



QUARTERLY

WINTER • 1970
Volume IX No.1



L. McMurtry

1970 W I N T E R F I L M S & L E C T U R E S

JANUARY 23 - Friday Evening, 7:30 PM

Two Walt Disney true-life adventure films:

"THE SECRETS OF LIFE"

"NATURE'S STRANGEST CREATURES"

Bring the children!

Place: Concordia Senior College - Rm. 201, north classroom bldg.

FEBRUARY 20 - Friday Evening, 7:45 PM

"THREE YOUNG AMERICANS IN SEARCH OF SURVIVAL"
(a 3M documentary film)

The three young Americans in this film are:
A marine biologist searching for ways of protecting the sea communities of the Virgin Islands; an outdoor-recreation specialist searching for ways to open one of our new national parks to visitors, but protect the priceless natural features; a Philadelphia ghetto worker searching for ways to build constructive enterprise from a street gang. This film is an excellent treatise on human ecology. It attempts to relate natural and urban environments, their relationships to people and the challenges to three young people.

Young adults and Teen-Acres members are encouraged to come!

Place: Concordia Senior College - Rm. 201, north classroom bldg.

MARCH 20 - Friday Evening, 8:00 PM

"A WILDLIFE ADVENTURE IN THE PACIFIC"

John and Florence Klotz will take us traveling to the highlights of their 1969 sabbatical tour of the far Pacific and the Galapagos Islands. Illustrated with slides.

Place: Shoaff Park Riverside Lodge
(take St. Joe Center Road NE from Rt. 37)
Coffee, hot chocolate and treats served.

QUARTERLY COVER ARTIST is Miss Linda McMurtry who is now living in Elk, California and has contributed two previous cover pieces to ACRES' portfolio of Quarterly art. Linda is the daughter of Dr. & Mrs. Gerald McMurtry of Fort Wayne.

M A N ' S E F F E C T O N N A T U R E

Ecologists are a strange breed of people who believe that man should try to understand the consequences of his actions before he takes them.

Unfortunately, most people are impatient to get on with changing the world without considering what the results could be. Problems we are now concerned with have evolved slowly and gradually so that people have not noticed what was happening. If Lake Erie had suddenly changed overnight from what it was 50 years ago to what it is today, people would recognize that a great disaster had occurred. But it has happened so gradually that they have become accustomed to the change as it took place: we can go on to irreversible damage if people are not aware and concerned enough along the way to try and stop these destructive processes.

Ecologists are also among the few people who recognize that man is part of a very large and complex system - an ecosystem involving thousands of species of plants, animals, and microorganisms that are essential to man's continued survival. All of these things interact in various complex ways to make a functional system. If we intrude upon this system without understanding it, we are likely to produce unexpected results.

Actually, man has been extremely lucky to have survived as long as he has, and we are very quickly going to have to start living up to the presumptuous name we have given ourselves, HOMO SAPIENS, the wise one, or we are not likely to last very much longer.

The population explosion is actually the most serious of all our problems; if we do not solve it first, the other problems that face us will be impossible to solve - even theoretically. To begin to understand what this means, reflect that man has existed on this earth for about one million years: we might calculate that starting with one pair of individuals, we have grown to our present population (which passed the 3.5 billion mark last summer) with a doubling of the population occurring only 32 times. Today, however, with the present rate continuing, the population would double every 35 years. This earth cannot sustain such numbers. We are already putting such pressures on our environment that we are causing its deterioration - we are facing disaster. Perhaps it will take a disaster to wake people up to what we are doing by polluting the atmosphere, the soil, and the water.

Man has been altering his environment almost from the beginning. Things such as burning, erosion, and siltation simply accentuate processes that could have gone on without man. An entirely new dimension to the problem was added when man began the serious burning of fossil fuels: coal, natural gas and more recently petroleum. It is recorded that in the year 1306, a citizen of London was tried and executed for burning coal in the city, but three centuries later that was the way of life and London had a smog problem.

The heating requirements of an expanding world population, along with industrial plants and transportation, especially by automobile, have brought the combustion of fossil fuels to the point where we are actually causing measurable changes in the composition of the earth's atmosphere. It's interesting that Los Angeles is on the verge of passing an ordinance prohibiting the burning of coal in the city. In a sense perhaps, man is starting to come whole cycle on this problem.

Much earlier there were specific examples of industrial contamination that had occurred without their significance being appreciated. For example, the Romans mined and smelted lead in Britain,

and it is said that the sites of those ancient smelting operations are still recognized by the impoverished vegetation growing on the poisoned soil. In Rome, this lead went into paints, water pipes, and to line the vessels in which wine was stored. A recent study of old Roman bones has shown concentrations of lead indicating that many members of the upper classes must have suffered from lead poisoning. It's even been suggested that this may have contributed to the decline of the empire.

