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ETHICS OF EVOLUTION

THE COLLAPSE OF ETHICS has been more complete in the last half-century than in the previous thousand years. It has been blamed upon the great wars, excessive wealth, poverty, urbanization and science, and especially upon the theory of evolution. Probably all of these have played a part in the change, and also each of them has affected the other, but all these developments are characteristic of developing societies, normal rather than aberrant, and not the less serious for that.

It is rather surprising that the growing acceptance of evolution has been disturbing religion and philosophy, yet the ethics of evolution have not been more thoroughly analyzed. Nietsche saw the need for the Superman in a world which had destroyed God, but his very unclear suggestions of desirable development are unconvincing. Bertrand Russell in his *Philosophy* identified evolution with survival and survival with prolificacy, which does not suggest that he had a keen interest in the matter, yet the society which he was discussing was subject to the same laws, if one may call them that, of Evolution.

Ethics and Religion are intertwined yet not the same. Religion says what you must, or must not, do; Ethics says what you ought to do (also a definition of Russell's). The first commandments are religious; the other commandments are ethical, in that they define desirable social relationships. The earlier Little Decalogue was entirely religious, defining the beliefs and ceremonies that held a small group together, and forbidding customs that might link them to other groups.

In the past century, anthropologists have made very interesting studies of the behaviour of primitive societies. We cannot always be certain of the mentality behind the behaviour, but in general we find among hunting peoples a readiness to share what they have, among agricultural peoples a greater

insistence upon private property. All, however, recognize a very important relationship with the world as they know it, with animals and plants, weather, sun and water, and the spirits which represent the immaterial possibilities of life. All this is stored in mythology which in the course of years becomes very real to the believers. A serious change in behaviour may demand a reformation.

It has been very difficult to adjust our mythology to the kaleidoscopic scientific picture of the universe. The sun bestows its rays indifferently upon the Earth where it makes life possible, and upon Mercury where it makes life impossible. Geology does not confirm a world made especially for man. The tensions of the spinning Earth have split and resplit the continents and have shifted them into better balance, drifting some, like South America, into more favourable positions, and others, like Antarctica, into spots unfit for life. Astronomy and geology give a tale more interesting and orderly than one told by an idiot, but no more purposeful.

In the stew of hot water and volcanic gases that made up the earliest beginning of the ocean, chance compounded, perhaps only once, a molecule of nucleic acid or its ancestor, and life began. From this point we have two factors to consider, the physical behaviour of the geological field and the evolution of life. With the coming of chlorophyll in the plants of the sea, the stores of carbon dioxide in the water became replaced by oxygen which eventually escaped into the atmosphere and gradually replaced its noxious gases, making more possible an invasion of the land. Rapidly-growing plants stripped the atmosphere of much of its carbon dioxide and allowed to escape into space the heat which the former atmosphere had blanketed. Plants might have destroyed their atmospheric food and have buried all the carbon in coal measures, but herbivorous animals fed upon the plants and restored carbon dioxide to the air. Too great success of the herbivores would have reduced the plants and caused starvation, but carnivorous animals kept the herbivores under control. Throughout the ages, life has kept a shifting balance, destroying the overpowerful for the general benefit. Only one pattern seems to be common to all living things, a wish to survive, and this involves killing each other. It is not a kindly pattern, but it has been an effective one.

Evolution means different things to different people. Herbert Spencer's catchword, "the survival of the fittest", is still in use, but survival is only one aspect of the process. Darwin was most interested in change as a result of "natural selection". Many people, however, concentrate their interest upon the increase of complexity, especially that leading to man. All these aspects

need to be grasped, as they may contradict each other. The elephant, for example, is a triumph of complexity, immense, intelligent, and, until a few thousand years ago, immune to all enemies except starvation and disease. The amoeba is an oozing cell of protoplasm, possibly little changed since the beginning of animal life. From the point of view of complexity, the elephant is admirable, but there can be little doubt that the amoeba will survive him. Nevertheless, most of us would rather be an elephant than an amoeba.

