



MAN AND HIS WORLD

SPECIAL EDITION
EARTH SUMMIT '92



65

UNDP

MAN AND HIS WORLD



Regional Project for Cultural, Urban and Environmental Heritage in Latin America and the Caribbean (RLA)



ONLINE VERSION / Feb 2011

special edition
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FIRST PUBLISHED 1972

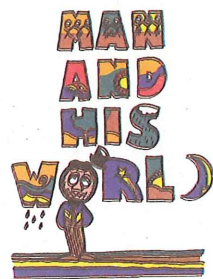




MAN AND HIS WORLD

A PUBLICATION BY THE UNDP/UNESCO REGIONAL PROJECT FOR
CULTURAL, URBAN, AND ENVIRONMENTAL HERITAGE IN
COLLABORATION WITH THE UNITED NATIONS ENVIRONMENT
PROGRAMME (UNEP), THE MAN AND BIOSPHERE PROGRAMME (MAB),
AND THE INTERNATIONAL HYDROLOGICAL PROGRAMME (IHP)





TEXT AND DRAWINGS
MARGARITA JARAMILLO SALAZAR
UNITED NATIONS VOLUNTEER (1978-1982)



REGIONAL PROJECT FOR CULTURAL, URBAN, AND ENVIRONMENTAL HERITAGE UNDP/UNESCO

Dear Readers,

The history of man is a struggle to survive in harmony with nature. Nonetheless in the name of 'progress', humanity willingly or unwillingly has been instrumental in destroying nature. In this quest for development we have been driven to act destructively and not constructively and rationally as we originally intended. If creation continues to go hand in hand with destruction, humanity may not only destroy nature but itself. Hence it is imperative that humanity revert this current seeking, instead, creative, alternative means of sustainable development by channeling resources constructively and respecting nature.

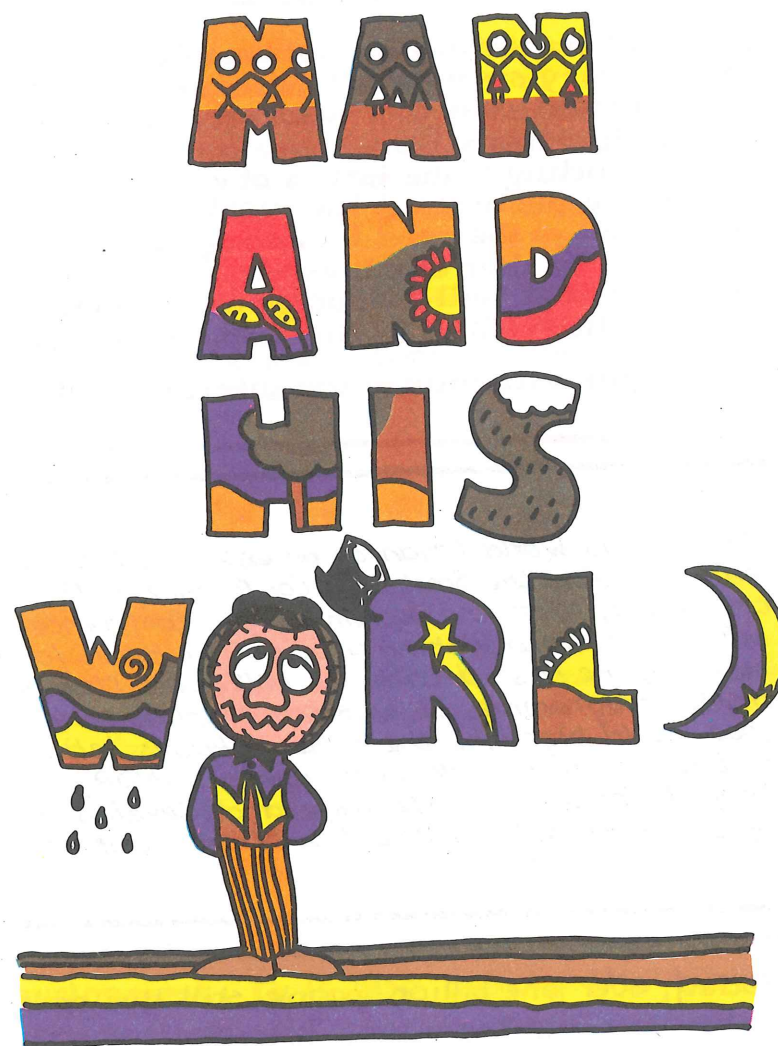
'Man and His World' was conceived and published in 1982 by the UNDP/UNESCO Regional Project in collaboration with UNEP and MAB. At this time, we are pleased to present a new edition at the

occasion of the UNCED Earth Summit Rio '92. 'Man and His World' deals with issues such as the environment and development, cultural heritage, industrialization, the biosphere, ecosystems, and the use of natural resources in an effort to educate and raise awareness about environmental issues vis a vis development. 'Man and His World', in essence, illustrates in a witty yet serious manner the need to reevaluate the human element in development, take an ethnocentric outlook to development as opposed to a technocentric approach, preserve environmental and natural heritage, and to stabilize population to avoid the deterioration of environmental systems.

As we move toward the year 2000 in the context of the growing urban crisis, the urban environment is also our major concern. Our next publication will be related to environmental concerns in third world cities particularly in reference to the urban poor.

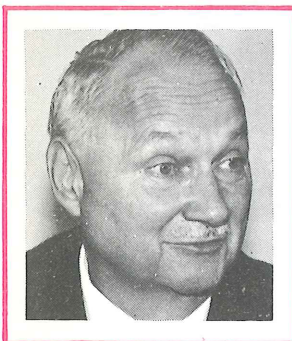
We hope that in addressing grave issues in a witty and imaginative manner, 'Man and His World' will impel readers, children, men and women alike to create alternatives which portray a sincere respect for our planet and revert the current destructive process. After all, to live means to create and man is made to create.

Sylvio Mutal
Coordinator - Project Manager
UNDP/UNESCO
June 1992



TEXT AND DRAWINGS
MARGARITA JARAMILLO SALAZAR
UNITED NATIONS VOLUNTEER (1978-1982)





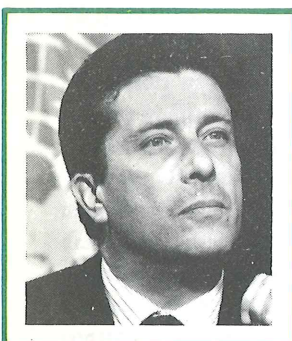
MAURICE F. STRONG
SECRETARY-GENERAL, UNITED NATIONS CONFERENCE
ON ENVIRONMENT AND DEVELOPMENT

A global transition to sustainable development is essential for our very survival. If humankind is to make the fundamental changes in society that will be necessary to effect this transition, there must be a level of understanding of the issues of environment and development among people around the world so that everyone is convinced of the need for change. Only then will we be prepared to alter our lifestyles and provide the political pressure that will encourage our leaders to make the changes in policy that will make this imperative transition possible.

To present a flavour of the intricate, linked issues of

environment and development in a digestible format that makes enjoyable reading while imparting a wealth of information is indeed a challenge, and it is one that is carried off with great aplomb in this amusing and informative book. Public awareness and education are of paramount importance, and "Man and his World" describes perhaps the most grave issues of our day with a humour that captures the imagination, makes a cry to the conscience and lingers in the memory

This delightful book conveys a deep message about the urgency of our situation. The illustrations and text provide a vivid sample of the richness of life on earth, explain some of the errors of the past and suggest positive ideas for a sustainable future. The text describes

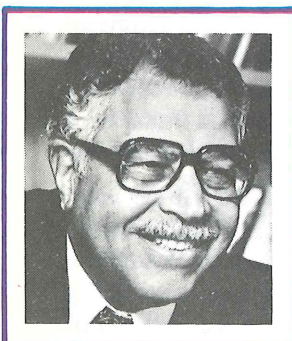


FEDERICO MAYOR
DIRECTOR-GENERAL, UNESCO

Man and His World began as an experiment and challenge in 1982, ten years after the Stockholm Conference on the Human Environment and shortly after the September 1981 Conference/Exhibit Ecology in Practice - Establishing a Scientific Basis for Land Management marking the first decade of UNESCO's Man and the Biosphere (MAB) programme. It was conceived as an intersectoral exercise that would highlight the close linkages between nature and culture. Its origins derived from a UNDP/UNESCO Regional Project for Cultural Heritage and Development, from the talent of a United Nations Volunteer, from a close partnership of

UNESCO, including MAB and IHP with UNEP and from a large body of scientific and popularized environmental information assembled by UNESCO and other international and national sources.

Some purist spirits within international environmental programmes looked askance at the production of a comic-strip book on the environment, which seemed to them to fall short of the standards of rigour and seriousness that the topic demanded. Experience, however, justified the undertaking - which UNESCO saw as fully in accord with its tradition of scientific popularization activities initiated by its first Director-General Sir Julian Huxley,



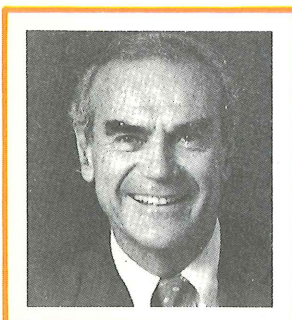
Dr. MOSTAFA K. TOLBA
EXECUTIVE DIRECTOR UNITED NATIONS
ENVIRONMENT PROGRAMME (UNEP)

Today, over one billion people still live on less than one dollar equivalent per day. Crushed by the burden of external debts, inadequate infrastructures, high mortality and disease rates and poor sanitation, these poverty-stricken people are destroying their natural environments out of sheer desperation. For them *survival* is the only goal. Environmental concerns are a luxury.

This is the most graphic example I can give of the importance of promoting environmentally sound and

sustainable development. It is also merely the tip of the iceberg: unsustainable production and consumption patterns in the North and the desperate destruction of natural resources in most of the South have brought our planet to the brink of an environmental disaster.

Quite clearly, rectifying these problems will take money and commitment. Yet that commitment, and the financial resources to match it, will largely be won through public awareness, through galvanizing political willpower. We need to make people everywhere recognize the threats which face our planet. And understand what they can do to help.



WILLIAM H. DRAPER III
ADMINISTRATOR, UNITED NATIONS
DEVELOPMENT PROGRAMME

Ten years ago, when "Man and his World" was first published, the problems it painted - urban pollution and gross overcrowding, loss of species, expanding poverty and destruction of the ozone - seemed in some ways part of an unreal future. Sad to say, many of these problems have today materialized, bringing with them disturbing changes in the quality of our lives.

At the same time, a new consciousness is

emerging of the complex linkages between people and the natural world. With this is a growing recognition that development and environment must go hand in hand, and that the fate of the developing countries - representing four-fifths of humanity by the year 2000 - is very much intertwined with the fate of our Earth.

The 1992 Earth Summit is a unique opportunity to turn the tide of environmental decline into a truly new era of human development, where both people and nature are

many of the central themes underlying environment and development, from sustainable livelihoods, consumption patterns, cultural heritage and appropriate technology to international relations and a new world economic order. It does not shy from addressing military spending and the importance of democracy. All these are described in a straightforward manner that is accessible and entertaining. In this manner the book avoids concentrating simply on the causes celebres of environment, but highlights the integrated nature of environment and development and introduces a broad range of issues and the linkages between them.

"Man and his World" has already been a success, but this new edition in 1992 is most timely, for this is the year of Earth Summit, the

himself a brilliant popularizer of science. The publication has been reprinted several times in various languages, and the original Spanish version in particular has had a very significant impact in Latin America and the Caribbean as an instrument of environmental education.

Twenty years after Stockholm, the problems highlighted in Man and His World have assumed crisis proportions. The Earth Summit meeting in Rio de Janeiro in June must address the challenge of halting a process of environmental degradation that threatens to pass beyond the point of no

Education about environment and development issues is vital. But it needs to be made relevant. For the average reader this means more than books full of statistics. It means arguments clearly and simply expounded, with examples and stories to illustrate the points. In order to see what sustainable development means on a global scale, we need first to look at how it can work in thousands of small communities around the globe.

Ten years ago, the first publication of "Man and his World" was already a step on the road to getting the message across. This second edition

offered greater respect. UNDP would like to acknowledge the Regional Project for Cultural Heritage and Development for its contribution through "Man and his World", which, as it says in its conclusion, will have achieved its goal if it makes even one person less indifferent to the problems of our world.

*William H. Draper III
Administrator, United Nations Development Programme*

United Nations Conference on Environment and Development, when the leaders of the world will meet to agree on their response to these issues. In this year, and in the years to come, the awareness and concerns of individuals will be critical. In a final and pertinent question, the book asks "which path will humanity choose?". "Man and his World" with its poignant message will alert the reader that the fate of this Only One Earth is truly In Our Hands.

*Maurice F. Strong
Secretary-General United Nations Conference
on Environment and Development*

return. The fostering of global environmental awareness is a necessary strand in any strategy for reconciling development with the safeguarding of the environment, and we hope that Man and His World will make a useful contribution to UNCED by promoting in a colorful and amusing fashion knowledge and appreciation of environmental issues, particularly among young people.

Federico Mayor, Director-General UNESCO

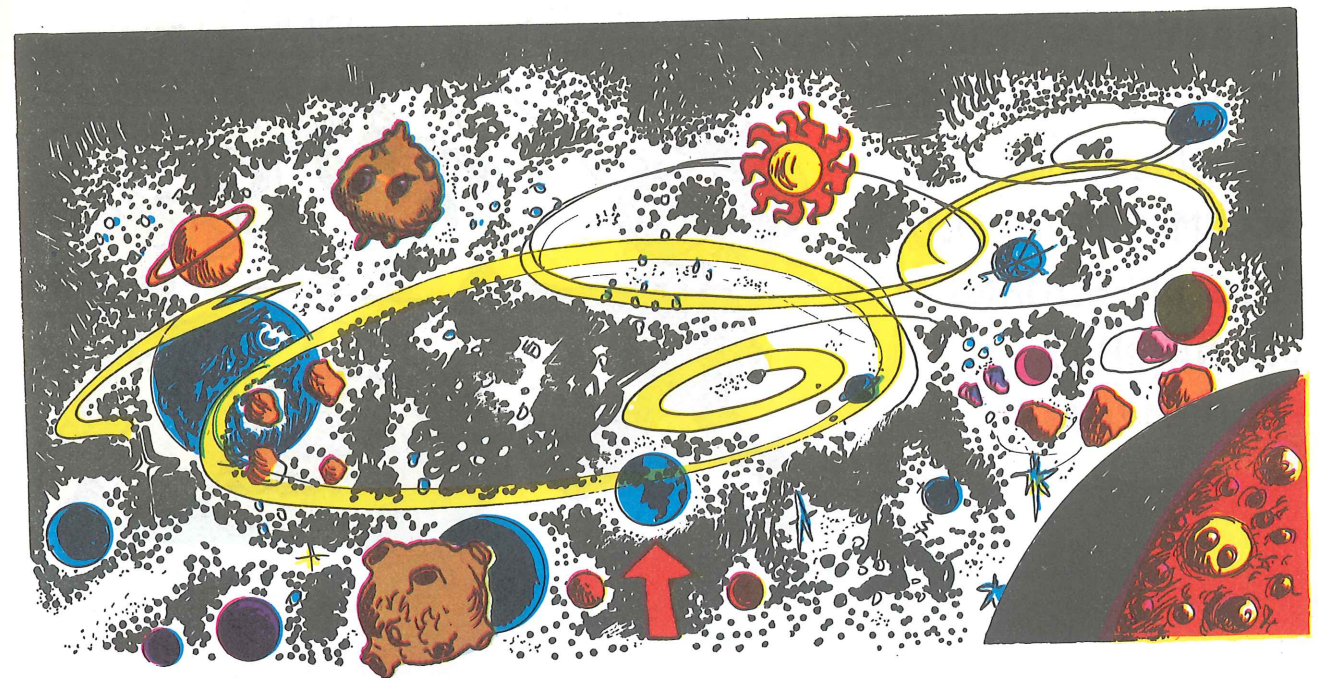
produced in the year of the Earth Summit, is a welcome reminder to people that the fundamental international issues of ten years ago are still with us today, and even more urgent. The message of this book is therefore doubly welcome. Not only does it give a boost to our efforts to educate people about sustainable development, it also serves as a reminder that for the next decade, it will be actions, not words, which will count.