In this country, lead was until recently a constituent of indoor paints, and lead arsenate was a favorite insecticide - especially for use on tobacco. It got into the soil and so we inhale lead with tobacco smoke. Now in our city slums, children are suffering mental retardation and even dying as a result of the lead in peeling paint. New York City had 509 reported cases in 1964 and the number is steadily rising as more physicians become aware of the problem and are able to diagnose lead poisoning. The burning of ethyl gasoline is putting tremendous quantities of lead into the atmosphere and is literally polluting the world.

I have singled out lead as a contaminant to discuss. I could make just as compelling a case for arsenic or perhaps several other things, and consider this: the Food and Drug Administration estimates that today we are imposing upon ourselves and our environment over a half-million different types of chemicals per year. In my view we have been incredibly lucky to have survived as long as we have, just trusting to luck that there is not going to be a disaster from these chemicals. I don't think we can count on this run of luck to continue indefinitely. Think of the entirely new classes of materials that we ask the environment to cope with just in the years since World War II: synthetic pesticides, plastics, antibiotics, radio isotopes, and detergents.

The detergents are an interesting case. A few years ago people were agonizing about detergents because suds were coming out of their faucets. So the chemists went back to the drawing boards and came up with a so-called "biodegradable" detergent which replaced the old foaming ones. People relaxed and considered the problem solved, but what they did not know was that the new detergents are more toxic to many forms of aquatic life than the old ones were, and that they are phosphorous compounds which are among our most significant pollutants.

It is difficult to say how much was known about water pollution in medieval times, but Saint Hildegard had an interesting comment on the Rhine, a name, incidentally, supposedly derived from the German word for "clear". In the 13th century, she wrote that if its waters were drunk unboiled it "would produce noxious blue fluids in the body".

As civilization and urbanization advanced, pollution problems became more acute and by the year 1800, Samuel Taylor Coleridge wrote:

The river Rhine, it is well known
Doth wash your city of Cologne;
But tell me, nymphs, what power divine
Shall henceforth wash the river Rhine?

Urbanization in its early stages already displayed faults that we are just beginning to recognize today. Nature's way of dealing with waste is to recycle it, but a city brings together materials produced over large areas and concentrates them into a very small area. When it comes for disposal, these materials cannot be recycled locally but must be dispersed. Now industry is encouraging planned obsolescence which further accelerates the accumulation of waste.

We are at most a few generations away from running out of the fossil fuels upon which our economy, including agriculture, now depends. Current thinking holds that our next form of energy will be nuclear energy but this raises some very disturbing thoughts.

Before the controlled release of nuclear energy during World War II, the entire amount of radioactive material under man's control consisted of about 10 grams of radium: ten curies of radio activity scattered among the world's hospitals and laboratories. Today a nuclear power plant is being built on the shores of Lake Ontario near Oswego, New York, which will, by the company's own estimate, release 130 curies per day into the atmosphere. And this is a small plant in terms of modern dreams - it represents less than 5 percent of the nuclear generating capacity for which licenses were sought from AEC in 1966.

This present generation of reactors is incredibly inefficient: it wastes over 99 percent of the uranium that is mined, and in addition, the manufacturing plants produce unbelievable quantities of radioactive waste such as very dangerous isotopes: strontium 90 which has a half-life of 30 years, and caesium 137 which has a half-life of 32 years. This "half-life" means that if you hold it for 32 years it will then be half as radioactive as it is now. These materials should be stored where they cannot pollute the environment for at least 1,000 years. We are burying these liquid wastes in very concentrated forms, and there are billions of curies of it in underground disposal sites in Idaho, Washington, and Georgia. They are in stainless steel tanks that have to be refrigerated continuously because the stuff is so hot that it will boil spontaneously for an estimated 300 years. Remember, this should be stored for 1,000 years, but a survey done last year by the Atomic Energy Commission showed that about 5 percent of these tanks are leaking after only about 20 years.

Knowing that radioactivity shortens life, causes malignancies, and may cause genetic changes that can damage future generations, I don't think we have much cause for complacency. If it turns out that we can't live with the atom, I see only one other large source of energy remaining and this is sunlight itself. This is very diffusely scattered energy and the problems of collecting it and concentrating it to run our economy would be immense.

Our atmosphere at sea level, neglecting contaminants, consists of about 78 percent nitrogen by volume, 21 percent oxygen, 3/100 of 1 percent carbon dioxide and minor amounts of other gases. Nitrogen is actually a scarce element on earth; 18 chemical elements account for 99.9 percent of the mass of all known terrestrial matter and nitrogen is not one of the 18. So what is so much nitrogen doing in the atmosphere? Oxygen is actually the most abundant of all the chemical elements but it's a highly reactive chemical which, aside from the atmosphere, is almost never found in uncombined form. So what is so much free oxygen doing in the atmosphere?