Theories of evolution are as old as the weird speculations of Empedocles, but until Lamarck, a generation before Darwin, no one had suggested a rational process that would have brought about evolution. To Lamarck, the driving force was action. The giraffe, in stretching his neck to reach high branches, stretched also the necks of his descendants. This principle could not be applied to plants and had little influence. Darwin's principle depended upon overprolificacy and the variability of heredity which turns out no two individuals wholly alike. One feeble chapter in his great work touched on behaviour and admitted that hereditary reflexes might have value for survival. Today we have at our disposal an amazing volume of fossil material on which to base explanations rather better than guesswork as to the development of living things, and out of these emerge a few frequent patterns.

The amoeba is an example of tiny animals and plants which have survived for incredible ages without evolving into great size or complexity. With them, Russell's definition of evolution applies. The cow elephant may produce a calf every two years; many of the Protista can double their numbers in six hours. In spite of innumerable enemies against which they have no defence, a sufficiency of them survive and flourish on infinitesimal items of food. They are too small to master complex behaviour or to carry complex organs. The rapidity of their procreation is their greatest weapon, and they can find simple answers to new dangers with great rapidity, depending, Darwin-fashion, on the variability of every new generation. "Hospital *Streptococcus*" became immune to a diet of antibiotics in a very short time. Several animals and plants have turned back from complexity to the safety of smallness. Rotifers had once reached the complexity of worms, and then returned to one-celled simplicity.

Many species, however, have preferred a more ample life in areas rich enough to supply it. There the competition is immense. The taller plants shade out the lower; the stronger herbivores get most of the food; the most powerful carnivores feed upon the herbivores. The fossil record is full of gigantic plants and animals, and none of them have left descendants. Giants

ave long lives, but they need much food and so must defend an ample terri-
ry. Even their offspring are rivals, so they reduce procreation to a minimum
nd sacrifice the Darwinian element in evolution which depends upon genetic
ange. Giant trees have few seeds; giant animals breed rarely. Animals
ave the Lamarckian resource of adapting their behaviour to conditions—to a
oint. The demands of giants for food are tremendous, and any lapse in
pply may be fatal, and they cannot change rapidly to meet a new disease.
reat size is the simplest path to success, but only for a time. In the long run,
ch success is disastrous.

There are other methods of limited success for species which wish a
are in prosperity. The undergrowth of a deciduous forest lives its hurried
e in the few weeks when the sun is warm and the leaves of the dominant
ees have not yet opened. The saprophytes live on the dead leaves and rotting
ood—garbage collectors of the forest. Most efficient are the parasites which
ed on the trees themselves, and these have no use for the varied equipment
rdening adaptable species, so they often become reduced to a single root
d a flower, to eating and reproduction. The same pattern is found in animal
rasites such as the *Bothriocephalus* tapeworm which passes part of its life
fish and the rest in Eskimos in whom the worm may grow to fifty feet long
segments dedicated to eating and to laying innumerable eggs. A simple
ange in the host, such as cooking the fish, and the parasite might disappear.
ecialization is always a dead-end. The family trees of the survivors are
aced through the less rich and favourable areas where adaptability and thrift
e needed.

A halfway house to gigantism has been adopted by the most successful
ecies of animals. Instead of developing into giant individuals, those of
nited size combine forces. A flock of birds has many eyes to see danger and
find food; a pack of wolves may pull down a horse too strong for the in-
vidual wolf. The society may be as powerful as a giant yet retain multiple
production which encourages genetic variability, while individuality enriches
haviour. Starvation may threaten the pack as it does the giant, but the pack
s the resort of returning to individual scavenging in which the most efficient
ll survive.