*Dr. Mostafa K. Tolba
Executive Director United Nations Environment Programme (UNEP)*

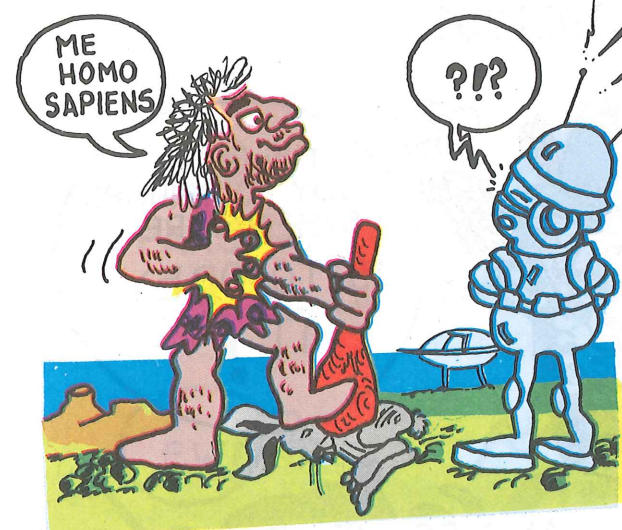


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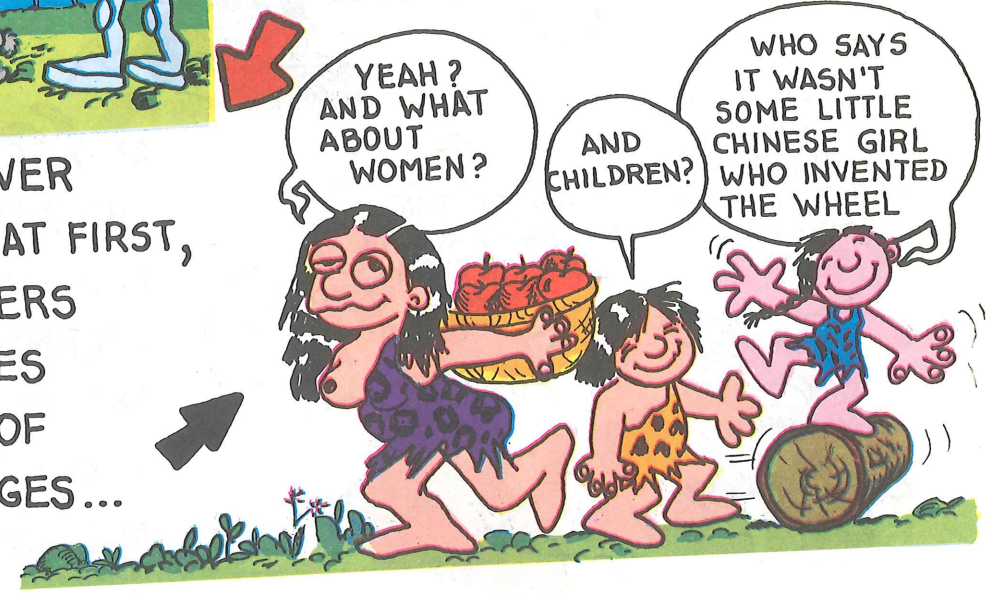


IN SOME REMOTE CORNER OF A FAR-OFF GALAXY,
THERE IS A SMALL PLANET CALLED **EARTH**, WHICH IS
INHABITED BY **MAN... MAN??**



AN ERECT ANTHROPOID
WHO, AT THE BEGINNING
OF HIS LONG EVOLUTION
OCCUPIED HIS PLACE
IN NATURE LIKE
ANY OTHER ANIMAL...

... HIS CONTROL OVER
NATURE IS WEAK AT FIRST,
BUT MAN DISCOVERS
FIRE AND BECOMES
AN INSTIGATOR OF
IMPORTANT CHANGES...



IN ANY CASE, THE HUMAN CONQUEST OF NATURE CONTINUES AND MAN BECOMES LESS AND LESS DEPENDENT ON NATURAL PHENOMENA



BUT THE MATERIAL PROGRESS OF SCIENCE AND SOCIETY IS ACHIEVED AT THE EXPENSE OF NATURE AND NATURAL RESOURCES...



MANY PHILOSOPHIES GLORIFY MAN'S BATTLE AGAINST NATURE, AND IT IS MISTAKENLY BELIEVED THAT MIND IS SUPERIOR TO MATTER AND THEREFORE THAT CULTURE IS SUPERIOR TO NATURE. NONETHELESS, AT THE DAWN OF THE SCIENTIFIC REVOLUTION, THE PHILOSOPHER FRANCIS BACON WARNS:



THE RATE OF EVOLUTION INCREASES SPECTACULARLY:

★ WHILE IN EARLY PALAEOLITHIC TIMES IT TOOK HUNDREDS OF THOUSANDS OF YEARS FOR CERTAIN CHANGES TO TAKE PLACE ...



★ IN LATE PALAEOLITHIC TIMES IT TOOK TEN THOUSAND YEARS ...

★ AND IN HISTORIC TIMES JUST ONE CENTURY



AND SO WE ARRIVE AT THE INDUSTRIAL REVOLUTION. MAN ACHIEVES TECHNOLOGICAL WONDERS AND SUCCEEDS IN CONQUERING HUNGER AND DISEASE ...

... BUT IN THE PAST HUNDRED YEARS, EACH DECADE HAS BROUGHT AN IMPORTANT CHANGE: PHOTOGRAPHY, THE ELECTROMAGNETIC THEORY, ELECTRICITY, THE MICROBIAL THEORY, CINEMA, AND

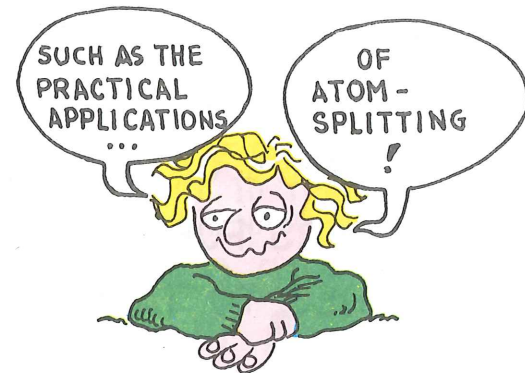


NOT COUNTING RADIOACTIVITY, THE TELEGRAPH, TELEVISION, SYNTHETICS, THE SPLITTING OF ATOMS, ETC., ETC., ETC...

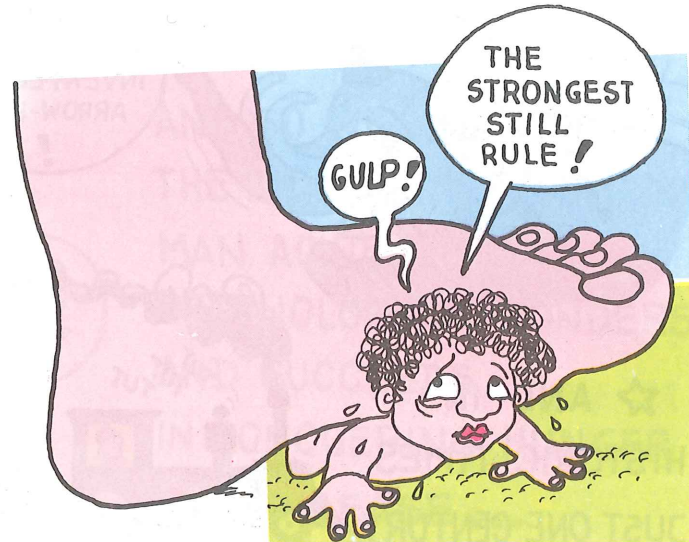
* * * * *



... TODAY, THE MOST DECISIVE TRANSFORMATIONS CAN TAKE PLACE IN FIVE YEARS...



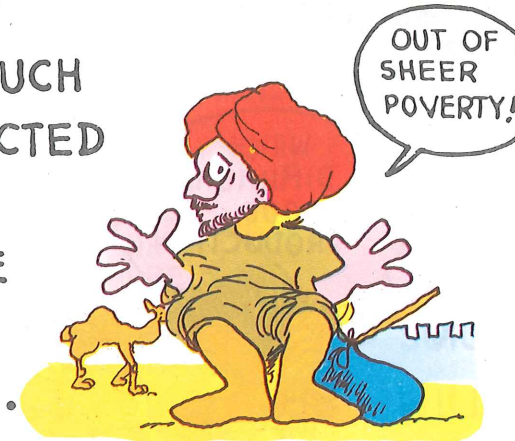
THE PROBLEM IS THAT THE EVOLUTION OF HUMANITY HASN'T BEEN QUITE SO SPECTACULAR. MAN'S MENTAL FACULTIES HAVE HARDLY CHANGED SINCE THE STONE AGE...



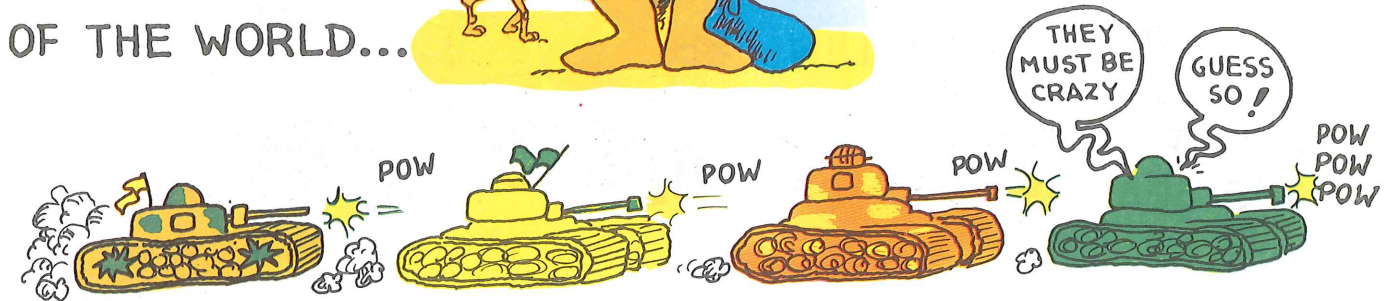
FROM CRO-MAGNON TO HOMO SAPIENS MAN'S SENSE OF ETHICS HAS NOT GREATLY EVOLVED. NOR HAS HIS SELF-CONTROL



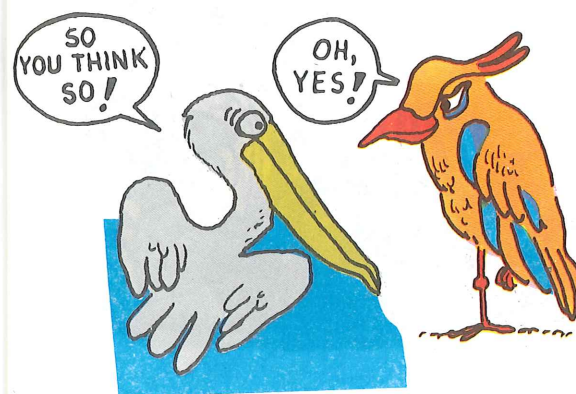
SOME SOCIETIES CONSUME TOO MUCH AND HAVE PERFECTED THEIR WAR MACHINES, WHILE IN OTHER PARTS OF THE WORLD...



... MILLIONS DIE OF HUNGER OR SUFFER FROM DISEASES

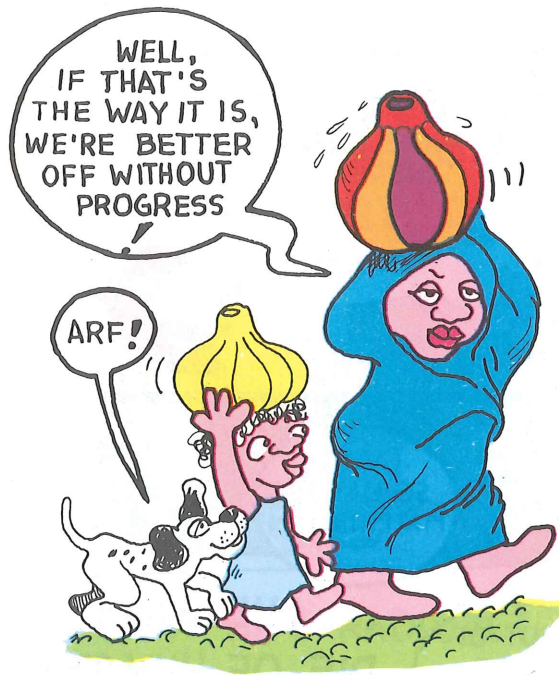


PROGRESS HAS LED MAN INTO A DEAD-END STREET AND THE SURVIVAL OF HUMANITY IS NOW IN JEOPARDY...

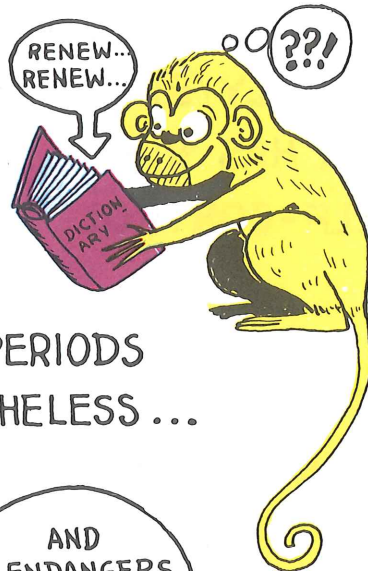


AND YET MAN CONTINUES TO "CONQUER" NATURE AND EVEN THREATENS TO KILL IT COMPLETELY! AND...





THE ENERGY CRISIS DEMONSTRATED THE EARTH'S LIMITATIONS AND THAT NATURAL RESOURCES ARE NOT ONLY LIMITED BUT THEY ARE NON-RENEWABLE OR RENEWABLE OVER EXTENDED PERIODS OF TIME. NONETHELESS...



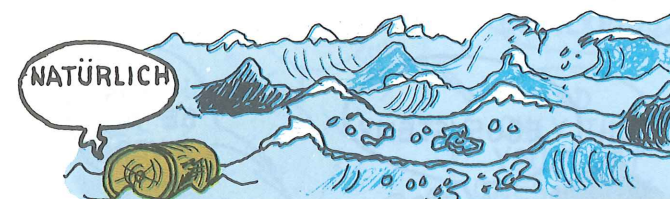
MAN WASTES THESE RESOURCES ON:
 WEAPONS
 INDUSTRIALIZATION
 UNCONTROLLED CONSUMERISM
 (AND POLLUTES THE AIR, THE SEAS AND THE SOIL...)



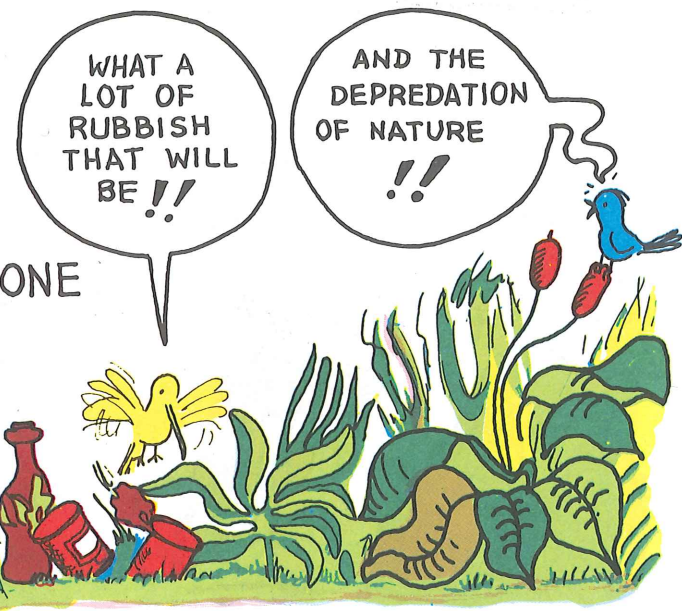
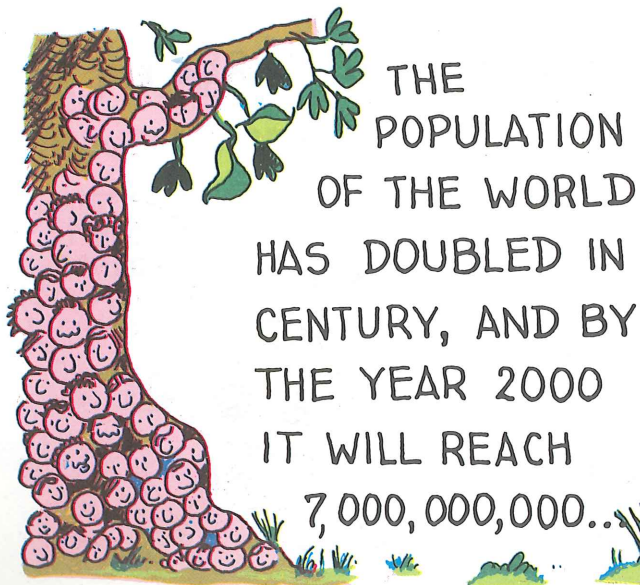
ACCORDING TO THE MOST OPTIMISTIC PREDICTIONS, BY THE 21ST CENTURY THE PLANET EARTH WILL BE SO POLLUTED THAT IT WILL BE VIRTUALLY UNINHABITABLE. THE EARTH WILL CONTINUE TO SUBMIT TO THE RIGORS OF EROSION, AND DROUGHT AND HUNGER AND POVERTY WILL INCREASE.



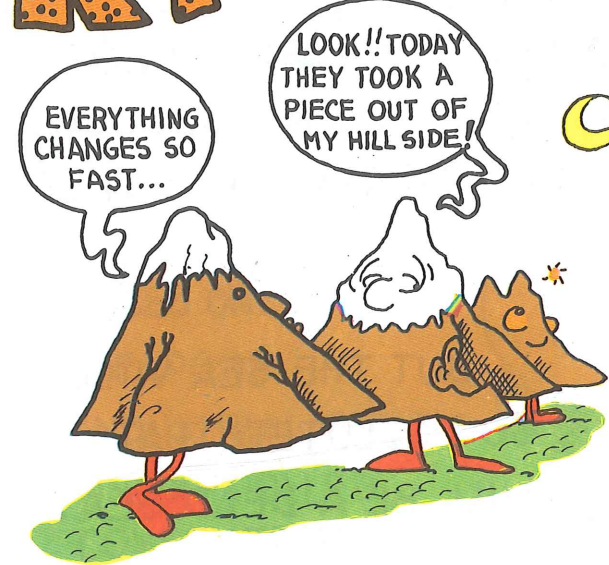
... BUT THE SEA WILL BE SO POLLUTED THAT IT WILL BE A DEAD SEA...



SOME SAY THAT SCIENCE AND TECHNOLOGY WILL ALLOW THE EXPLOITATION OF OTHER PLANETS. BUT THE TRUTH IS THAT THE EARTH IS MAN'S NATURAL HABITAT TO WHICH HE HAS ADAPTED OVER THOUSANDS OF YEARS OF EVOLUTION...



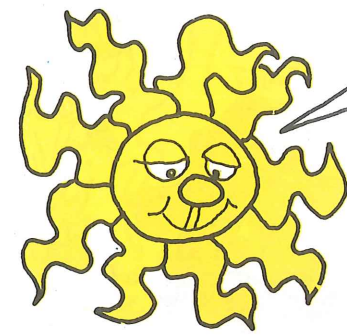
HOW MUCH LONGER
CAN LIVING BEINGS
STAND THE SUDDEN
CHANGES IN THEIR
ENVIRONMENT



THE FACT IS THAT, IN NATURE,
EVERYTHING IS INTERDEPENDENT
IN WHAT IS CALLED AN
"ECOSYSTEM": THAT IS,
A GROUP OF PLANTS AND
ANIMALS THAT INTERRELATE
IN A GIVEN ENVIRONMENT...

