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Man in the Balance of Nature

WHY ARE PEOPLE so disturbed about pollution of air and water? It is not simply because they have become more refined and aesthetic, but because they begin to realize that we have reached a critical point in human habitation of the earth.

As far back as 1947 the question before a conference at Princeton University was "the fate of man". Would he go the way of the dodo and the dinosaur? Or would he take his destiny in his own hands and make a better creature of himself? Opinion was divided.

There was no split of opinion at the UNESCO headquarters in Paris last year when more than two hundred experts from fifty countries met in conference. Within twenty years, they decided, life on our planet will be showing the first signs of succumbing to pollution: the atmosphere will become unbreathable for men and animals; life will cease in rivers and lakes; plants will wither from poisoning.

This opinion was made public following the Inter-Governmental Conference of Experts on the Scientific Bases for the Rational Utilisation and Conservation of Biospheric Resources.

The biosphere is the part of the earth and its atmosphere which contains living things. In this layer, only a few miles thick, man is creating far-reaching imbalances. He threatens the stability of his own ecology by destroying resources and burdening his environment with the waste products of his own activities.

The biosphere is so immensely complicated that its workings are imperfectly understood, but it is known that any interaction of factors, however insignificant, can produce repercussions whose chains often span continents or even girdle the earth.

After commenting on the damage done by swift depletion of minerals and forests, the report of the UNESCO Conference in the *Manchester Guardian* goes on: "As cities spread in monstrous fashion the problem of refuse inherent in urban life attains the size of an insoluble problem. Carbon dioxide and all the host of air-borne industrial wastes are fouling the atmosphere and poisoning fresh water. In the last twenty years the whole process has been accelerating at a crazy speed."

What shall we do?

We must be willing to ask such questions as "What is the meaning of life? What is our relationship with everything around us? What shall we do in the short stretch between birth and death to preserve and improve our inheritance?" We need the courage to ask such questions — as the UNESCO Conference did — with respect and seriousness, and the gumption to do what the answers tell us to do.

There is no better way of giving our lives the dimension of depth than by identifying ourselves as important factors in the balance of nature and putting our weight on the side of conserving what is good, correcting what is wrong, and progressing to something higher in the scale. We were put upon Earth, according to the Book of Genesis, "to dress it and to keep it."

But man has become a prober and a meddler. Fire, the axe, the plow, fire-arms and the bulldozer have been the fundamental tools of our modern culture. We have spurned the fact that Nature is a total of the conditions and principles which influence the existence of living things. Her laws were so contrived that land, water, plants and animals should, and under natural conditions do, exist in harmony and interdependence for perpetual productiveness.

Nature has been at work for a great many millions of years to get things as they are. Cause and effect are tied together like stones in a well-built wall. Without careful investigation you never can tell which is a keystone, the removal of which will bring down a large section of the structure in ruin.

Man is only a comparatively small element in this massive system. As Anthony Tucker put it in his report of the UNESCO Conference: "The system developed without him, determined his evolution, and shaped his dependence on life cycles which in

turn were already dependent upon complex living and chemical relationships in a relatively stable environment." It is imperative to his survival that man should recognize his animal nature and live within the boundaries set by his organic world.

Throughout history one species after another of animal and plant has disappeared from the earth, and one culture after another has passed to oblivion, because of inability to adjust to environmental change.

Nature's laws

We are, then, an integral part of our environment. "Nature" embraces all existing things — fields, oceans, mountains, forests, deserts, the wild creatures . . . and human beings. We are part of it, and we must live in concert with it.

Our discovery of nature's laws does not mean entering a state of slavery. On the contrary, once we know what they are we can learn to co-operate with them, and by so co-operating increase our own freedom within them. Take fire as an example: we learned far back in our aboriginal state that fire burns you if you touch it, not to punish you, but because that is the natural law of fire. From there we went on to use fire for our useful purposes within the bounds of its law.

