lives and breathes on this earth, and the "United States of the Earth" will choose for their combined Chief National Festival the day when this terraqueous planet passes over the point nearest to the sun at the moment of its **perihelion** on or about January 2. For the earth does not describe a true circle round the sun, but an elliptic curve which brings it nearer or further away; but it is nearest to the sun at the moment of "perihelion." In a circle, or an oval, the line which bounds this figure ends where it

\* The pure standard English tongue of Britannia Maxima will then be the only ordinary means of speech-communication between living beings.

began ; a point in this line has therefore to be chosen as the initial commencement of this re-entering curve. The year is the time that the earth takes to go round the sun, therefore "New Year's Day" might most appropriately fall on the day that the earth is nearest to the sun, especially as this is the time of year when the earth, as a whole, receives most heat from the sun ; for it receives ten per cent more heat at its perihelion in January than it does at its aphelion in July. In France and Scotland "New Year's Day" is the greatest national festival of the year, and this occurs on January 1. So the alteration of this festival to the date of the perihelion would involve a change of one day only throughout the whole year.

## MAN AS AN INTELLECTIVE ANIMAL

MODERN Man, being endowed with the faculty of reason, is now able to realize to a great extent what the universe is like and so to obtain a better idea of the infinite and eternal drama in the heavens to which our little earth also belongs and in which it is playing its obscure and ephemeral small part. Before he can understand himself Man must first understand the universe from which his sense-perceptions are drawn, because he himself forms part of it; and modern science confines itself to ascertained facts and has many more facts at his disposal.

Prehistoric Man studied the heavens as an indispensable condition of daily life, and a practical acquaintance with the elements of astronomy was diffused even among uncivilized peoples, for the stars roughly served them as almanacs for their hunting, sowing, and reaping. But the ancients, being unenlightened and therefore ignorant of all except their immediate surroundings, held very primitive ideas about the universe; for they regarded the earth as the central feature of the whole universe, and imagined that the sun was made to rule an earthly day, the moon to adorn an earthly night, the planets to serve as oracles of earthly fortunes, and the stars to relieve the monotony of an earthly sky.

For the earth, to its early inhabitants, appeared to be a plane extending indefinitely on all sides and sustaining the celestial vault in which the stars were fixed; and the heavens are of such vast dimensions that they gave the impression of a spherical concave surface, concentric with the eyes of the ancient observers, who, being unable to judge of the distance of very remote bodies, therefore supposed all the stars to be equally distant from the earth and embedded in a crystalline sphere which revolved once a day round the earth.

It was not until the middle of the sixteenth century of our era that the orthodox earth-centred theories of the universe were overthrown; and very soon afterwards it was discovered by the circumnavigation of the earth that our planet was a globe 8,000 miles in diameter with the stars on every side of it. The invention of the telescope in the following century enabled astronomical science to advance by leaps and bounds, and modern Man is now beginning to understand the universe and his position in it.

It has now been fully ascertained that the earth, scientifically known as "Terra," is a small planet in a group of worlds revolving round the sun, to which the collective name of solar system, or sun's family, has been given. In order of distance from their central luminary, from which they all receive their light and heat, these planets are Mercury, Venus, Terra, Mars, The Asteroids, Jupiter, Saturn, Uranus, Neptune, and Pluto, with the reasonable possibility of at least three more of them outside

the frontier of our present system which are still awaiting discovery.

The earth on which Man lives is thus merely a small celestial body suspended in space without any visible support, but held in its orbit by the double action of its rapid gyroscopic rotation on its axis, which keeps it from falling back into the sun, and its orbital revolution round the sun, due to gravitation, which prevents it from wandering off at a tangent into space.

So far as we definitely know at present, our earth is the only world in the whole cosmos which is inhabited by human beings, as, although other worlds which are known to exist may very probably be inhabited by reasoning beings, yet so far we have no proof that such is actually the case, even on Mars or Venus.

