



Your Living Environment

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THE POWER OF ENVIRONMENT

"Environmental factors exert a directive development on the effect of all human characteristics, in health as well as disease. The body and mind are shaped early in life by the environment" (Dr. Rene Dubos, *Science Journal*, Oct. 1969).

Man is not ignorant of this concept, but he lives as if he is unaware of it! Environmental influences *do* have a major effect in shaping every one of us. A clearer picture of the extent and power of environment can be given by first examining its effects on other living forms.

ORGANISMS "ATTUNED" TO SURROUNDINGS

"Clearly one of man's fundamental aims is to seek means of reconciling the individual to the environment and there is constant interplay between the two. The basis of the attachment, it would seem, lies in the minerals of the rocks. These, released by weathering and the acid secretions by organic life, find their way into the soil and thence into the roots, stems and leaves of plants. The metabolism of an animal (or human) feeding on the plants becomes "attuned" to a particular mineral complex, which then becomes essential to the animal's health. This fact is known to most farmers. Calves for instance, have an inherited attunement to the herbage of their own farm through their mother's blood.

"This also instills immunity to local diseases and if moved to another farm (with a distinctly different environment), special care has to be taken to protect them and build up their strength as they are prone to fall victims to disease-causing factors for which they are physiologically unprepared.

"Stability, or *rhythmical repetition of environmental conditions is essential if plant or animal (or human) species are to thrive. A herd which remains on the same farm from generation to generation can be seen to*

acquire recognizable characteristics derived from its environment" (The Inviolable Hills, R. A. D. J. Hart, p.117).

ENVIRONMENTAL CHANGES IN LIVESTOCK

Specific evidence to validate this is found in an 1865 *Journal of the Royal Agricultural Society*, on the breeding and management of sheep:

"The training, the character and history of any race of animals, the influence that situation, climate, and soil as well as management exert on the appearance, constitution, and disposition must not be overlooked ... *So great* is the effect of climate and soil, that the fine flavour of the Southdown (a squat, meaty, short-wooled breed of sheep) may be changed in time to a coarse, tallowy meat of the Leicester, or other long-wooled sheep. Nor will the flesh alone be interfered with, but the wool and every other feature will be assimilated to those of the natives of the different localities.

"... A remarkable case in point occurred in France some years ago, when I sent some Leicester sheep to a French farmer ... The wool to these sheep was enormously heavy, the ewes cut 10 lbs. each, the rams 14 lbs. each. These sheep being managed after the fashion of the Normans, the wool grew less every year, and that of their progeny still lighter. In six years they clipped only 3 lbs. of very bad wool; the fourth generation became long-legged, their bodies differing from the original stock, but *resembling the native bred Norman sheep, with which they had not relationship" (Journal of the Royal Agric. Society, T. Ellman, 1865, p. 406-407). (Emphasis ours.)*

Without doubt, *nutrition* is one of the most powerful environmental factors — as Sir John Hammond proved in a series of bovine experiments at Cambridge between 1945 and 1955. Batches of calves from *beef, dual-purpose*, and

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dairy breeds were reared on different planes of nutrition. Before being slaughtered at two to three years of age, the cattle were compared for growth rate, conformation, meatiness etc. . . .

"The conclusion which is of most permanent value is that a *high level* of nutrition and consequent rate of gain in calf-hood leads to the *full* development of the hindquarters and loin so desirable in the animal *destined for beef production*.

"Conversely, a *low level* of nutrition results in an animal with *poorly* developed hindquarters and little second thigh, in fact a '*dairy*' type of beast" (*In Search of Beef*, Dr. Allan Fraser, p. 118).

This work of Hammond's indicates that the traditional conformation difference between *dairy* cattle and *beef* cattle is more the result of FEEDING differences (*environmental*) and less the result of BREEDING differences (*genetical*) than most cattlemen have imagined!

ENVIRONMENT AND PLANTS

Luther Burbank, (one of the leading plant breeders of all time) claimed that this is equally true in plants:

"Here, then, was one of my lessons from Nature — that different environments produce plants of the same family that are so widely *different* that even the *botanists* want to *put them into separate classifications* and yet they are *the same plants identically*. Their only differences were the pure result of environment and expressed themselves physically, in varying shades, shapes, sizes and so on without being in the least different in their actual make-up or heredity" (*Harvest of the Years*, by L. Burbank, p. 92).

Some time ago, members of our *Agricultural Research Programme* had the privilege of visiting one of the leading rose-breeders in England. He verified that a rose of the same strain and variety grown in *Aberdeen*, Scotland would be noticeably different in appearance if grown in *Surrey* or *Kent*. Again the difference would be due to soil and climatic differences, NOT *genetics*!