The answer to both of these questions are biological. Certain bacteria and blue-green algae take the molecular nitrogen out of the atmosphere and convert it to ammonia which is quite a toxic material. If the story stopped at this stage we would all be fatally poisoned when we breathed.

But still other bacteria convert the ammonia into nitrate, and green plants take both ammonia and nitrate and use them as the raw materials for building their proteins, which of course are nitrogen compounds. Animals and virtually all microorganisms make their proteins directly or indirectly from the constituents of plant proteins. When plants and animals die, decomposer organisms (primarily microorganisms), break down protein mostly to ammonia, and this little cycle, ammonia to nitrate, nitrate to protein, protein to ammonia, repeats itself.

There are quite a number of microorganisms involved in the nitrogen cycle that are essential for the continuation of life. But what thought does industrialized man give to these organisms? With reckless abandon we dump our half-million chemical species into air, soil and water without a thought that one of these forms, or some combination of them, might turn out to be a deadly poison for one of the essential

links in the nitrogen cycle and so would cause the extinction of life.

The only reason there is oxygen in our atmosphere is that green plants keep putting it there. Plants take in carbon dioxide and give off oxygen. Animals, including ourselves, take in oxygen and give off carbon dioxide. So do our factories, our automobiles, and our furnaces. Seventy percent of the free oxygen released into the atmosphere each year is produced by green plants floating in the upper lighted levels of the oceans, the so-called marine phytoplankton. But what thought does man give to these green plants? When he wants a new strip mine or a parking plaza or a housing project, he is not even solicitous of the plants growing on land. And the fate of Lake Erie and many lesser bodies of water have shown us that man is indeed capable of blocking the nitrogen cycle by sheer carelessness.

Now in case this leaves you complacent, I would like to mention just a few more details. The deciduous forests of the eastern United States appear to produce about 1,000 times as much oxygen per unit area as the average cover of the earth's surface. Yet forests seem to be the thing that man is willing to dispense with first. Tropical rain forests, unlike our deciduous forest, carry on photosynthesis all year and so are probably more productive, but several times each year I hear or read of plans for getting on with the "developing" of the tropical regions of Latin America, Africa, and Asia. In fact, I have read a statement by the president of Brazil saying that we simply must get on with the development of the Amazon Basin. Tropical soils are typically very low in mineral nutrients and these leach out and are washed away very rapidly if the vegetation is unable to trap and recycle them. So when a tropical rain forest is once destroyed, the process may be irreversible.

As a corollary of this rapid use of oxygen and the threat to the species that produce it, we are adding carbon dioxide to the atmosphere more rapidly than the oceans can assimilate it. This has very serious implications for changing the climates of the earth but the question of what may happen is still uncertain and controversial.

I would like to ask - would any rational creature go on altering his environment like this without understanding the implications of what he is doing, and at the same time argue that it is necessary to keep this destructive process accelerating each year? What is popularly known as "progress" begins to look very much like the path to extinction.

I have been discussing the atmosphere without unnatural contaminants. I'm sure you all know the true situation: that over 3,000 chemicals, elements, foreign chemicals, have been identified in our atmosphere; that in our cities, particulate matter, soot, fly ash, and perhaps more importantly, particles of rubber from tires, and particles of asbestos from brake linings pose public health problems; that carbon monoxide, sulfur dioxide, and the various oxides of nitrogen pose many problems. Even our intense agricultural efforts to produce enough food raises problems. A few years ago a local paper in Iowa carried an account of a very interesting lawsuit in which the defendant claimed that 2,4-D should be considered a normal part of the Iowa atmosphere in summer. Another example - the manufacturing plants that produce superphosphate fertilizer produce, as a by-product, tremendous quantities of fluorine, a very toxic chemical. This fluorine frequently kills vegetation for some miles around the plant and subsequently kills wildlife and livestock that feed on the vegetation.

You are reading today about the supersonic transport and what a great thing it will be to cross the Atlantic in two hours. This plane is expected to fly at roughly 65,000 feet elevation. Recently I was on a program with a leading atmospheric scientist, Vincent J. Schaefer from the State University of New York in Albany. He is the man who invented cloud seeding to cause rain, and he is concerned about the development of this plane, not because of the sonic boom which is most publicized, but for a very different reason. At 65,000 feet elevation, you are in the stratosphere where there is no climate, there are no convection currents, no

cloud circulation, no rain. There is, in fact, nothing to wash the pollutants out of the stratosphere.

We have had some experience with volcanic eruptions within historic times when the dust which was catapulted into the stratosphere changed the climate of the world for a year or more afterwards. The biggest of these occurred in 1815 when Mount Tambora in the lesser Sunda Islands blew up. The year after this, 1816, was known as the year without a summer. It snowed in Boston every month that year and the crop failure, at least throughout the northeast, was very general.