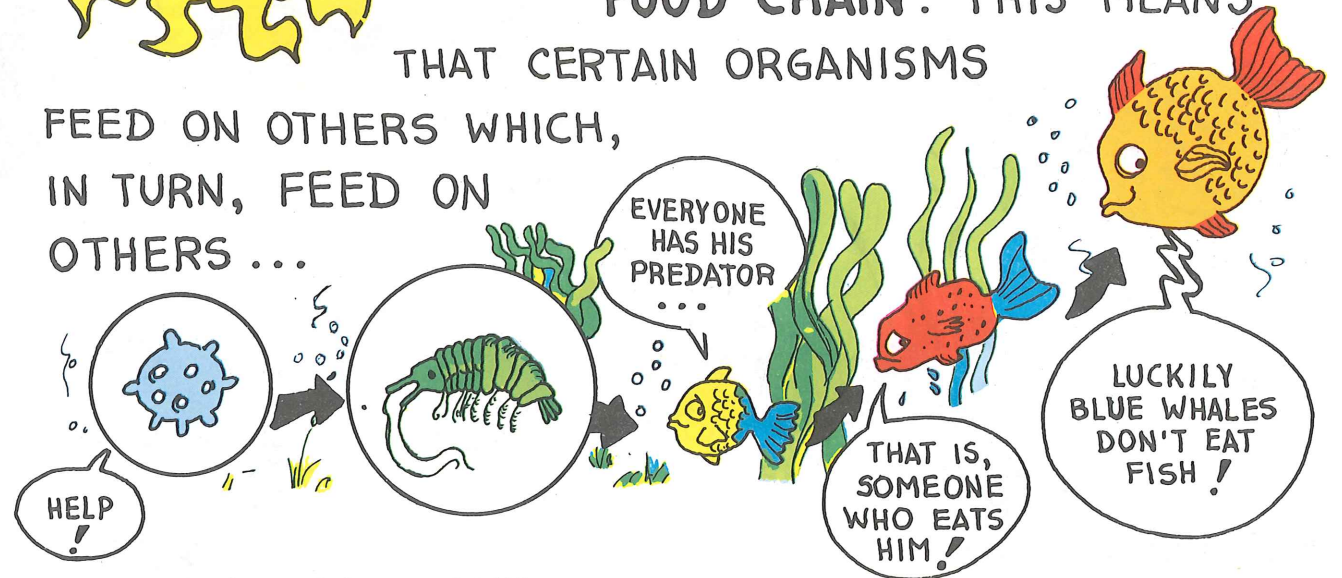


THE EARTH NEEDS TREES
TO RETAIN WATER. THE
TREES NEED SUN AND
CLEAN AIR TO ACCOMPLISH
PHOTOSYNTHESIS. THE SUN...



ANOTHER FORM OF
INTERDEPENDENCE WITHIN
AN ECOSYSTEM IS
SOMETHING CALLED THE
FOOD CHAIN: THIS MEANS
THAT CERTAIN ORGANISMS

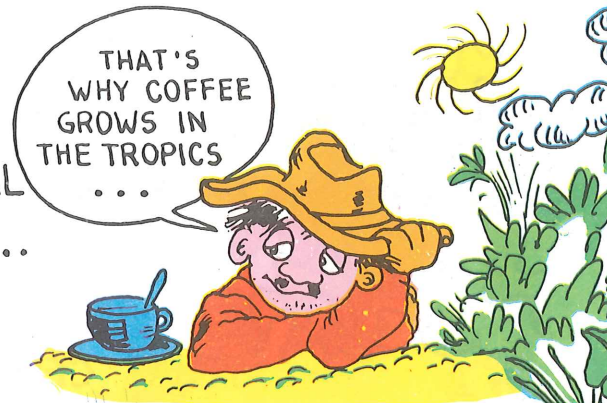
FEED ON OTHERS WHICH,
IN TURN, FEED ON
OTHERS ...



LIVING BEINGS HAVE
ADAPTED TO THEIR
ENVIRONMENT (AND
IN MANY CASES HAVE
DEVELOPED IN A
SPECIALIZED WAY)...



EVERY LIVING BEING HAS ITS OWN "ECOLOGICAL NICHE" WHICH IS THE SMALL PORTION OF THE NATURAL ENVIRONMENT IN WHICH IT CAN LIVE...



THAT'S WHY COFFEE GROWS IN THE TROPICS ...



IT COMES FROM THE GREEK "OIXO S"

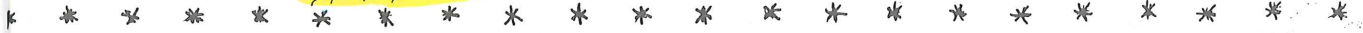
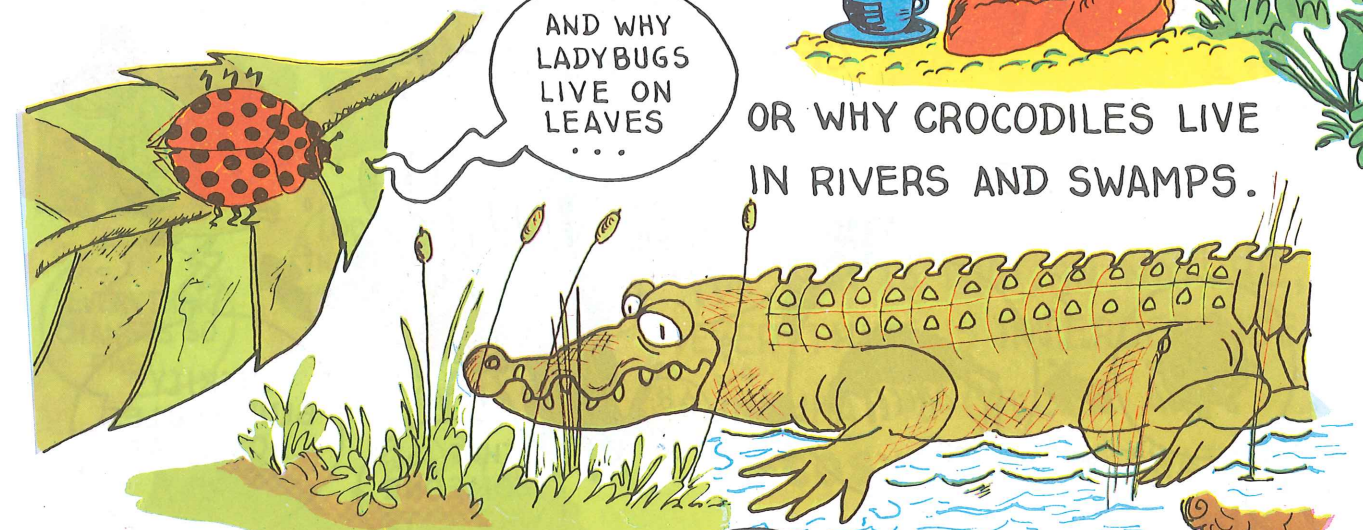
RIGHT! THAT MEANS HOME OR "HABITAT"

THE PLACE WHERE ONE LIVES...

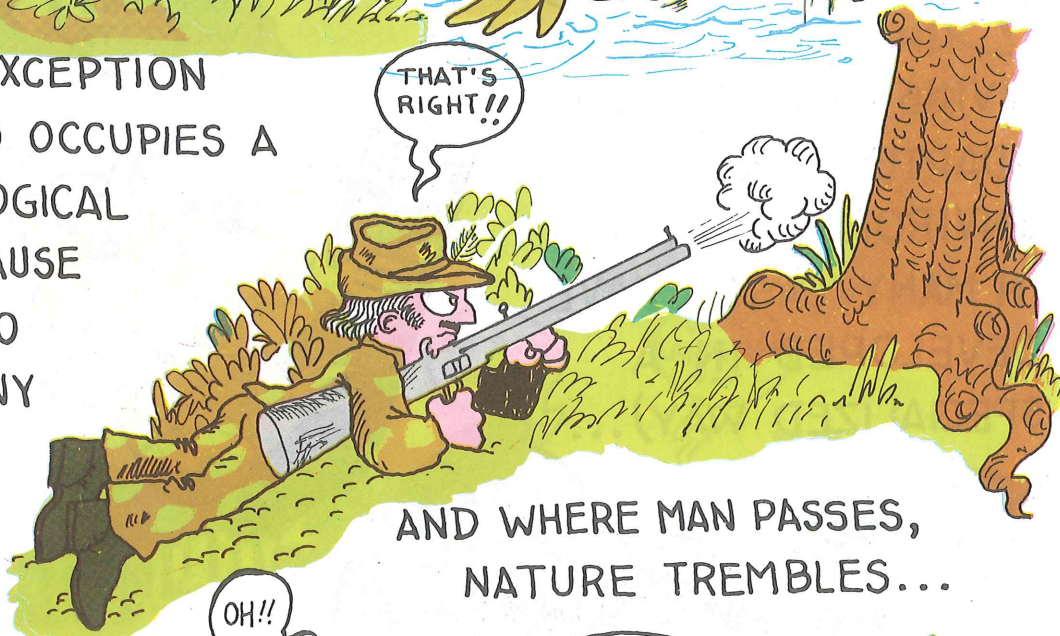
ECOLOGY IS THE SCIENCE THAT DEALS WITH ALL LIVING BEINGS, PLANTS AND ANIMALS, AND HOW THEY INTERRELATE WITH THEIR ENVIRONMENT AND WITH EACH OTHER...

AND WHY LADYBUGS LIVE ON LEAVES ...

OR WHY CROCODILES LIVE IN RIVERS AND SWAMPS.



A NOTABLE EXCEPTION IS MAN, WHO OCCUPIES A VAST "ECOLOGICAL NICHE" BECAUSE HE IS ABLE TO ADAPT TO ANY PART OF THE WORLD ...



THAT'S RIGHT!!

AND WHERE MAN PASSES, NATURE TREMBLES...

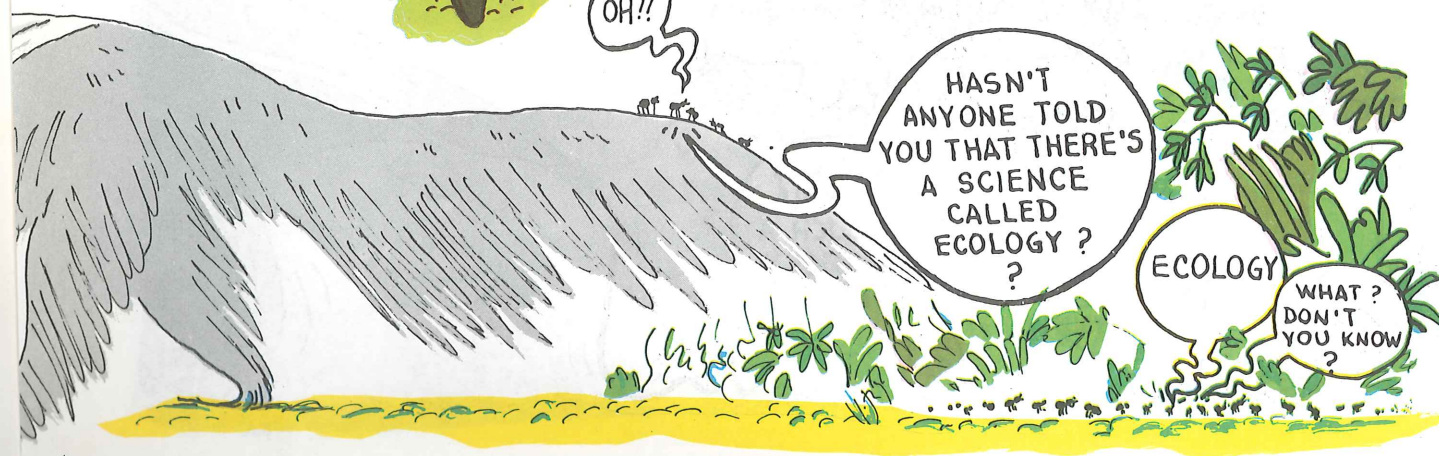


BY ALLAH! THAT MEANS THAT EVERYTHING HAS TO DO WITH EVERYTHING ...

YES!

THAT'S WHY WHEN MAN CHANGES THE ENVIRONMENT, HE THROWS THE WHOLE ECOLOGICAL SYSTEM OUT OF BALANCE ...

IN GENERAL, CHANGING OR MODIFYING THE ECOSYSTEM MEANS DESTROYING IT, SINCE PLANTS AND ANIMALS CANNOT SURVIVE THE SUDDEN CHANGES.



OH!!

HASN'T ANYONE TOLD YOU THAT THERE'S A SCIENCE CALLED ECOLOGY ?

ECOLOGY

WHAT? DON'T YOU KNOW?

THIS IS WHY PEREGRINE FALCONS AND OTHER EUROPEAN BIRDS OF PREY ARE ALMOST EXTINCT, BECAUSE INSECTICIDES IMPEDE THE METABOLISM OF CALCIUM WHICH IN TURN MEANS THAT THEIR EGG-SHELLS ARE NOT THICK OR HARD ENOUGH...

© # \$ NOW ALL RATS STINK OF D.D.T.

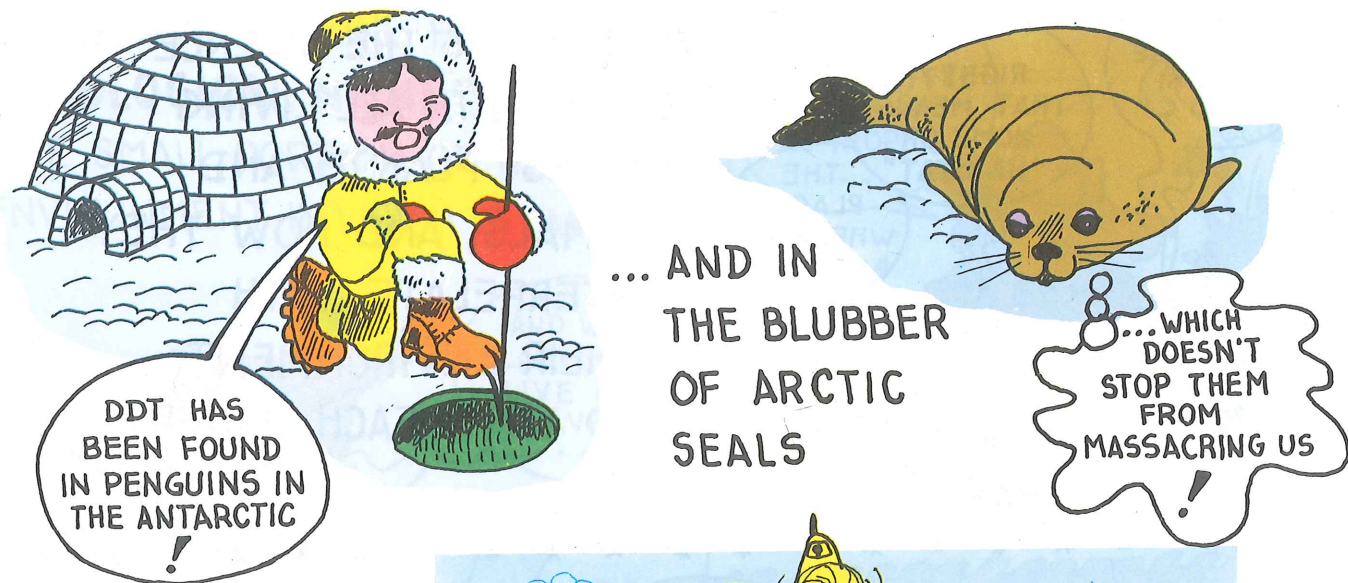


INSECTICIDES PASS FROM PLANTS TO ANIMALS ...

AND DON'T FORGET ...



... THAT IN DRY PERIODS D.D.T. CAN BE CARRIED OVER GREAT DISTANCES BY THE WIND...

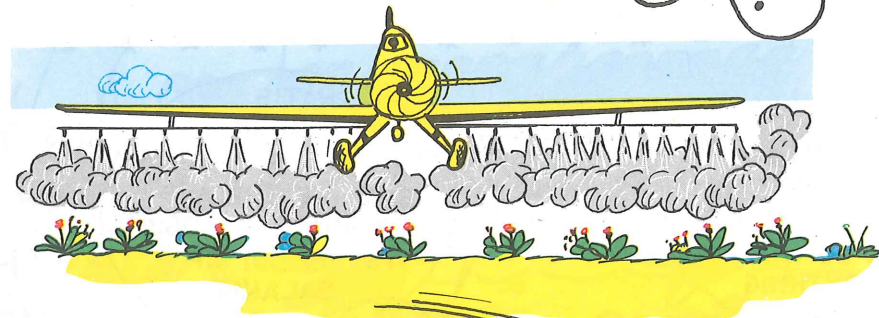


... AND IN THE BLUBBER OF ARCTIC SEALS

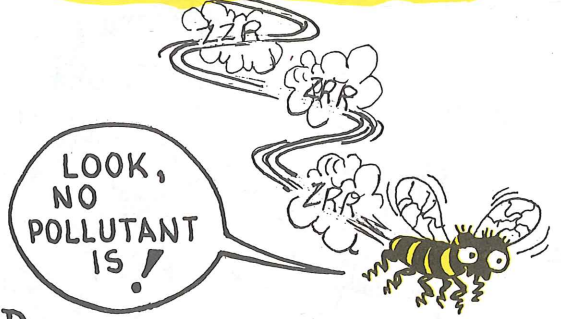
... WHICH DOESN'T STOP THEM FROM MASSACRING US!

DDT HAS BEEN FOUND IN PENGUINS IN THE ANTARCTIC!

THE WORST IS THAT INSECTS BECOME RESISTANT TO CHEMICALS.