Ecology is the science concerned with the relation of living things to their environment, and with the factors which influence that environment. It is an expression of the realization that man must give over trying to mould the rest of the natural world to his wishes without adequate understanding of the laws that govern it.

What are some of the things needful to know? The subject is so vast that no human mind has ever fathomed all its secrets, but the basic principles are becoming known. First and foremost is the lesson so hard to learn: that Nature is the expression of a definite order with which nothing interferes successfully, and that the chief business of men is to learn that order and govern themselves accordingly.

Consider our disregard for plant life. The green leaf pigment, called chlorophyll, is the sole link between the sun and life: it is the conduit of energy to our frail organisms. Every plant, even the most humble, even algae, the simplest form in the vegetable kingdom, is a specialist, adapted by its habit of growth and its special requirement for light and moisture, to grow best in its preferred environment, and there to fulfil its destiny in serving Nature's purpose.

Let disaster strike the microscopic plants upon which the tier of life is built, and whole organizations will come tumbling down. The forces we set in motion to carry out our great projects move out to affect the lives of other creatures, and come back to act upon us.

Our worst conservation problems owe their existence largely to our short-sighted preoccupation with our immediate affairs, our personal lives, our ignorance of our place in the balance of nature. A person who has once perceived the greatness of nature's smallest creature or flower, can no longer be happy if he allows himself to be petty, self-seeking, and greedy in his dealings with Nature.

Because there are men and women who have not received this vision, it is necessary to have man-made laws to enforce the laws of nature.

Why should anti-pollution regulations raise objections? Do they restrict our freedom, that word so cherished in democracies? So do traffic laws and signals, which limit the freedom of action of the driver of the automobile. None the less, intelligent drivers gladly obey the regulations, even when there is no policeman at the corner to enforce them, because they know that in the absence of such organization of traffic their freedom to move in a chosen direction would be enormously more impeded by traffic jams and accidents.

On a higher scale than enforcement by law is the self-regulation taught to Boy Scouts: always leave the camping ground better than you find it. There are unwritten laws observed by woodsmen and mountain climbers: not to kill a porcupine or a fool hen unless there is no other food to be had; always replenish the wood-pile at a shelter hut to at least the size it was when you took shelter there.

Something about meddling

Meddling with small parts of a related whole produces evil consequences. Whatever we do in altering nature must be done in full awareness of Nature's reactions to and on ourselves.

For lack of adequate knowledge, much of our manipulation is based on technological criteria without thought of its over-all biological results. Some of this tampering starts a chain of events that upsets the balance of nature with destructive effects.

Consider the undisputed facts of life in the soil. These facts were studied by the UNESCO Conference and reported by Mr. Tucker. Something like forty billion tons of vegetable material are made and destroyed on the earth every year. The mass of land animals and smaller organisms amounts to less than one per cent of the vegetation. Of this tiny "zoomass" (which includes man) some 95 per cent consists of invertebrate organisms with crucial roles in the decomposition processes of the life cycle. Since they form an essential part of the natural capital it is utterly profligate to bring about their mass destruction through indiscriminate use of such things as non-selective pesticides.

Irresponsible chemical eradication of weed and insect pests presents not only a serious threat to wildlife conservation but holds out the danger of contamination to human beings. A pesticide, possibly used to kill rats in a wheat field, was blamed for the death of seventeen children in Mexico. Alfalfa that had been sprayed with DDT was fed to cows by

scientists. The cream was churned to butter, the butter was fed to rats, and the still toxic DDT was found in their body fat in substantial amounts.

Our poisoned water

What use is it to make a fetish of cleanliness of the body, of hair, of teeth, if we continue to pour sewage into rivers, thence to be carried inside our bodies?

In one midwestern city in the United States, as John H. Storer tells us in *The Web of Life*, tests of the city's water showed that during the period of low water in the winter it was one-half straight sewage.