ENVIRONMENT AND FRUIT

"Environmental factors, however, such as climate, soil type, or disease attacks may modify the appearance of the plant or the flowers or fruit produced so that differences can appear even though no genetic change has occurred. Bartlett pears grown in California produce, in many years, round, apple-shaped fruits, but the same variety grown in Washington and Oregon produces fruits that are relatively long and narrow, a difference due to climatic factors" (*Plant Propagation Principles and Practices*, by Hartman and Jester, p. 159).

Practically every Englishman is familiar with the peculiar flavour of Cox's Orange Pippin, England's best-known apple variety. But is a Cox always a Cox? An Englishman who recently began a fruit farm in *Spain* is not so sure:

"In this climate, Cox is disappointing . . . It turns out to be a completely different apple. For one thing the distinctive Cox flavour is entirely absent. For another, here (in Spain) it ripens much earlier and has to be gathered at the end of August, otherwise it goes soft and rots on the tree.

"Furthermore, it doesn't keep at all well . . ." (*The Grower*, July 1, 1972, p. 27).

Such is the power of different environments to produce *different* 'plant-types' from the *same* genetic starting point!

ENVIRONMENT AND SEEDS

That the environment, with particular reference to soil fertility, can alter the quality of seeds is also proven by work in India:

"A very important observation made in the course of investigation at Coimbatore is the effect of *cattle manure* on the quality of the seed. Viswa Nath and Suryanarayana have shown that manuring the *parent* crop influences the resulting *seed* in regard to its capacity for subsequent crop production.

"McCarrison carried out animal nutrition experiments with the identical grains employed by *Viswa Nath* and *Suryanarayana* in their plot experiments and found that, as in the case of seed vitality, the grain from the cattle manure plot possessed *higher* nutritive value than the grain from either the *unmanured* plot or the *mineral-manured* plot. He attributed the better nutritive value to the higher '*vitamin content of the grain*'.

"The effect of organic matter on the nutritive value of *seeds* has received striking confirmation from the work of *Rowlands* and *Wilkinson* who compared the effect on rats, of grain seeds grown without manure and those grown on soil to which an extract of pig manure had been added. Although *chemical analysis revealed little if any* difference in composition between the two crops, the difference in *nutritive value* was *markedly* in favour of the seeds grown with traces of manure extract" (*Biochemistry of Nitrogen Conservation*, Gilbert Fowler, 1934, pp. 226, 227).

In his book *Soil Fertility and Animal Health*, Dr. Wm. A. Albrecht, Professor Emeritus of Soils at the University of Missouri verified that seed wheat was of *lower* quality when grown continuously with nothing returned than when grown continuously with six tons of *barnyard manure* returned annually.

"Tests of the seedling vigour of grains from

these plots by Dr. R. L. Fox reported that of the Wheat seeds grown with no soil treatment only 42% showed emergence of seedlings, but where organic matter as barnyard manure had been going back annually, 75% of the seeds had their seedlings emerge to represent that high degree of survival of the species in the next crop" (*Soil Fertility and Animal Health*, Dr. Wm. A. Albrecht, p. 129).

Notice how Dr. Albrecht summed up his lifetime's investigations into this subject:

"There is no escape by ascribing the trouble to the plant's or animal's pedigree, or to their line of breeding. The spermatozoa, the ova, the chromosomes, and the genes are all highly specific proteins. The genes, therefore, may suffer deficiencies too. Such are losses of transmissible characters via losses of protein characters. Yet the gene, too, struggles to keep the stream of its own life flowing which may mean accumulated losses, all originating via nutrition as feed and therefore *via the soil fertility*. The pedigree of the plant does not guarantee the quality of the crop as feed for our animals (or ourselves). *Only a fertile soil does that*" (*Ibid*, p. 52).

Herein lies the clue to understanding why new varieties break down!

ENVIRONMENT AND HUMANS

With this background material on the power of environment to mould and shape plants, animals and seeds, let us now examine the extent to which each and every one of us *has been, is now, and shall be* shaped by our surroundings!

"Differences in environment make a difference in the kind of people we become. Psychologists believe that environment affects the intelligence more than it does the physical characteristics; that it affects the educational achievement still more, and that it affects the personality most of all" (*Psychology for Living*, Herbert Sorenson. New York, 1961, p. 16-17).

Notice also what Dr. Rene Dubos states:

"Jets and world-wide television have not altered the fact that *rocky hills, alluvial plains, family farmsteads and housing developments*, foster *different* kinds of people.

"Let me emphasise again that the radical changes in growth, health, and behaviour that result from life in the urbanized, technologically controlled environment are *not* caused by genetic disturbances. In practically all cases, the *changes* represent responses of the human organism to *environmental stimuli*..."

"Crowding, regimented life, environmental pollution, and disturbances of the fundamental biological rhythms are aspects of life which are common to all highly technicized and urbanized societies, rich or poor. These

influences elicit from the human organism responses from which are emerging the physical, mental and social disorders commonly called *diseases of civilization*. These responses impress a characteristic stamp on modern life. They account for the fact that Emerson noted — we resemble our contemporaries even more than our progenitors.