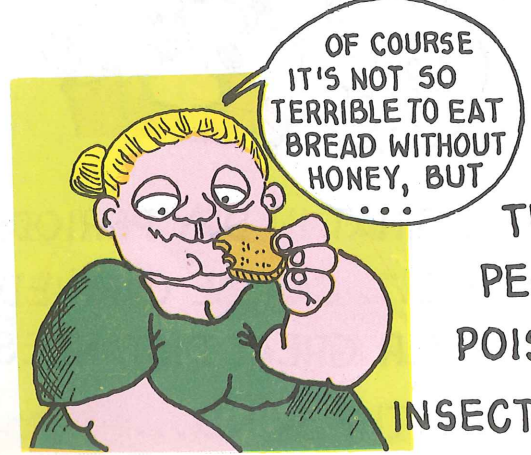


WHAT'S MORE, INSECTICIDES ARE NOT SPECIFIC ...



... AND THEY ALSO AFFECT GOOD OR USEFUL INSECTS, SUCH AS BEES AND BUTTERFLIES, AND PLANTS, TOO. THE PRODUCTION OF HONEY AND FRUIT IN CALIFORNIA DECREASED BECAUSE INSECTICIDES

KILLED MANY BEES ...

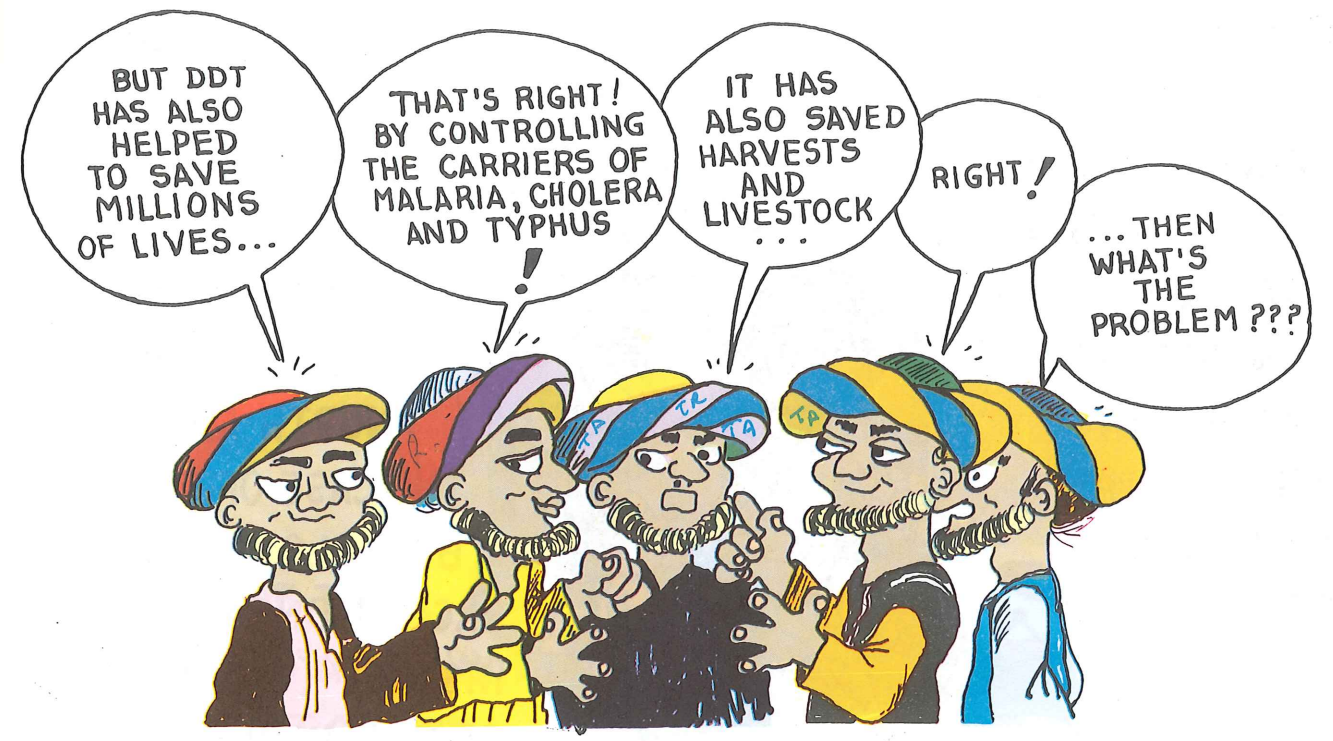


... IN IRAN, THOUSANDS OF PEOPLE DIED OF POISONING FROM INSECTICIDE TREATED WHEAT...



INSECTICIDES ACCUMULATE IN PLANTS, ANIMALS AND PEOPLE ...

CAUSING ALL SORTS OF ILLS, AND, ULTIMATELY, DEATH!



BUT DDT HAS ALSO HELPED TO SAVE MILLIONS OF LIVES...

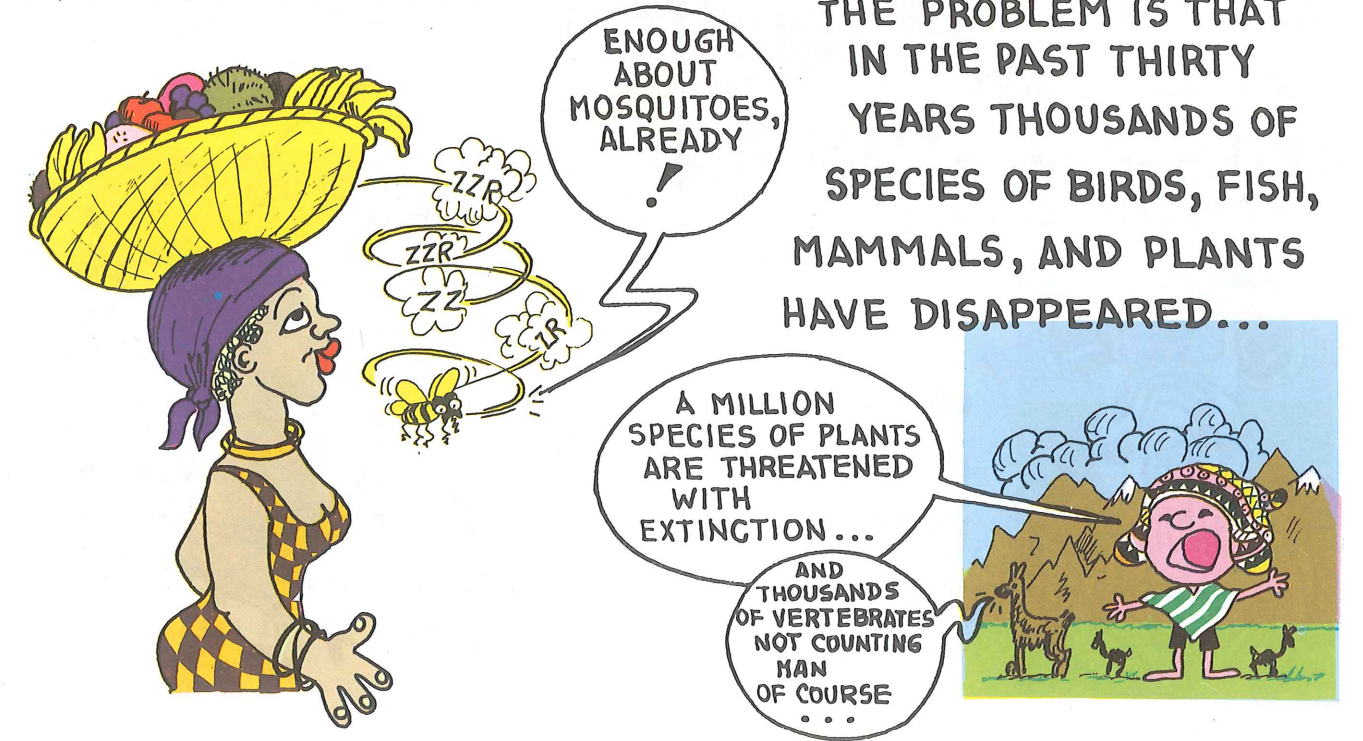
THAT'S RIGHT! BY CONTROLLING THE CARRIERS OF MALARIA, CHOLERA AND TYPHUS

IT HAS ALSO SAVED HARVESTS AND LIVESTOCK ...

RIGHT!

... THEN WHAT'S THE PROBLEM ???

OK, THERE'S NO PROBLEM WHEN INSECTICIDES ARE USED RATIONALLY, BUT RATIONAL USE IMPLIES ECOLOGICAL CONSCIOUSNESS, STUDIES OF TOXIC EFFECTS IN ORDER TO USE MINIMAL AMOUNTS, REDUCING THE USE OF CROPDUSTING PLANES IN THE BATTLE AGAINST TSE-TSE FLIES, LOCUSTS, MOSQUITOES, ETC.



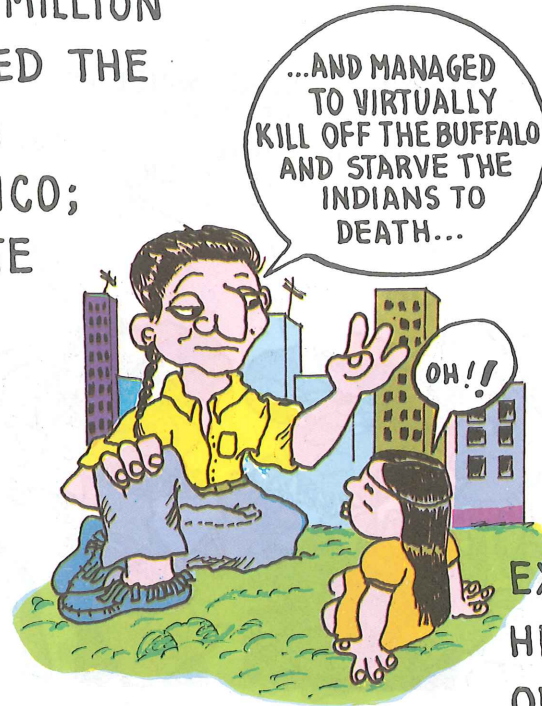
THE PROBLEM IS THAT IN THE PAST THIRTY YEARS THOUSANDS OF SPECIES OF BIRDS, FISH, MAMMALS, AND PLANTS HAVE DISAPPEARED...

A MILLION SPECIES OF PLANTS ARE THREATENED WITH EXTINCTION ...

AND THOUSANDS OF VERTEBRATES NOT COUNTING MAN OF COURSE ...



LONG AGO, FIFTY MILLION BUFFALO ROAMED THE PRAIRIES FROM CANADA TO MEXICO; BUT THEN, WHITE MEN ARRIVED AND BEGAN HUNTING THEM ON A GRAND SCALE...



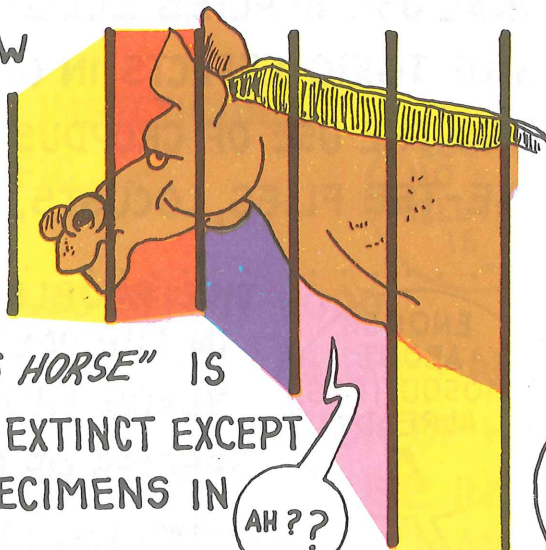
...AND MANAGED TO VIRTUALLY KILL OFF THE BUFFALO AND STARVE THE INDIANS TO DEATH...

OH!!

...THE INDIANS FOUGHT BACK. BUT WITHOUT THE BUFFALO, INDIAN CULTURE FADED AWAY IN NORTH AMERICA. THE CASE OF THE BUFFALO IS NO EXCEPTION IN RECENT HISTORY (NOR IS THAT OF THE INDIANS).

* * * * *

DID YOU KNOW THAT: THE MONGOLIAN WILD HORSE, OR "PRZEWALSKI'S HORSE" IS PRACTICALLY EXTINCT EXCEPT FOR A FEW SPECIMENS IN ZOOS?!



AH??



OR THAT THE LAST QUAGGAS WERE HUNTED IN SOUTH AFRICA IN 1861?

... OR THAT THE PHILIPPINE MONKEY-EATING EAGLE POPULATION IS DOWN TO ABOUT 100 BIRDS?

AND THE LESS THERE ARE OF US, THE MORE THE ZOOS WANT US!



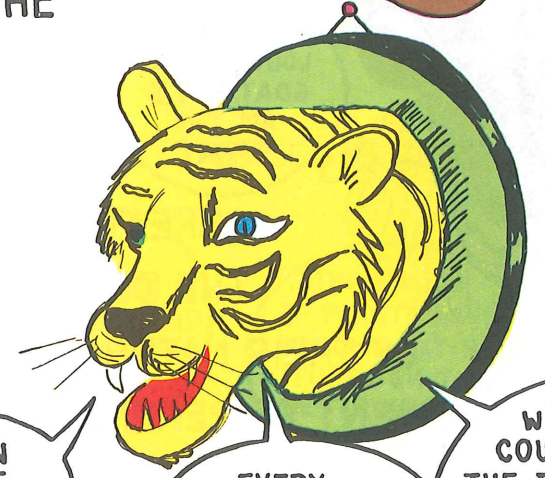
THE LION, LIKE MOST BIG CATS, DOES NOT HAVE MANY NATURAL ENEMIES. ITS WORST ENEMY IS MAN...



HE SHOULD BE ASHAMED OF HIMSELF ...

AFTER ALL, I AM THE KING OF BEASTS !

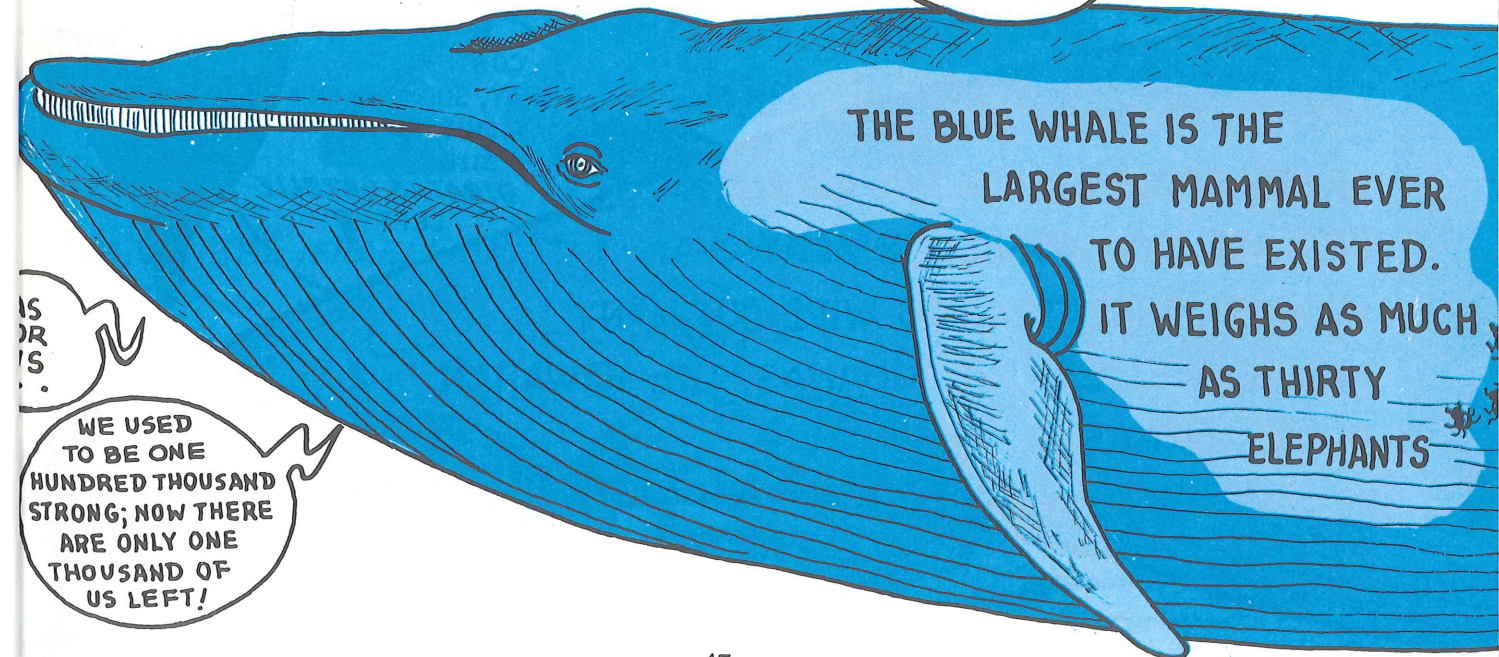
AS FOR THE TIGER, IT IS ON THE EDGE OF TOTAL EXTINCTION AS A RESULT OF THE DESTRUCTION OF ITS NATURAL HABITAT AND HUNTING. THERE ARE 45,000 TIGER-HEAD TROPHIES ON THE WALLS OF INDIAN PALACES...!



ON THE AVERAGE

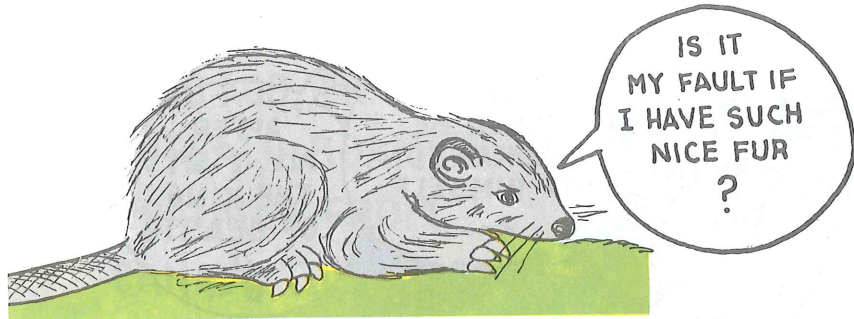
EVERY MAHARAJA KILLED 1000 TIGERS IN HIS LIFE ...