Water, the most important natural resource, can be the medium for the transmission of germs and toxic substances. The World Health Organization reports that about five million children die every year from intestinal diseases caused by water.

There is a point at which the rivers themselves rebel. The load of poisons from city sewers, factories, slaughter-houses and farm lands becomes unsupportable. These kill the cleansing plants, use up the purifying oxygen in the water, and clog up the filtering gravel.

Once the mass of pollution exceeds a certain amount, animal and vegetable life disappears; the river dies.

To clean up our lakes and rivers we must deal with many types of man-made pollutants: detergents, fertilizers, insecticides, weed-killers, sewage, industrial waste, and hundreds of other products. This clean-up does not involve primarily treatment, but prevention, and some movement is being made in that direction by municipalities and industries.

Our lakes are dying. The United States public health service has warned shippers in Lake Erie that water within five miles of the shoreline should not be used for drinking or cooking. This stretch of near-shore water is so polluted that even boiling or chlorination will not remove the contamination. Farther out, pollution has stimulated the growth of vegetation, using up oxygen, so that a large expanse of dead water has developed.

In 1965, Dr. G. B. Langford, F.R.S.C., Director of the Great Lakes Institute, University of Toronto, concluded a report *The Great Lakes and Their Problems* in this way: "Governments in the United States are facing up to the situation much more realistically than are those in Canada. The insignificant support of research in the Great Lakes by the governments of Canada stands in sharp contrast to what our neighbours are doing. An unbiased observer would wonder if we actually share these lakes, for we do not share the responsibility of saving them from the pending disaster."

Our polluted air

Hamlet put it this way: "This most excellent canopy, the air, this brave o'erhanging firmament... appeareth nothing to me but a foul and pestilent congregation of vapours."

Today we seem to look upon smog and air pollution as incidents of urban life, until a public health disaster such as the death of 4,000 people in London's smog in 1952 calls our attention to the fact that this can be a killing negligence.

At least a hundred air pollutants have been identified, and their interaction produces others.

The cost of air pollution in Canada has been estimated at from $20 to $65 per person, depending on where he lives. This is for laundering, painting, cleaning of buildings, filtering of air, and doctors' bills.

But cost and loss in dollars and cents do not tell the whole story. Air pollution constitutes a serious hazard to health. Atmosphere pollution has been found to lower resistance to disease, to reduce vitality, and to increase sickness. Relatively low levels of air pollution may be involved in the development of chronic degenerative diseases, including skin and lung cancer, heart and vascular disorders, and chronic bronchitis. Paul Kotin, of the University of California, has established that several of the organic compounds produced by the combustion of gasoline and diesel oil are carcinogenic.

The best means of preventing combustion-caused pollution is simple: use better combustion equipment. This improvement should be insisted upon by those who have the responsibility for community welfare and hold the legal power to enforce it.

Restoring the balance

Some people who have not thought seriously about the matter shy away from the word "conservation" under the misapprehension that it means "stop using". Resource conservation is fundamentally nothing more than wise use of our resources in accordance with the laws of nature.

Personal conscience is the beginning of any effective conservation effort. A Washington State Supreme Court decision reads: "An unwritten compact between the dead, the living, and the unborn requires that we leave the unborn something more than debts and depleted natural resources."

Nature maintained her balance for millions of years, but she is now up against something new. All other participants in nature live by habit and instinct but men try to manage things, to force things into new ways. Their conceited and arrogant interference has brought about the deterioration in living conditions which alarms us, the extinction of many animals and plants, and the defilement of air and water.

Now that their continued existence is shown to be at stake men are called upon to rethink many things, to relearn lessons long forgotten, and to get back on the right road.

Our research and its findings and the lessons it teaches give hope to a world as yet largely unconscious

of the gravity of its situation. Scientists and research people do not make laws, but discover them. The laws of nature are there, and scientists find them so that we may obey them.

This involves a new duty: communication. The facts of the balance of nature and man's part in it must be presented to the people of all countries in understandable terms. By this means scientists can place the decision about these grave issues in the proper hands.