"All thoughtful persons worry about the future of children who will have to spend their lives under the absurd social and environmental conditions we are thoughtlessly creating; even more disturbing is the fact that the physical and mental characteristics of mankind are being shaped now by dirty skies and cluttered streets, anonymous high rises and amorphous urban sprawl, social attitudes which are more concerned with things than men.

"The environment men create ... becomes a mirror that reflects their civilization; more important it constitutes a book in which is written the formula of life that they communicate to others and transmit to succeeding generations. The characteristics of the *environment* are therefore of importance not only because they affect the comfort and quality of present-day life, but even *more* because *they condition the development of young people* and thereby *society*.

"While the total environment certainly affects the way men feel and behave, more importantly it conditions the *kind* of persons their *descendants* will *become*, because all environmental factors have their *most* profound and *lasting effects* when they impinge on the *young organism* during the early stages of its development.

"Most educational and social systems also try to force the young into traditional patterns through environmental manipulations, and despite appearances they largely succeed. Americans, Englishmen, Frenchmen, Germans, Italians or Spaniards acquire their national characteristics because they are shaped during early life by their buildings, educational systems and ways of life. But such shaping need not be only for the preservation of the past. It can be oriented toward the future.

"The Israeli Kibbutz has demonstrated that a systematic programme of child-rearing can, in a single generation, give to children a healthy and vigorous personality entirely different from that of their parents" (*So Human An Animal*, Dr. Rene Dubos, pp. ix, xi, 56, 85, 171, 172).

We have quoted extensively from Dubos, not because he is the only authority who makes this point, but rather because he has chosen to say it in terms that have so much meaning for Ambassador College and its worldwide Extension Programme.

Dubos goes on to again stress the importance of optimum child-rearing:

"Experimental studies in animals have revealed that severe nutritional deprivation or imbalances during the prenatal or early postnatal period, will interfere with the normal development of the brain and of learning ability.

"In man also, malnutrition occurring at a critical time appears to handicap mental development almost irreversibly.

"It is probable that biological and mental characteristics can be strongly affected while the processes of organization are actively going on (while the child is still young). As the organism achieves its organization it becomes increasingly resistant to change. Hence the crucial importance of the *early* environment.

"In the past, *rural* life presented favourable conditions for the mental development of children because it exposed them to an immense *variety* of stimuli — those from nature, those from the very diverse activities on the farm, and especially those from the chores in which they were expected to participate. During recent years, the non-urban environment has become poorer in stimuli even on the farm and particularly in many suburbs. From the point of view of mental and emotional development, some of the children brought up in *wealthy* suburbs may be among those *most* severely deprived of stimulating sensory input. Paradoxically their environment may be more deficient in creative stimuli than that of certain country and city children. . . .

"All too often, modern housing developments give the impression of being merely *disposable cubicles* for *dispensable people*. Children growing up in them are likely to be so handicapped as to become mentally handicapped and emotionally crippled. This however is not a defect inherent in urban life; it is only the consequence of a kind of city planning unconcerned with the mental needs of human beings.

"By acting on the child during his formative stages, the *environment* thus shapes him *biologically* and *mentally*, thereby influencing what he will become and how he will function as an adult. For this reason environmental planning plays a key role in enabling human beings to realize their potentialities" (*Human*

Environment, Dr. Rene Dubos, 1969, pp. 79, 80).

THE AMBASSADOR COLLEGE ENVIRONMENT

This vital power of environment to change and affect man, animals, and plants has been largely overlooked in the past. But an awareness of its importance is slowly polarizing the thinking of leading men — but few have stressed the importance of right environment *more* than *Ambassador College*.

The physical plant of the college (gardens, buildings, furniture etc.) is carefully designed to have the maximum beneficial effect on the students (who are still at a relatively impressionable age). A student is encouraged to organize his college life to include the maximum of upgrading experiences — study, work, dancing, sports, dating, speaking, travel, etc.

An optimum diet is provided to enable the student to function at his best while in college and to become familiar with the advantages of maintaining that standard of nutrition after he leaves college. A good environment is many more things than we can enumerate here, but producing it and maintaining it boils down to *obedience* to God's laws! A bad environment is the result of *disobedience* to the laws of God.

The scientific evidence quoted earlier proves that a bad environment will degenerate *sheep, plants, seeds* and most of all *humans* — with *lasting* effects to *many* generations! But conversely a *good* environment (i.e. obedience to God's laws), will build up degenerated humans, plants, animals etc. and these up-grading effects carry through to succeeding generations. This then makes an understanding of the power of environment an important addition to every Christian's overall understanding.

Soil, climate and plants form the very foundation of man's living environment. These powerful factors have always been part of God's plan, in fact some of the actual tools He has used in building *families, tribes and nations*. In our next issue we hope to demonstrate this in some detail, relative to those God has called His "*peculiar*" people!