WITHOUT COUNTING THE DEER, GAZELLES AND LEOPARDS ...



THE BLUE WHALE IS THE LARGEST MAMMAL EVER TO HAVE EXISTED. IT WEIGHS AS MUCH AS THIRTY ELEPHANTS

WE USED TO BE ONE HUNDRED THOUSAND STRONG; NOW THERE ARE ONLY ONE THOUSAND OF US LEFT!



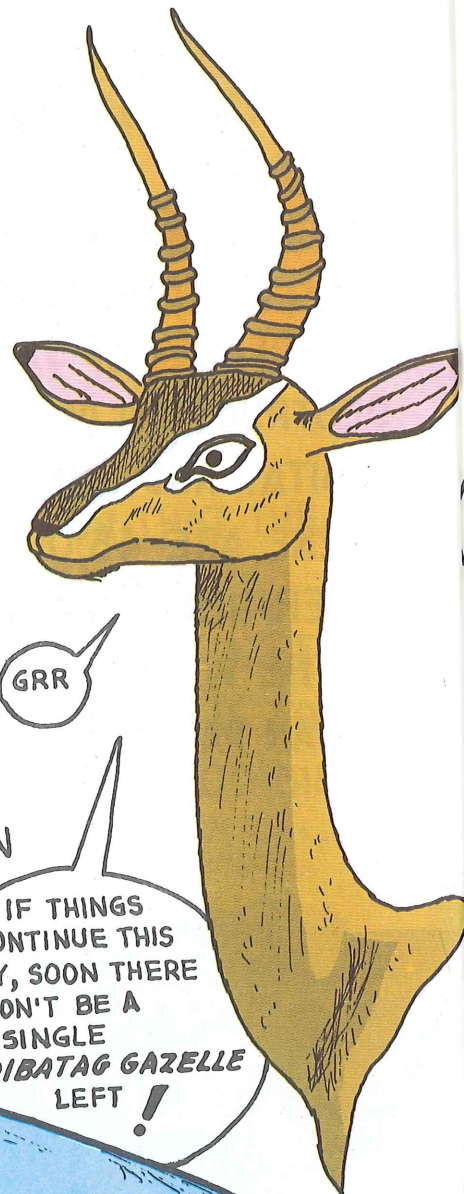
↑
THE AUSTRALIAN BANDICOOT TO THE RARE NILGIRI TAR (OF INDIA)



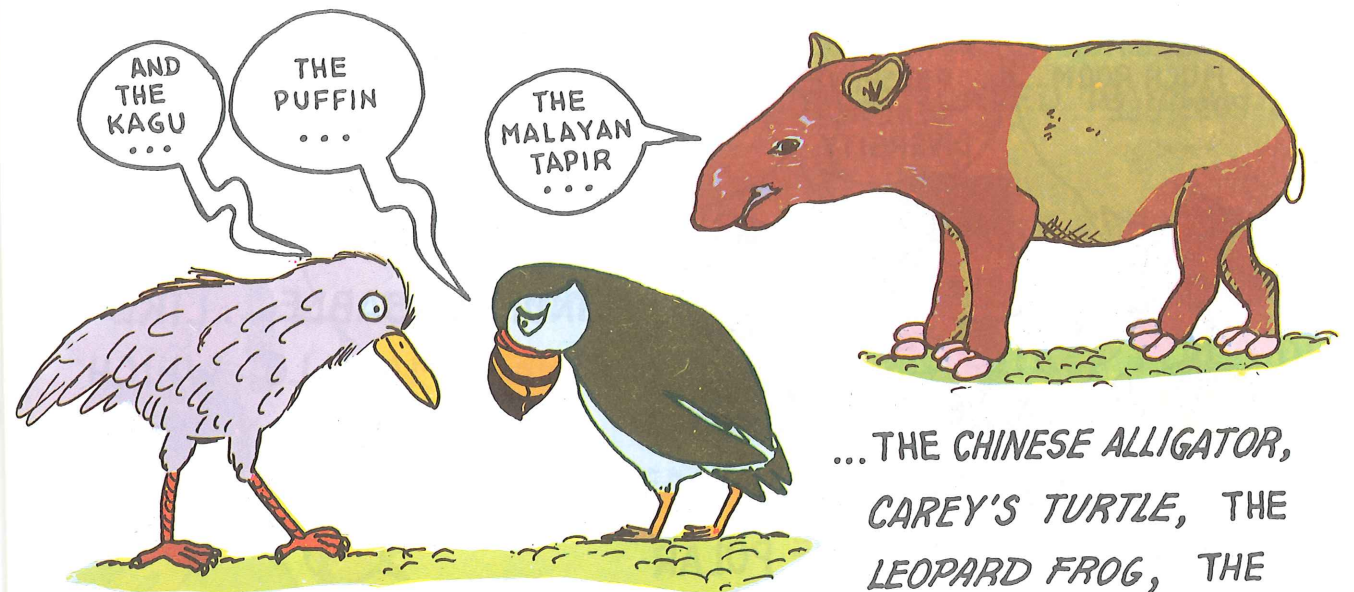
COUNTLESS ANIMALS ARE THREATENED BY THE DESTRUCTION OF THEIR NATURAL HABITAT: BY REPLACEMENT OF PERENNIAL FORESTS BY FARMS AND PLANTATIONS, THE RECLAIMING OF DESERTS AND THE DESTRUCTION OF ALREADY-SCARCE VEGETATION BY HERDS OF DOMESTIC GOATS.

... THE INTRODUCTION OF NEW SPECIES (CATS, DOGS, PIGS, RATS AND MONGOOSES) ON MANY ISLANDS, THREATENS TO WIPE OUT MANY NATIVE SPECIES, LIKE IGUANAS, THE HAWAIIAN DUCK, TORTOISES ...

... THE LIST OF ANIMALS THREATENED WITH EXTINCTION FROM OVER-HUNTING IS AS LONG AS IT IS VARIED: FROM MARSUPIALS SUCH AS



INSECTS!



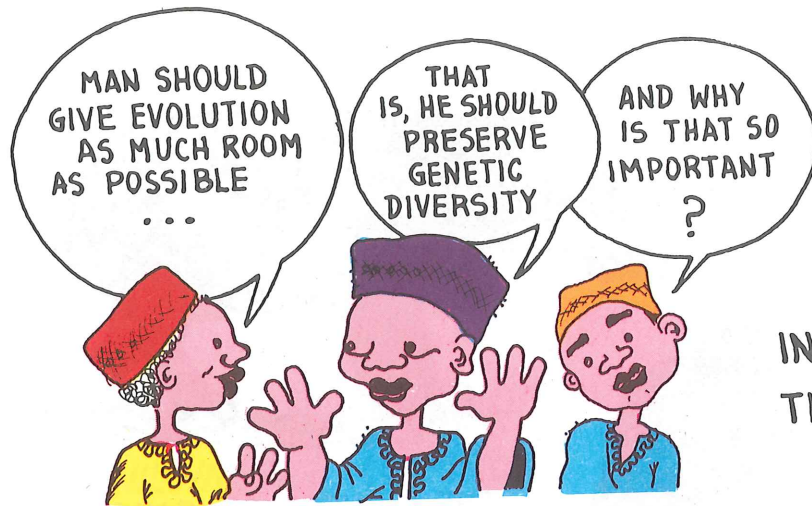
... THE CHINESE ALLIGATOR, CAREY'S TURTLE, THE LEOPARD FROG, THE JAPANESE CRESTED IBIS, THE PRAIRIE HEN, THE POLAR BEAR, THE ARABIAN ONYX, THE BARBARY MONKEY, ETC.

THE LIST IS VERY LONG!!



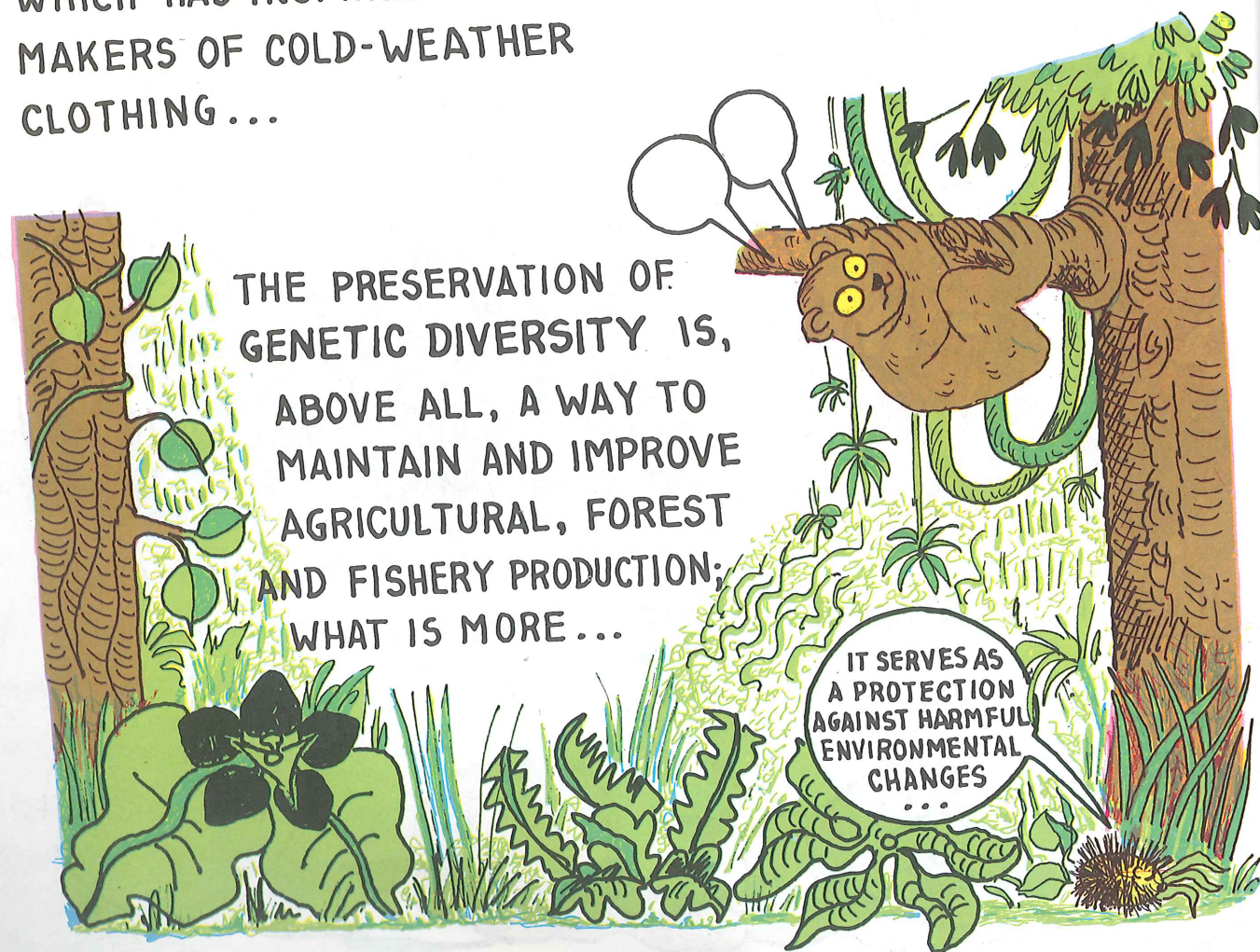
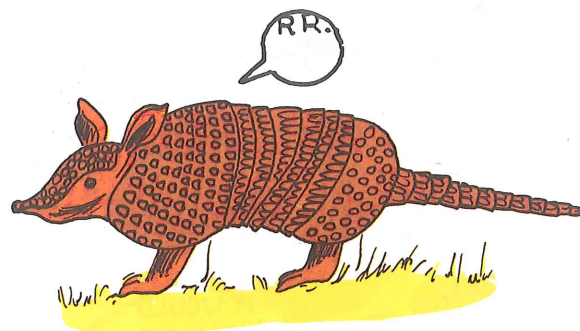
... AND MANY OTHERS ARE ENDANGERED SUCH US: THE ISRAELI IRIS, THE MARSH ROSE, ETC. ETC.



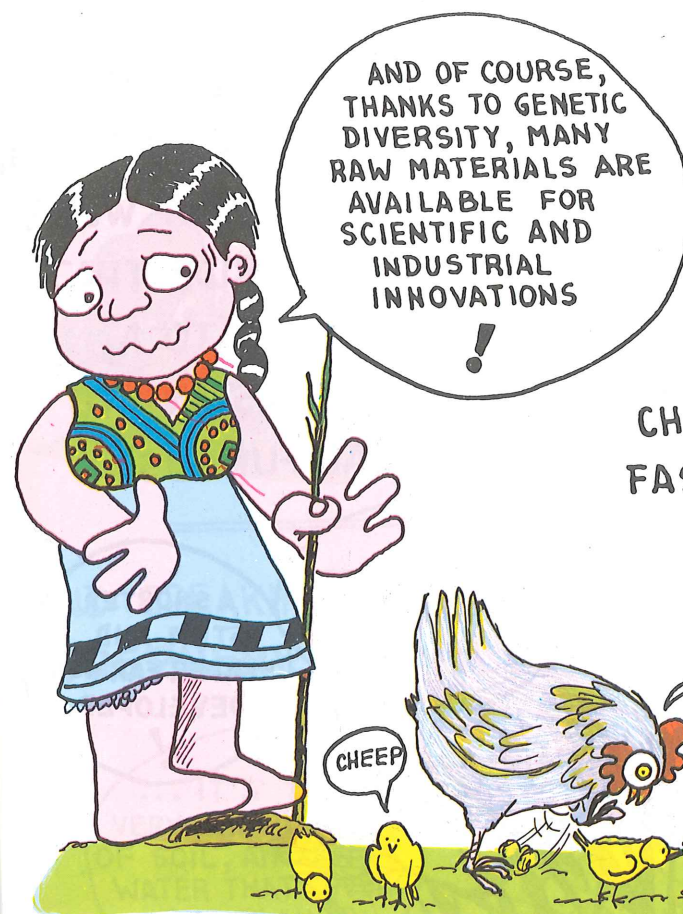


WELL, BECAUSE ANIMALS AND PLANTS THAT MIGHT SEEM "USELESS" MAY TURN OUT TO BE INDISPENSABLE... LIKE THE ARMADILLO, WHICH IS THE ONLY

ANIMAL BESIDES MAN THAT CAN CONTRACT LEPROSY. OR THE POLAR BEAR, WHOSE FUR HAS EXCELLENT PROPERTIES OF HEAT-EXTENSION WHICH HAS INSPIRED MAKERS OF COLD-WEATHER CLOTHING...



THE PRESERVATION OF GENETIC DIVERSITY IS, ABOVE ALL, A WAY TO MAINTAIN AND IMPROVE AGRICULTURAL, FOREST AND FISHERY PRODUCTION; WHAT IS MORE...



SUCH IS THE CASE OF MANY DOMESTICATED ANIMALS:
 ☆ FOR EXAMPLE THE CORNISH GAME HEN, WHICH IS CROSSED WITH MANY OTHER TYPES OF CHICKENS TO OBTAIN FAST-GROWING HYBRIDS...

THAT IS RESISTANT TO HEAT, THUS ALLOWING FOR PRODUCTION OF HIGH-QUALITY WOOL IN SUBTROPICAL CLIMATES...

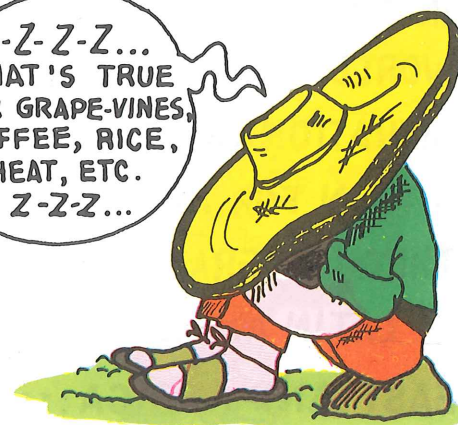
WHICH IS THE BASIS OF THE FRIED CHICKEN INDUSTRY!

☆ OR WENSLEYDALE SHEEP, WHICH ARE USED TO OBTAIN A BREED



PRIMITIVE SPECIES OF DOMESTIC PLANTS AS WELL AS WILD VARIETIES ARE SOMETIMES THE ONLY SOURCE OF RESISTANCE TO THE BLIGHTS AND DISEASES THAT ATTACK CROPS' ADAPTABILITY TO POOR CONDITIONS...

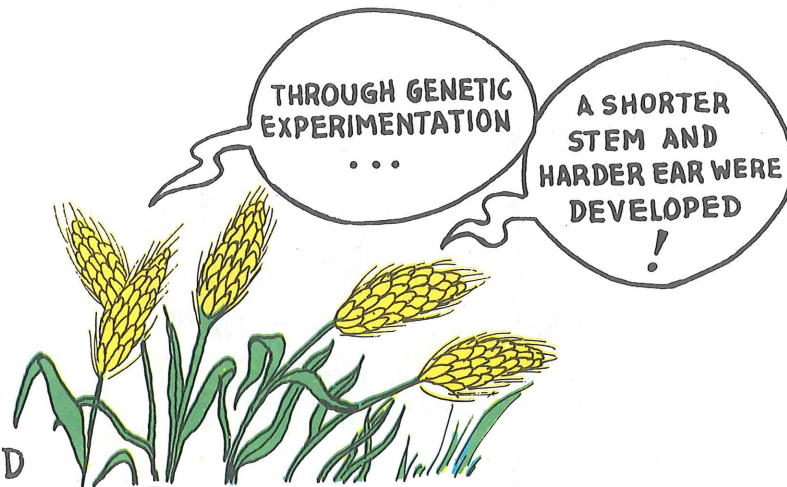
-Z-Z-Z... THAT'S TRUE FOR GRAPE-VINES, COFFEE, RICE, WHEAT, ETC. Z-Z-Z...