No municipal, provincial or national effort to preserve the balance of nature can be effective unless it is pressed for and adequately supported by informed public opinion. Every citizen need not be an expert in this or that branch of science, but he should know what the scientists are talking about, what the technicians are doing, and what his elected governments should be doing.

What could be a higher ideal than that of an intelligent informed citizenry with an attitude toward nature that is based upon an understanding and knowledge of man's dependence on his total environment? An effective programme with this end in view is being carried out by the 4-H Clubs in Canada. By intelligent and sympathetic guidance, these young people are learning conservation as a way of life.

Redemption

We have disregarded our place in the balance of nature for long enough, and we are face to face with our man-made conflict between the principle of freedom to use up and the principle of husbandry to use wisely and replenish. We can imagine the trees and the wild creatures and the earth itself watching and listening, alive and aware, holding their breaths in anticipation of what their human neighbours will do with their common heritage.

We face the hard task of putting natural forces to work in restoration and redemption. We need to deal with the necessary steps one at a time and with reasonable judgment.

Government programmes are being established, but at a snail's pace. They cannot succeed until they are enlarged to match the size of the problems, and until citizens are ready to pay the huge bill which we have already incurred by our assaults on the quality of our environment.

Political and geographical boundaries must not be allowed to impede the national effort. The first conservation duty of a city is to clean itself, and fastidious citizens will see that it does so. Then it must work hand-in-hand with adjoining municipalities, for how can people close their minds to the fact that much of the water flowing from their kitchen taps has already passed through other people's drains? Counties and townships and provinces are interlinked in any honest attempt to restore the balance of nature.

All of these divisions need to give attention to another aspect of nature. Our country-side is becoming wearied with the constant encroachment of factories and housing developments. Men pleading specious needs violate parks, forests and wildernesses. They ruin for all time what the time of man on earth cannot replace.

We need people rich enough in understanding and imagination, and strong enough in fibre, to insist that adequate forests and outdoor space be left to be admired, not destroyed. Unless natural outdoor spaces remain, young people are denied their instinctive wanderings. Trapped in city corridors, enmeshed in sprawling suburbs, empty of heart, mind and hand, cheated of experiences that are by nature necessary to them, they will turn their energies to protest and to evil.

When a young person goes for a stroll or paddles his canoe in a nature park he realizes that he is not merely an observer of nature, but a part of nature. His troubles grow petty, not because they are unreal, but because they dissolve within the larger plan.

A value judgment

Man, part of nature, has become enticed into a nearly fatal illusion: that his skills in science and technology make him independent of the laws of nature.

He spread insecticides without examining into whether they would be fatal to birds and beneficial insects and might kill people. He poured millions of pounds of detergents into rivers before learning that they polluted the water. He allowed lakes to die of oxygen starvation. He contributed to the deadliness of smog by floating noxious substances into the air.

What is required is a value judgment which compares the known risks with the anticipated benefits. This is where conscience and intelligence enter the scene. Said Barry Commoner in his powerful article entitled "Pollution: Time to Face the Consequences" in the mid-summer 1968 *Think:* "No scientific procedure can tell us how many defective births from fallout radiation we ought to tolerate for the sake of a new nuclear weapon. . . . No scientific principle can tell us how to make the choice — which may be forced upon us by the insecticide problem — between the shade of the elm tree and the song of the robin. . . . The necessary judgments are therefore the responsibility, not of scientists and technologists alone, but of all citizens."

Man emerged on this space ship Earth and is biologically bound to it for ever. The message from the UNESCO Conference to world governments and people is that either they keep the space ship healthy or we die with it.

What is the paramount thing? To come to nature with clean hands, unsoiled by spoilage, destruction and waste. This involves a great deal of governmental wisdom, a lot of scientific research, and a lot of engineering ingenuity. Behind all these must be the pressure of public demand.

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