Even if we could really suppose that our earth is the only world in the universe which is inhabited by living organisms akin to Man as we know him, let us pause to consider the actual position of our vaunted earth in this cosmos. Astronomers now picture the earth as one of the smaller planetary bodies, suspended in space with no visible support, and attendant upon the sun. This small planet Terra, silent, dark, and invisible except to a few of its nearest companions (Moon, Mercury, Venus, Mars), would appear to be of no measurable importance in the economy of Nature. So far as other worlds are concerned its existence is of no benefit (except to the Moon—supposed to be a dead world—to which it acts as an enormous and glorious



satellite); its disappearance would cause no anxiety; its absence would give no trouble; its destruction would be no loss.

Truth and science advance only by slow degrees. For the average human mind, crippled by ignorance, debased by prejudice, and bewildered by superstition, considers all attempts by unbiased genius to investigate the causes of Nature's operations solely as the effect of a presumptuous and daring impiety, and therefore it not only tries to impede investigation into the secret causes by which the great machine of the Universe is regulated, but also to frustrate any research as to whether these processes are due to the inter-relation of its various units, or to self-determination, or to a definite purposiveness in Nature.

The earth has a longeval history extending back for far-reaching ages, although it is not recorded in books written by eye-witnesses; and it did all this without the presence of Man.

As creatures of the earth, and therefore still earthy, we are very apt to think of Man as being already very old. But, to obtain a truer picture, let us take as a time-scale that of the age of the earth as being represented by the Biblical number of years allotted as the age for Man. On this time-scale, while the age of the earth is already seventy years, Man has existed on it only for the last four months; the Christian era was started less than five hours ago; scientific astronomy has been known only for the last fifty minutes; while the allotted span of man's life is only ten minutes;

also barely three minutes have elapsed since the Great War ended.

As there seem to be sound reasons for thinking that the earth, astronomically, is still good for many millions of years to come (that is to say that it will remain habitable because the heat of the sun will be sufficient to maintain life upon the earth for all that period of time), the present age may be considered only as still in the dawn of the world's history of the origin and progress of the nations of the earth since the advent of true Man. As inhabitants of this planet we are living almost at the beginning of time as judged by earthly standards of the history of the world; but until we shall have learnt the truth of the fact that human progress is subject to evolution, then only will there be possibilities of combined future international achievement grander than anything we now can well imagine.

For all we know to the contrary, there may also be "life" on myriads of far-off and unknown worlds, on many, if not most, of which highly-reasoning beings have also developed, but not necessarily on our own earthly lines; for, although the course of organic evolution may be very similar to that on our own earth, the physical and chemical conditions may be widely different elsewhere.

Even to-day fully ninety-nine per cent of the inhabitants of the earth generally have but little knowledge of the world on which they live and

move and have their being, and are not aware that our earth is actually only a small globe suspended in space without any visible support and attendant upon the sun as a small planetary body in our solar system. But even our glorious central luminary itself is only one of many thousands of millions of suns which go to form that part of the universe which is at present visible from our earth. For far beyond the confines of the entire solar system to which the little earth belongs there lies an unknown and limitless universe of suns still awaiting further investigation by means of continuously improving optical apparatus, thereby gaining for us the gradual extension of our conquest of the skies; for astronomy is still at the opening of its existence and may yet have something final to say on human destiny. For it has been fully ascertained that the whole solar system is being translated through space towards a point in the constellation of Hercules near the vicinity of Vega (a bright star in the adjoining constellation of Lyra); and it is now suspected that the sun itself is actually circling round a central point which lies in the direction of Carina Argus. And, of course, all the planets (including the earth) share in this solar drift.

Lastly, it is even possible a million years hence, when our solar system may be traversing the distant star-fields where at present the stars of the constellation of Hercules are shining, and when only a few of the brighter celestial orbs that we now admire will remain visible in the starry

heavens, that our almost unrecognizable earth may by then be administered solely by superhuman men who have evolved into beings only a little lower than the angels. But we have not yet the elements of a complete solution for so distant a future, and we have still to fight our way through dense jungles of ignorance, error, and superstition to discover truth. However, let us hope that the earth will become eventually a world of possibility and hope worthy for the Superman to live in and to continue his pursuit of the true, the good, and the beautiful, and thus work out his destiny in endeavouring to discover the Infinite, but as yet Incomprehensible, Causes which work throughout all the Mysteries of Nature.

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