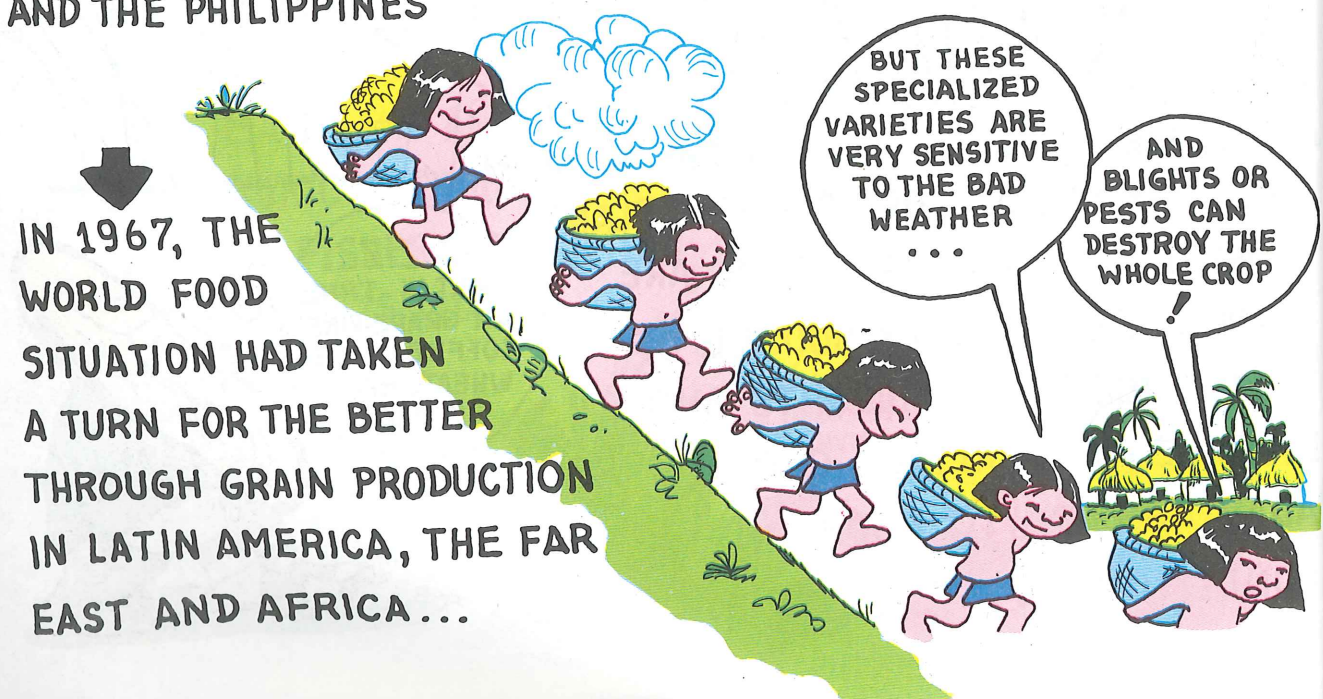


OF COURSE THERE ARE!!

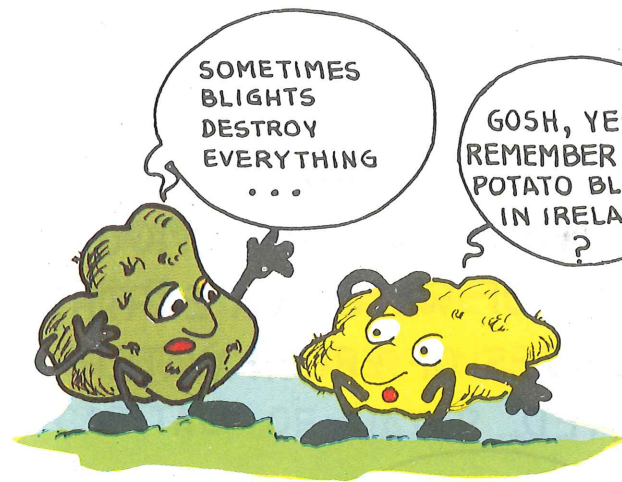
FOR EXAMPLE, DURING THE "GREEN REVOLUTION" CROSSES OF AMERICAN, KENYAN AND MEXICAN WHEAT WERE SOUGHT TO CREATE HYBRIDS THAT WOULD BE BETTER ADAPTED TO A GIVEN CLIMATE, AND MORE RESISTANT TO RED BLIGHT (A PARASITICAL FUNGUS).



IN 1963, THE BATTLE AGAINST RED BLIGHT WAS WON AND A NEW BREED OF SHORT-STEMMED WHEAT, CALLED SONORA, COVERED THE FIELDS OF MEXICO. LATER, "MIRACLE HYBRIDS" OF SORGHUM, RICE AND CORN WERE DEVELOPED AND GROWN IN INDIA, PAKISTAN, SRI LANKA AND THE PHILIPPINES

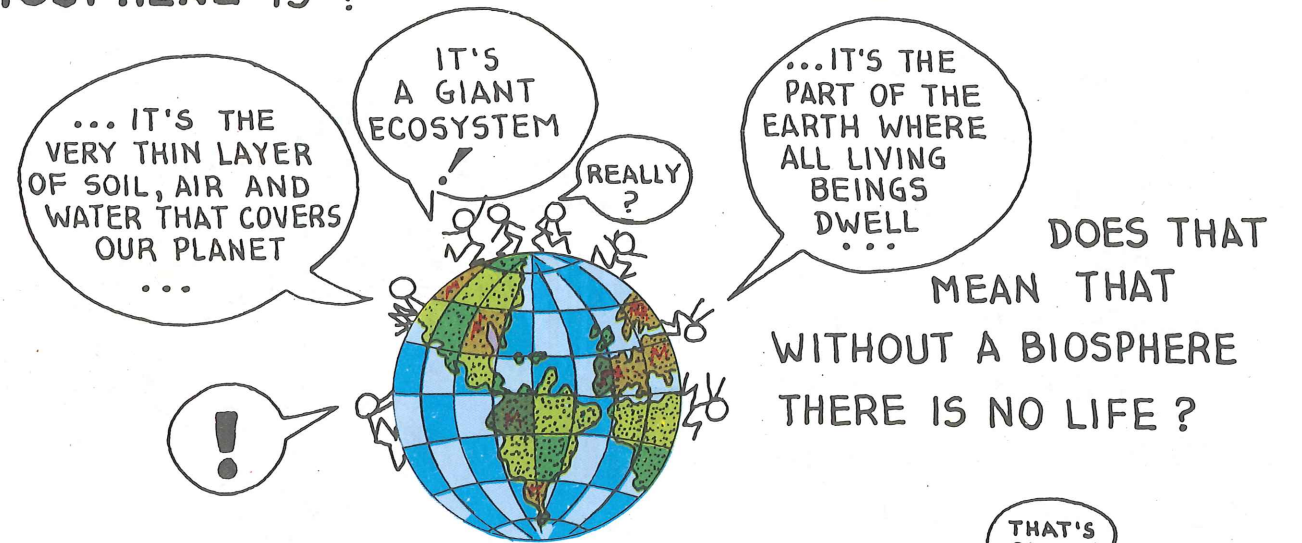


IN 1967, THE WORLD FOOD SITUATION HAD TAKEN A TURN FOR THE BETTER THROUGH GRAIN PRODUCTION IN LATIN AMERICA, THE FAR EAST AND AFRICA...

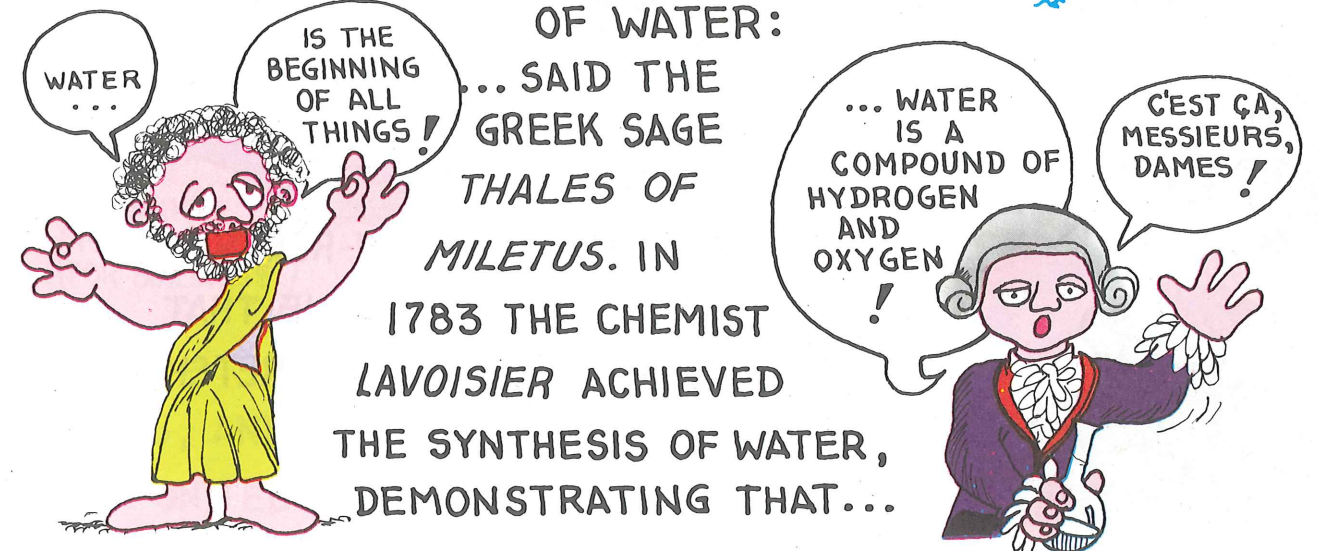


FOR ALL OF THESE REASONS, IT'S VERY IMPORTANT TO MAINTAIN GENETIC DIVERSITY, THAT IS TO SAY, THE WIDEST POSSIBLE VARIETY OF BREEDS. HUMANS NEED THEM FOR THEIR OWN SURVIVAL!

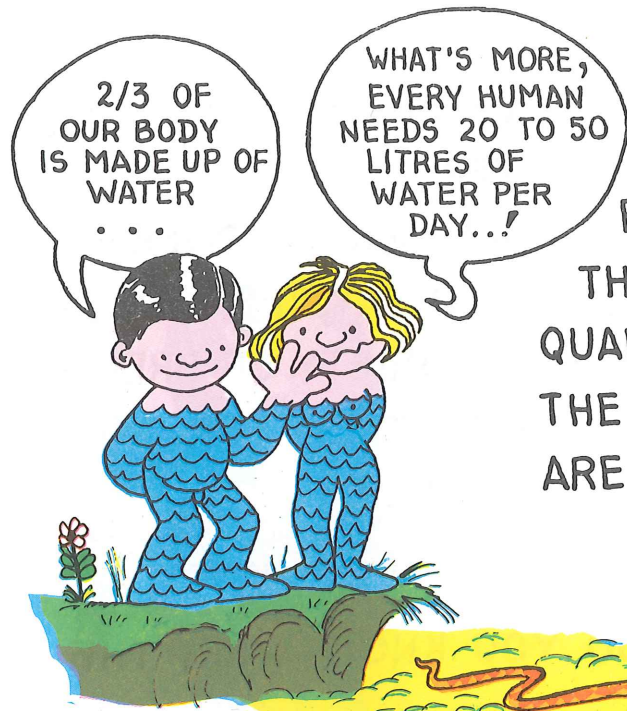
AND SPEAKING OF SURVIVAL ... DO YOU KNOW WHAT THE BIOSPHERE IS ?



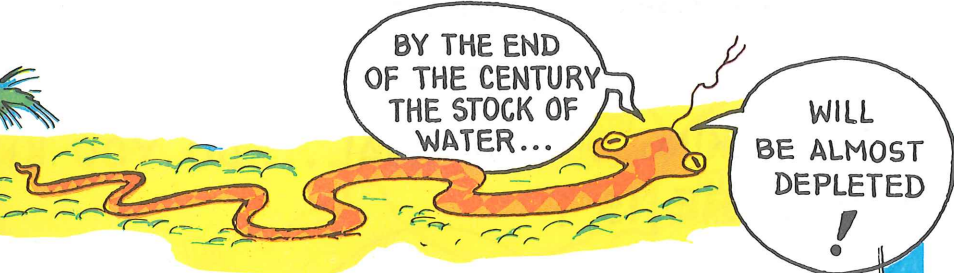
FOR EXAMPLE, LET'S LOOK AT THE CASE OF WATER:



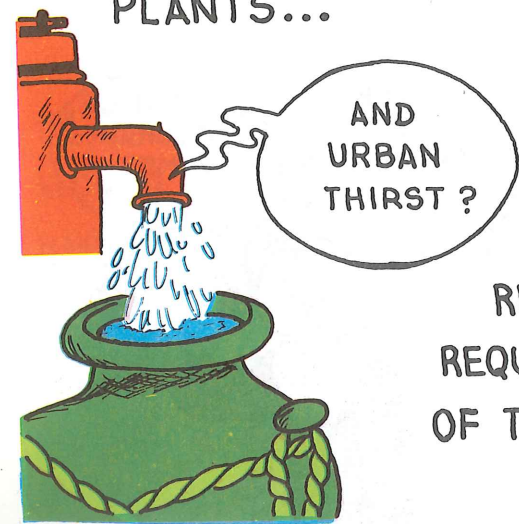
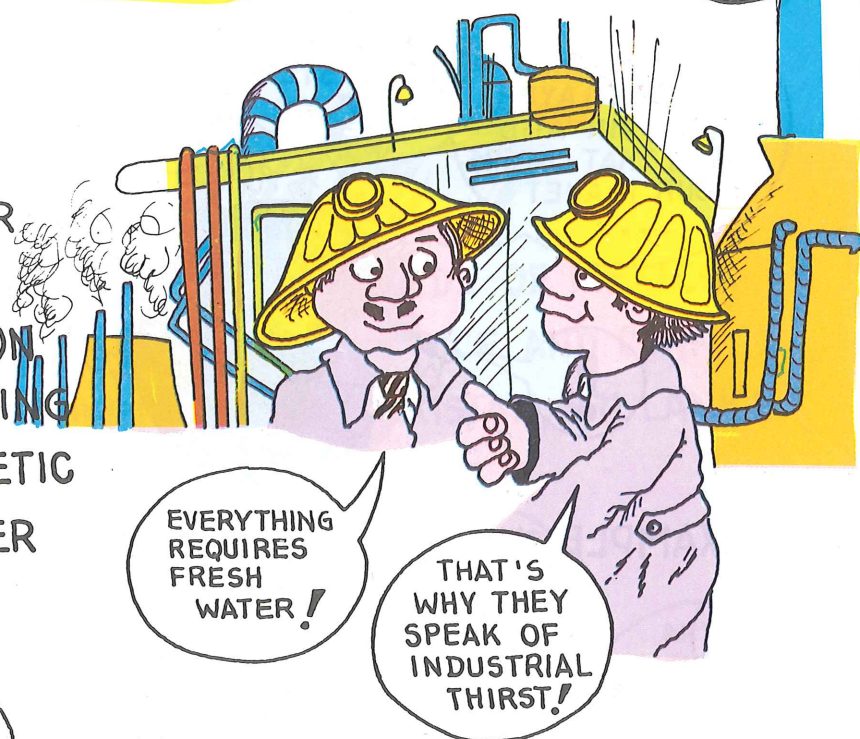
... SAID THE GREEK SAGE THALES OF MILETUS. IN 1783 THE CHEMIST LAVOISIER ACHIEVED THE SYNTHESIS OF WATER, DEMONSTRATING THAT...



YES. WATER FOR DRINKING, COOKING AND WASHING... THE PROBLEM IS THAT HUMANS REQUIRE FRESH WATER AND THOUGH THERE ARE ENORMOUS QUANTITIES OF WATER ON EARTH, THE RESERVES OF FRESH WATER ARE LIMITED.



WITH INCREASES IN POPULATION AND INDUSTRY, EACH DAY THE DEMAND FOR WATER INCREASES. VIRTUALLY NO SECTOR CAN FUNCTION WITHOUT WATER: DRILLING FOR OIL, MAKING SYNTHETIC FIBERS, THERMAL POWER PLANTS...

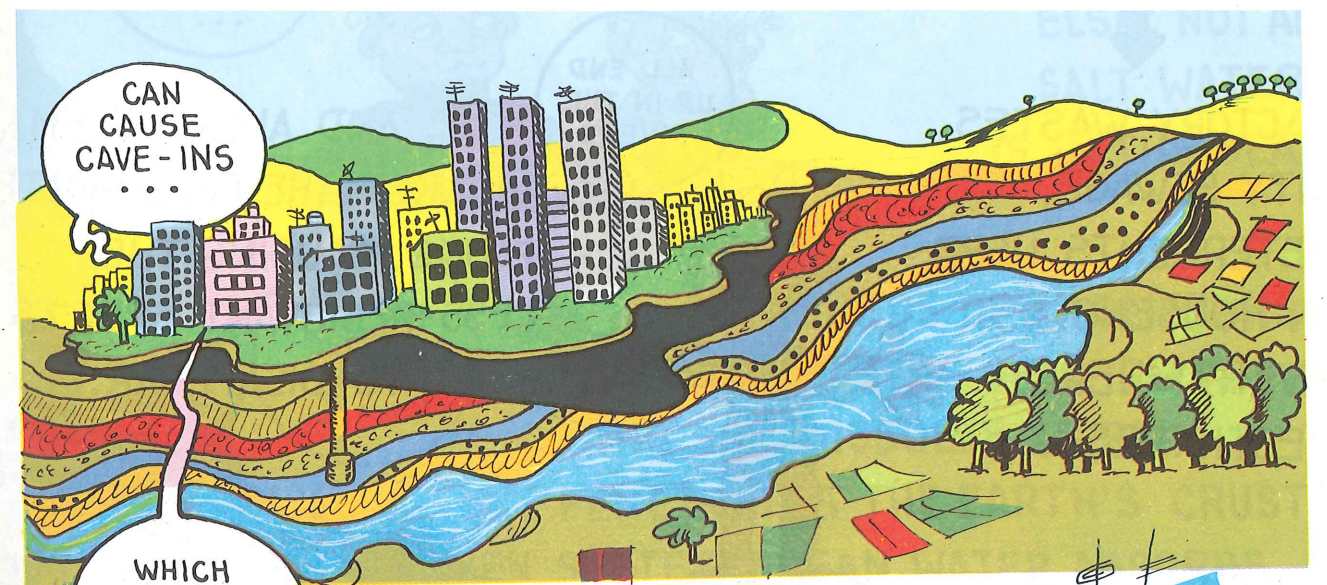


...YOU COULD SAY... THAT WATER IS A NON-RENEWABLE RESOURCE, OR AT LEAST, ONE THAT REQUIRES EXTREMELY LONG STRETCHES OF TIME TO RENEW ITSELF...