Man is in many ways a contradiction of Darwinism. He has most of
e retarding features of gigantism: large size, big appetite, slow maturation,
w prolificacy, minimal non-survival. The explanation is in part Lamarck-
n—that his intelligence has given him versatile behaviour which makes
ange possible without need to wait for genetic change. We used to be told

that animals act by instinct, man by reason, but in fact there is a gradual incline from the behaviour of plants to that of man. Most plants are wholly Darwinian and act in line with their heredity. Animals not brought up by their parents need innate patterns of behaviour, but they have brains that learn by experience. As intelligence increases, these patterns become less rigid to allow for unpredictable change, and in man they are, after childhood, reduced to "drives" which urge toward some form of action while providing only a shadowy pattern for its achievement. Obedience to these drives provides the pleasures of life, but since many of them, such as creation and destruction, are contradictory, they are very poor guides to a complex life, and experience and reason are needed to fill out the pattern.

Man must have been social when he left the trees, since the individual lacked both natural weapons and sufficient speed in running to save himself from predators. Archaeology has made immense strides in the last few years, yet our knowledge of the societies of even ten thousand years ago remains chiefly guess work. Hunting man of yesterday lived a life recognizably similar to that of social carnivorous animals. Families, or small groups of families, might hunt alone during certain seasons, but at special times these groups gathered together in bands, and these bands had collective territories and a collective religion that defined the in-group as against the out-groups, defined the status of every individual, family relationship to each other, their history (usually mythical) and sacred explanations of their land. There were also reinforcing rituals with music, dancing and feasting. Such patterns remain attractive to mankind, and in overgrown societies in which the sense of being a collective family responsible for each other has been lost, people tend to gather into minor groups of primitive type in which they can feel the comfort of belonging. This can be mild and harmless, but it is a symptom of the overgrowth of the society, and there is always the danger that the bonding of the inner-group may intensify into hatred of the outer-groups which are technically their fellow citizens. It is difficult for a small society to tolerate different religions; it is doubtful whether even large societies can bear them.

The development of civilization follows superficially the evolutionary pattern of gigantism. The units become ever larger until they reach the wavering limit of their resources. Their position becomes similar to that of an elephant herd on the savanna where a flight of locusts might exterminate them. But the parallel is not complete. We do not know for certain what ended the careers of the giant club-mosses of the Carboniferous or of the dinosaurs of the Cretaceous, but they seem to have retained their vigour to the end.

Our civilization grew out of in-groups which united individuals into unselfish families, and that unselfishness has been the main bond of society. But at no time were all the members unselfish, and so government became necessary, at first the Church, then the State, then wealth. Each in turn began by being unselfish, but later it became debauched by power and used its office selfishly. A man as wise as Dante could consider the State as more desirable than the Church. In Wat Tyler's rebellion in England, the aggrieved peasants executed bishops but made no attack upon the nobility and made their own arrangements to defend the country against foreign assault. They were betrayed by the military nobility whose dominance was unselfish only when facing the out-group. The city guilds began with an unselfish code of fair wages, fair prices and good standards of quality, but, as their wealth and power rose, workers, competitors and customers were exploited alike. The trades unions began as an unselfish movement to aid the exploited workers and have grown to power which enables them to exploit the whole society for their own advantage. There remains no unselfish group to be relied on to maintain the good of the society except perhaps in time of war, and where unselfishness is lacking only force can rule.

We cannot trace these steps through the evolution of the giant plants and animals, but the result seems to be the same, the sacrifice of the future to the present, the reduction of the birthrate and cessation of evolution.

So some historical-minded dinosaur might have looked upon his crumbling world and have lamented the end of life, though on the barren hills the unpromising mammals were appearing. What is in danger is the civilization rather than mankind. No doubt, a crumbling of civilization will reduce the overpopulation in the best Malthusian fashion, but outliers will survive in areas where thrift is necessary, and in a confused world some new prophet will bind together in kindness a nucleus of followers, and a new civilization will begin again, Toynbee's "Vain Repetitions of the Gentiles".

Has civilization been in vain? From the point of view of religion perhaps, for science has grown somewhat at the expense of religion. But this new knowledge is itself necessary to religion, since it gives a wider recognition of man's relationship to the universe, one far more complex than the simple concepts from which earlier religions started. However, science, because by its nature it is provisional and incomplete, cannot give the assurance of success needed in time of chaos, so it is probable that much of the knowledge gained will be discarded in favour of belief and be lost for centuries and perhaps forever.