So what will happen when there are 1,000 of these SST's up there pouring their exhaust gases with incompletely burned hydrocarbons into the stratosphere? Schaefer talks about the global gloom that he thinks may settle over the entire world if these plans are completed. Pushing for the development are those who say we mustn't let Britain, France and Russia corner the market, and the only argument seems to be over whether people can stand the sonic booms, or whether their picture windows can take it. Yet the real implications of these plans are far more serious and could be disastrous.

The problems that will confront us in the immediate future are many and grave. As voters, you will be asked to stand up and be counted on such questions as the one I have described above, and I would implore you keep your eyes and ears open and make some wise decisions. Remember that what is good for industry or good for the military is not necessarily good for mankind. Somewhere we must try to make a rational approach to what we are doing to our environment, or disaster will be inevitable.

Will it ever be possible to bring together biologists, physical scientists, sociologists, economists, and political scientists who, if we are to survive, simply must learn to communicate with each other and to recommend considered policy decisions on all such matters? This may be our only hope, and our time for acting may be alarmingly short.

Lamont C. Cole, Ecologist
Cornell University

(This article is excerpted from a paper presented in April, 1969 at a symposium on Man and His Environment, SEARCH FOR SURVIVAL. Subsequently reprinted with permission of THE EXPLORER, Vol. II, No. 3, Fall '69. Copyright by the Cleveland Museum of Natural History, Cleveland, Ohio.

CLEVO ESCOSA BEGINS AN ACRES LIBRARY WITH BOOK DONATION - The books donated by Clevo Escosa in October began a conservation "Book Section" to ACRES periodical collection. Volumes include:

The Peregrine Falcon, R. Murphy; Seal Morning, R. Farre; That Quail Robert, M.A. Stanger; A Wilderness Bill of Rights, Douglas; The Natural History of Selborne, White; Speak to the Earth, Breyfogle; Arctic Wild, L. Crisler; Doomed Oasis, H. Innes; Whose Woods These Are, M. Frome; Earth's Company, L. Reid; The Natural Thing, Frosburgh; Land of Tane, R. St. Barbe Baker; The Great White Mantle, Woodbury.

Thank you Clevo for this good start! Additional donations are welcome.

VISIT ACRES BOOTH AT THE SPORT, VACATION & BOAT SHOW - Feb. 10-15, at the Memorial Coliseum, ACRES will outfit and man a special booth. The booth, donated by Evans Motors, will feature a perpetual slide show and special stereo "natural area" sounds. We hope to interest a lot of outdoor enthusiasts in our program and areas. Visit us. Thank you Evans Motors for making this promotion of ACRES program possible.

Will the world be richer or poorer for your having passed through?

With so many of us around, I'm afraid that in many cases it's going to be poorer. Too many people live as if this planet existed for them and that it will end with them; they have little sense of responsibility to future generations. It is with this responsibility to future generations that ACRES and similar organizations dealing with the environmental quality are concerned.

Supporting ACRES and its program is one way of discharging your responsibility to future generations. Your membership itself helps promote our program. In addition, if you own land you will want to be concerned with caring for it so that its quality will not have deteriorated when you pass it on. If you are in a position to do so, you may want to set aside a parcel of land by transferring title to ACRES; a number of our patrons have done this. By vesting ownership in ACRES you can be sure that your wishes for preserving the quality of the land will be carried out. Your gifts to the land acquisition fund also assist in this program.

Make your mark and leave your legacy, but be sure it's a good one.

John W. Klotz

A WINTER EXPLORING AND WORK PARTY - SATURDAY MARCH 7

The woodland Bog in Steuben County (ACRES least known natural area) needs some trail exploration, stile maintenance and a new marker installed. Join our winter outing!

Meet: The Peoples Trust Northcrest Bank (Golden Dome)

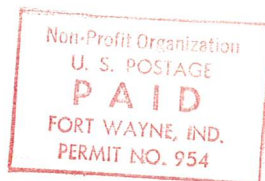
Time: 9:30

Preparations: Dress warmly, wear work gloves, warm footgear.

Bring: Sandwich, drink, desert. Heafy, hot soup provided.

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NON-PROFIT ORGANIZATION



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The **QUARTERLY** is published by ACRES, Inc., four times each year at 106 West Wildwood, Fort Wayne, Indiana, 46807, for the interest of its members, friends, and other similarly dedicated to the preservation of natural areas in northeastern Indiana. ACRES, Inc., is a not-for-profit corporation, incorporated under the laws of the State of Indiana. Contributions are deductible for tax purposes. Jane Dustin, Editor.

MEMBERSHIP: Student, \$5.00; Regular, \$2.00; Sustaining, \$10.00; Patron, \$50.00, payable annually to ACRES, Inc., 106 W. Wildwood, Fort Wayne, Indiana 46807.