IN ANY CASE, STUDIES SHOULD BE MADE OF EVERY SITUATION TO FIND OUT IF THE STOCK OF WATER IS REPLENISHING ITSELF OR IF WE ARE SIMPLY DRINKING UP OUR ENTIRE "CAPITAL" OF WATER...

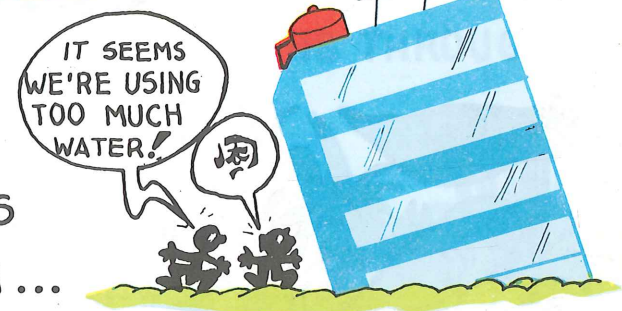


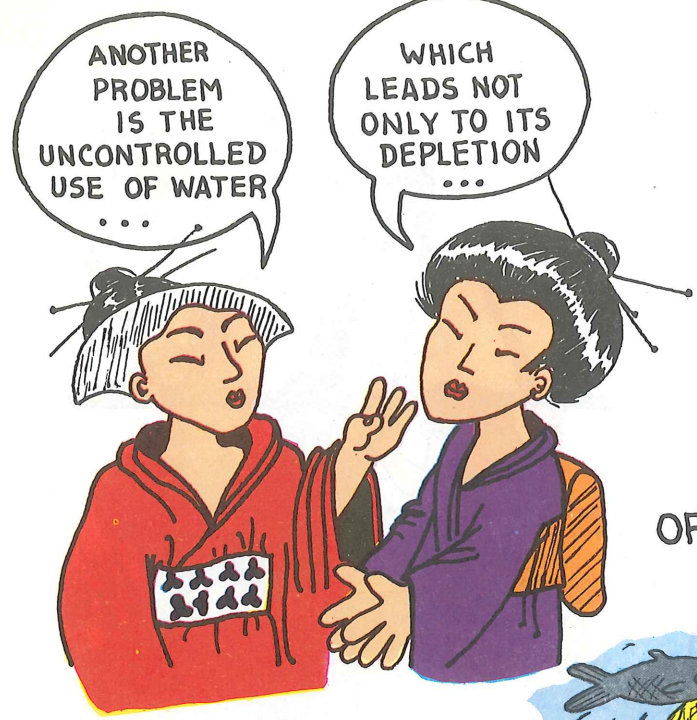
MANY CITIES AROUND THE WORLD DRAW ON SUBTERRANEAN RESERVES OF WATER AND IN MANY CASES, THE VACUUM LEFT BY EXCESSIVE WITHDRAWAL OF WATER...



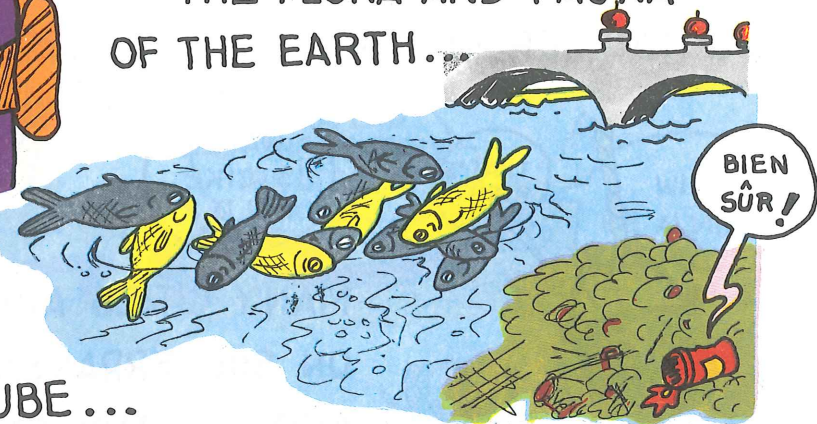
WHICH IS DANGEROUS FOR BUILDINGS!

...THIS HAS HAPPENED IN STOCKHOLM, IN PARIS, AND MANY, MANY CITIES IN THE UNITED STATES AND JAPAN...





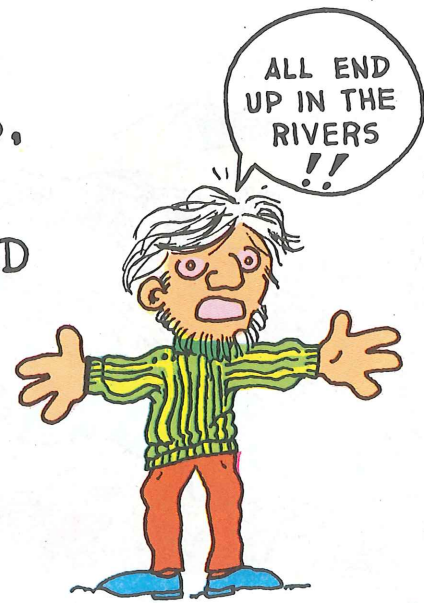
... BUT ALSO TO DETERIORATION OF QUALITY, WHICH IN TURN ALTERS THE ECOLOGICAL BALANCE OF THE BIOSPHERE. AND ALL TO THE DETRIMENT OF THE FLORA AND FAUNA OF THE EARTH.



DEAD FISH IN THE SEINE, THE TIBER, THE RHINE, THE THAMES, THE DANUBE ... ARE A CONSEQUENCE OF EXCESSIVE DUMPING OF HUMAN AND INDUSTRIAL WASTES.



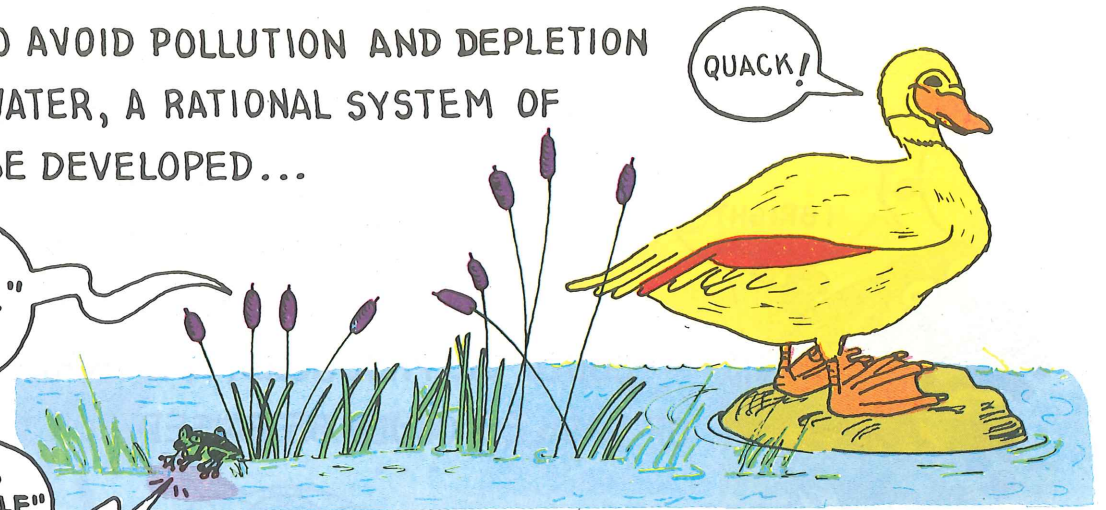
FACTORY WASTES, CITY SEWAGE, DETERGENTS USED IN HOUSEHOLDS EVERYWHERE, PESTICIDES ...



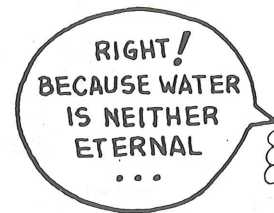
... AND ALL OF THEM WEAKEN THE FRESH-WATER FAUNA, CAUSING THE LESS-RESISTANT SPECIES TO DISAPPEAR:



IN ORDER TO AVOID POLLUTION AND DEPLETION OF FRESH WATER, A RATIONAL SYSTEM OF USE MUST BE DEVELOPED...



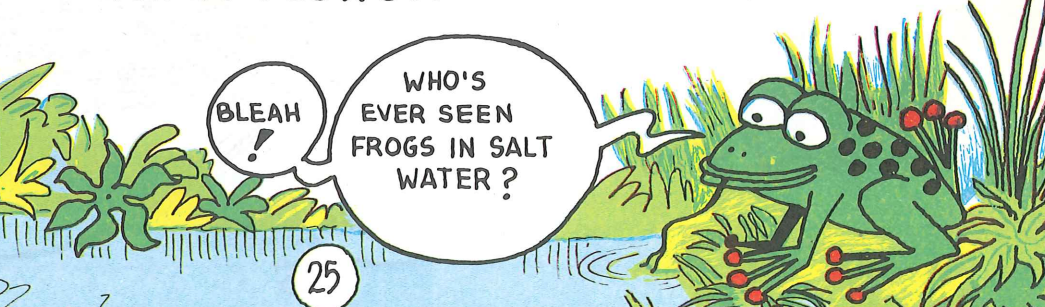
IN EVERY COUNTRY, ECONOMIC PLANNERS, TOGETHER WITH HYDROLOGISTS, CAN DETERMINE THE VOLUME OF WATER THAT IS AVAILABLE TO THEM FOR MEDIUM TO LONG-TERM USE...

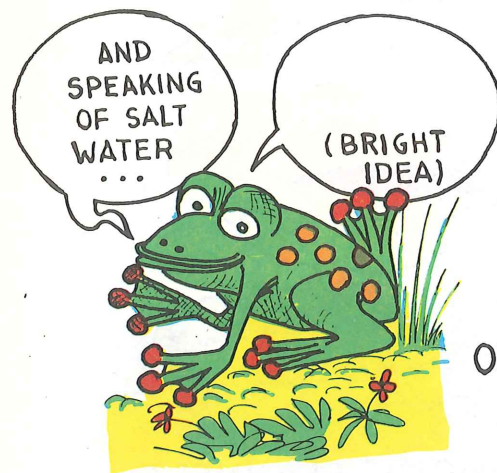


AND SOMETHING ELSE: NOT ALL SALT WATER IS IN THE SEA.



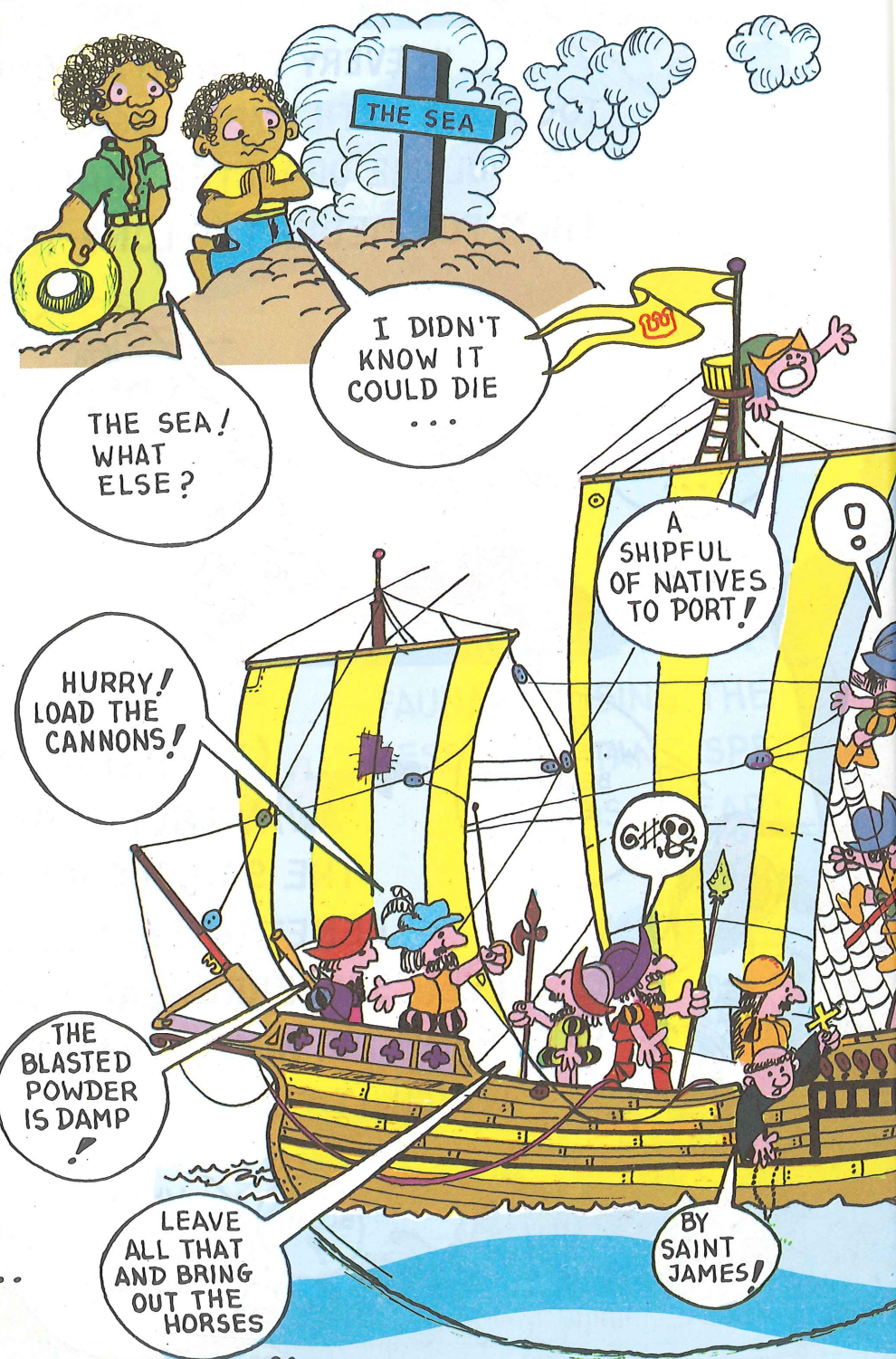
... (HUNDREDS OF KILOMETERS AWAY FROM THE SEA). SALTS IN THE SOIL DISSOLVE AS RAIN PENETRATES THE EARTH'S CRUST. EVEN SUBTERRANEAN WATER ABSORBS SALT FROM THE ROCK FORMATIONS THROUGH WHICH IT FLOWS...





... PERHAPS SOME DAY THE SEA COULD BE USED AS A FOOD-SOURCE. MARINE FARMS COULD BE ESTABLISHED WHERE SEAWEED, VEGETABLES AND TURTLE-EGGS COULD BE PRODUCED, AND WHERE HERDS OF WHALES COULD BE RAISED FOR MILK...

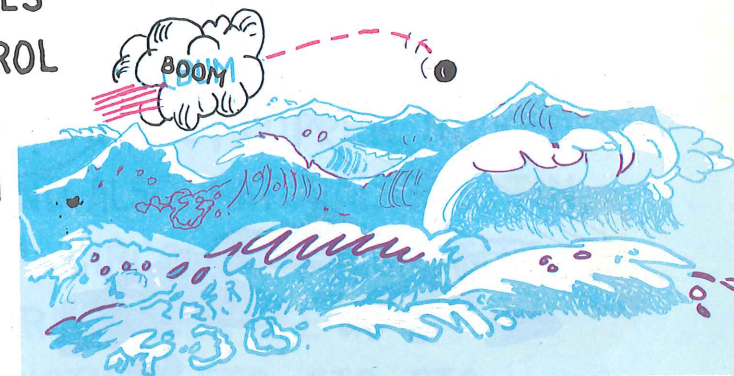
THIS IS NO UTOPIA! IT IS QUITE POSSIBLE TO ACCOMPLISH IF, OF COURSE, WE DON'T FIRST KILL...



FOR CENTURIES THE SEAS BELONGED TO NO ONE. UNTIL THE POWERFUL MARITIME NATIONS BEGAN BUILDING UP FLEETS IN ORDER TO DISCOVER NEW WORLDS AND NEW SEAS...



IN TIMES, COUNTRIES EXERCISED CONTROL OVER SEAS UP TO 3 MILES FROM THEIR COASTLINES ...



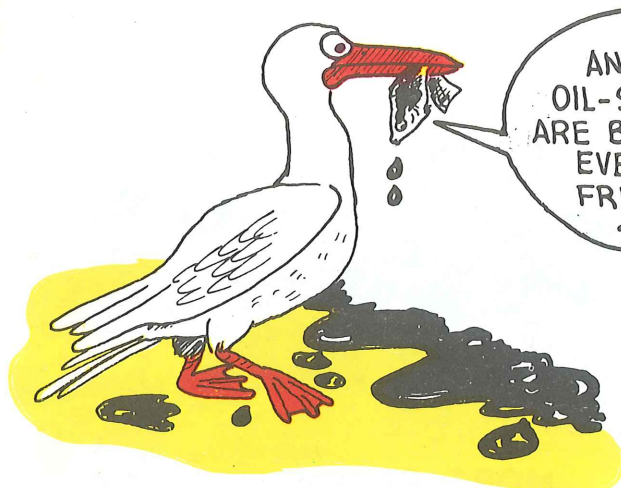
MORE RECENTLY, THE SEA HAS BEEN A RECEPTACLE FOR EVERY KIND OF HUMAN REFUSE; IN THE SEAS OF

TODAY THERE ARE SYNTHETIC CHEMICAL PRODUCTS THAT CONTAIN PARTICLES OF CHLORINE AND SOMETIMES FLUOR (THEY ARE CALLED "HALOGENATED HYDROCARBURATES")...



OIL-SPILLS AND RESIDUAL OIL FROM SHIPS CAUSE "BLACK TIDES" ON THE COASTS WHICH AFFECT NOT ONLY SEABIRDS, BUT ALSO THE FLORA AND FAUNA OF THE LITTORAL, PLANKTON AND FISH...

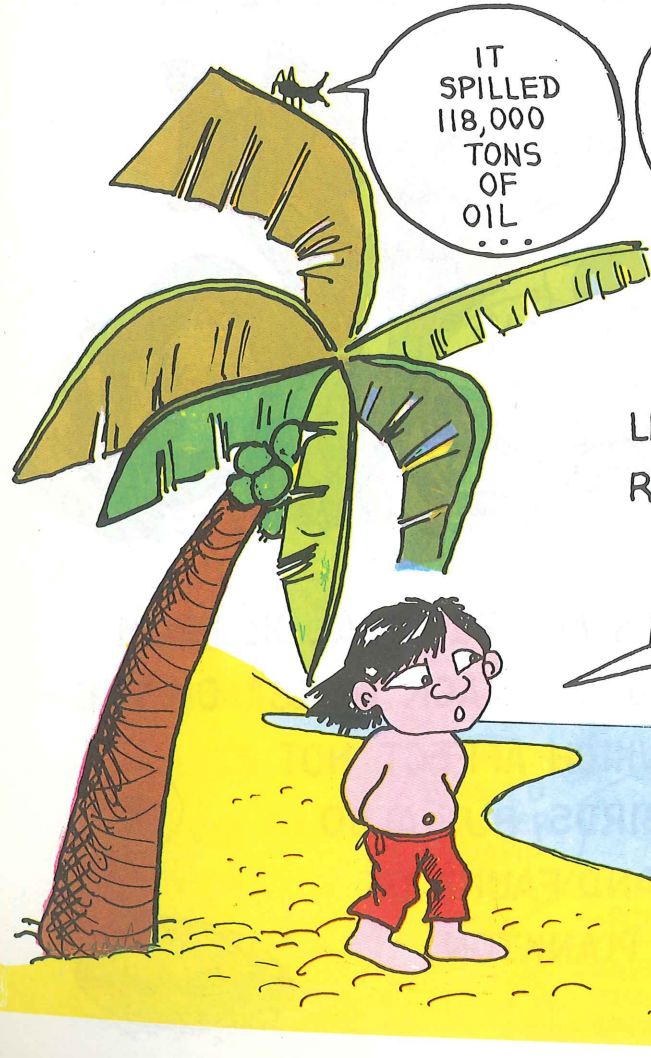
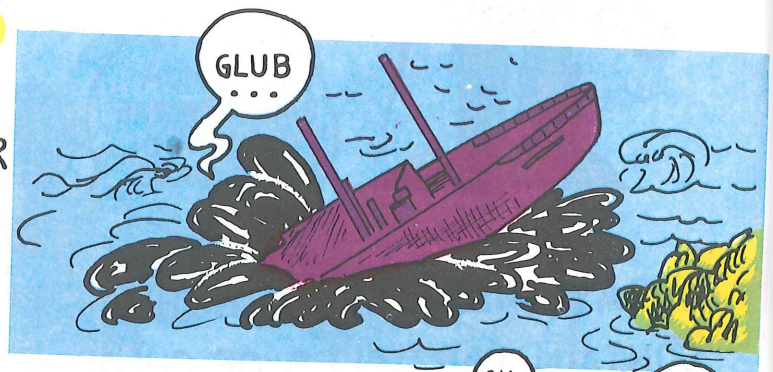




AND AS OIL-SPILLS ARE BECOMING EVER MORE FREQUENT ...

... BETWEEN 150,000 AND 400,000 DUCKS, SEA GULLS, GANNETS AND OTHER BIRDS DIE EVERY YEAR ALONG THE COASTS OF EUROPE ON THE NORTH SEA AND NORTH ATLANTIC ...

REMEMBER THE "TORREY CANON"? A SUPER-TANKER THAT CRASHED AGAINST THE ROCKS (OFF THE COAST OF BRITTANY)...



... OVER A HUGE EXpanse OF WATER !

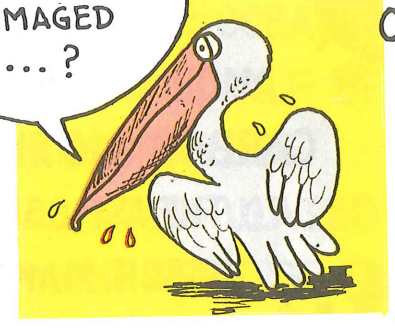
(WITHOUT COUNTING THE FACT THAT A SUPER-TANKER CAN LEAVE UP TO ONE THOUSAND TONS OF RESIDUAL OIL ...)

WHICH MEANS THAT EACH YEAR THERE IS A GREATER ACCUMULATION OF TOXIC SUBSTANCES ...

... WHICH GO FROM THE SEA'S SURFACE TO ITS DEPTHS ...

YOU HAVE TO WONDER HOW MUCH MORE IT WILL TAKE TO POISON THE OCEAN FOR GOOD ...

AND HOW LONG BEFORE THE ECOSYSTEM IS PERMANENTLY DAMAGED ... ?



WITH MODERN TECHNOLOGY, THE SEA HAS BECOME AN IMPORTANT SOURCE OF OIL, MANGANESE, COPPER, NICKEL, COBALT, AND ALSO NATURAL GAS, TIN, TITANIUM, CIRCONIUM, MAGNETITE, SAND, GRAVEL FOR USE IN CONSTRUCTION, ETC., ETC., ETC.

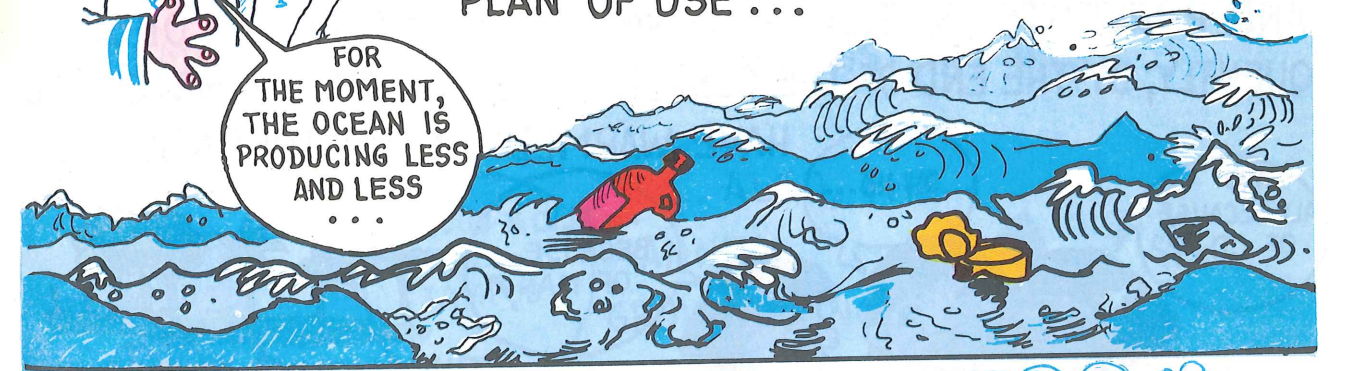
BECAUSE OF THIS, COUNTRIES ARE NEGOTIATING NEW "SEA RIGHTS" (AT THE UNITED NATIONS)...



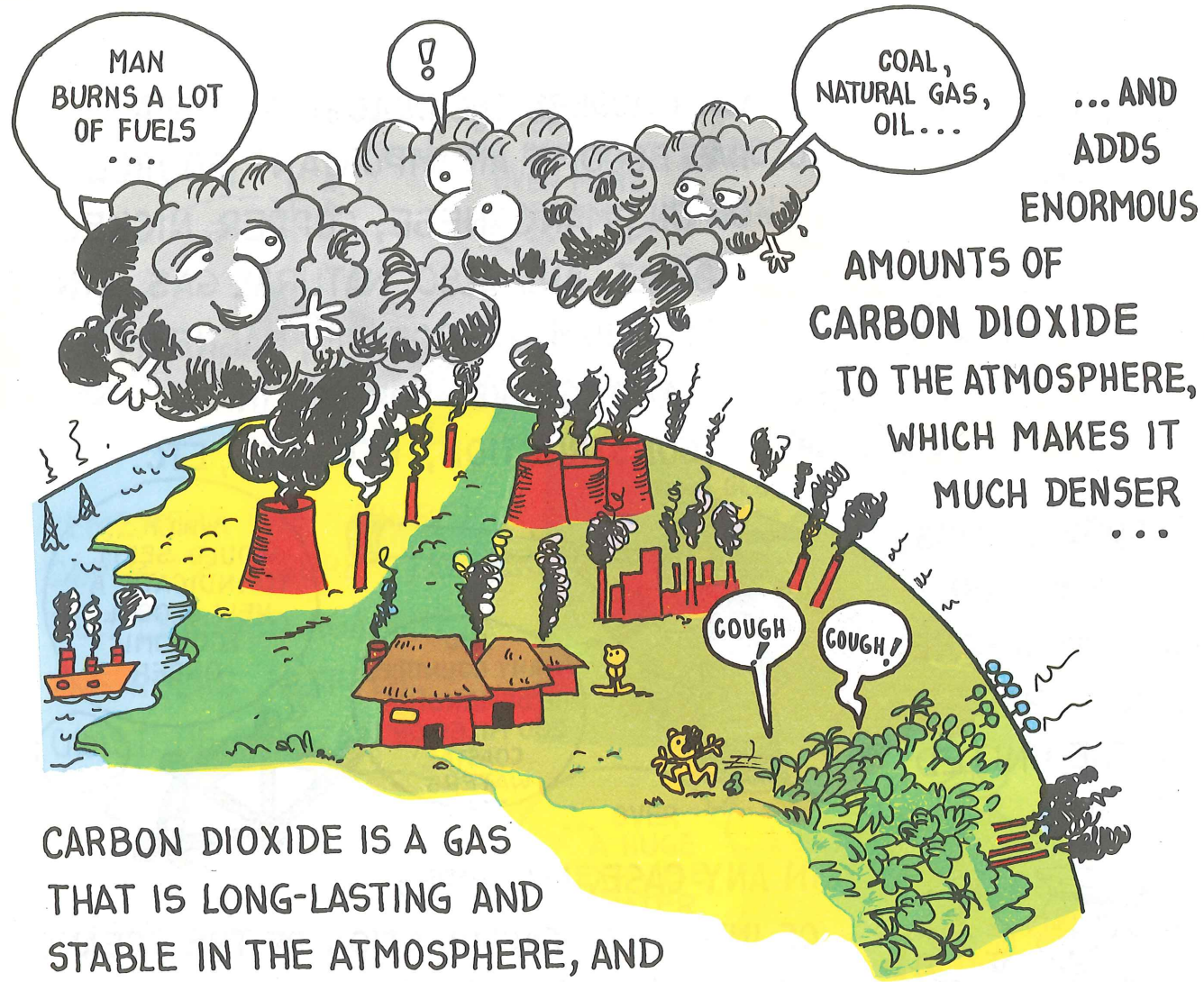
WHICH WOULD SEEM TO INDICATE A NEW GLOBAL ECONOMIC ORDER

OH ...

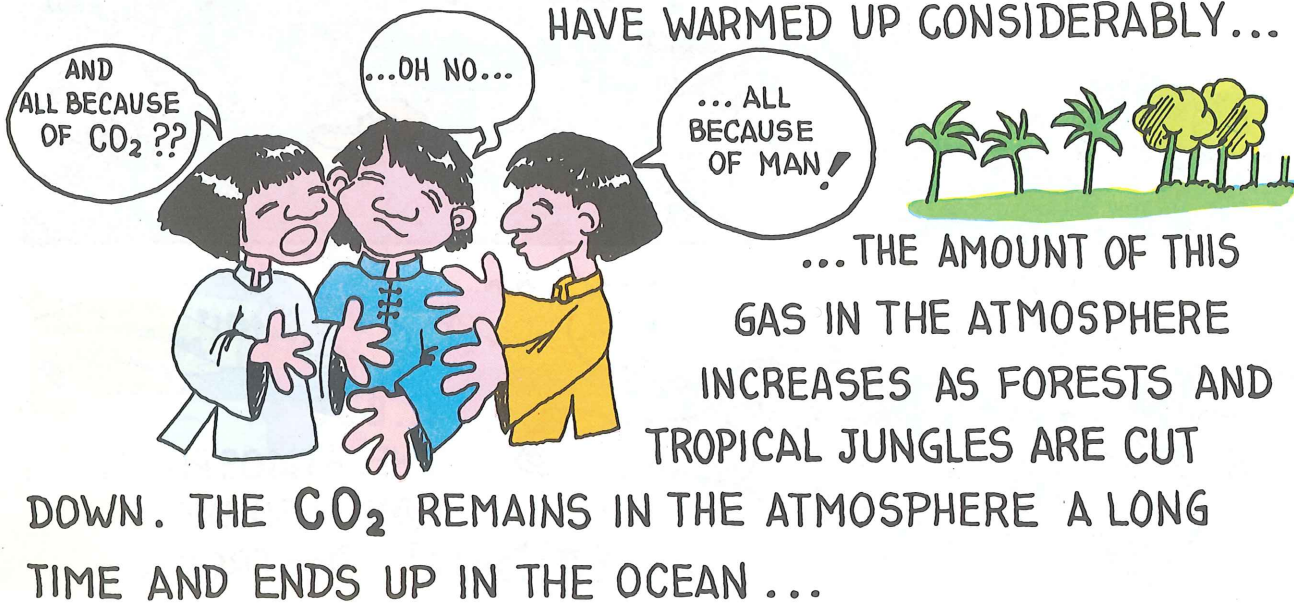
IN ANY CASE, ALL HOPES OF INTENSIVE EXPLOITATION OF THE OCEANS REST EXCLUSIVELY ON A RATIONAL PLAN OF USE ...



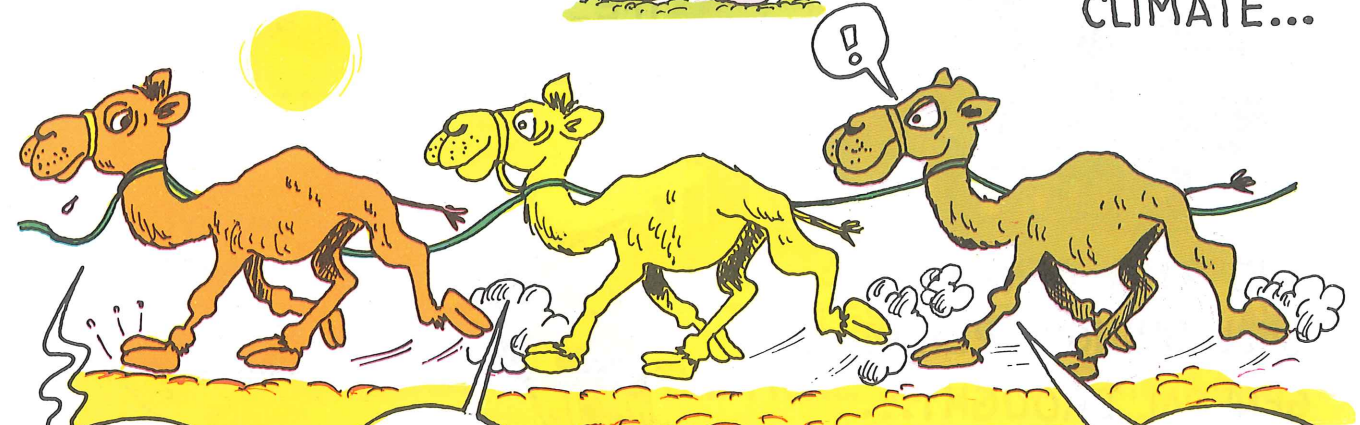
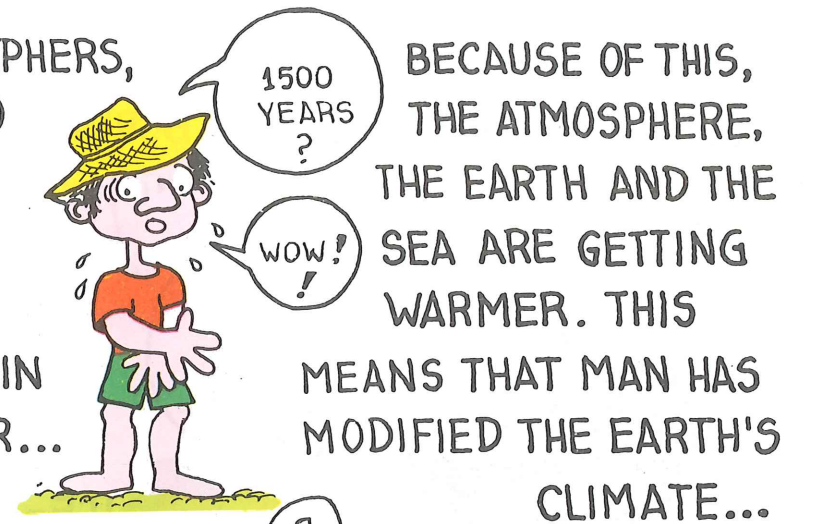
... BUT THE ATMOSPHERE CAN ALSO BE DESTROYED ...



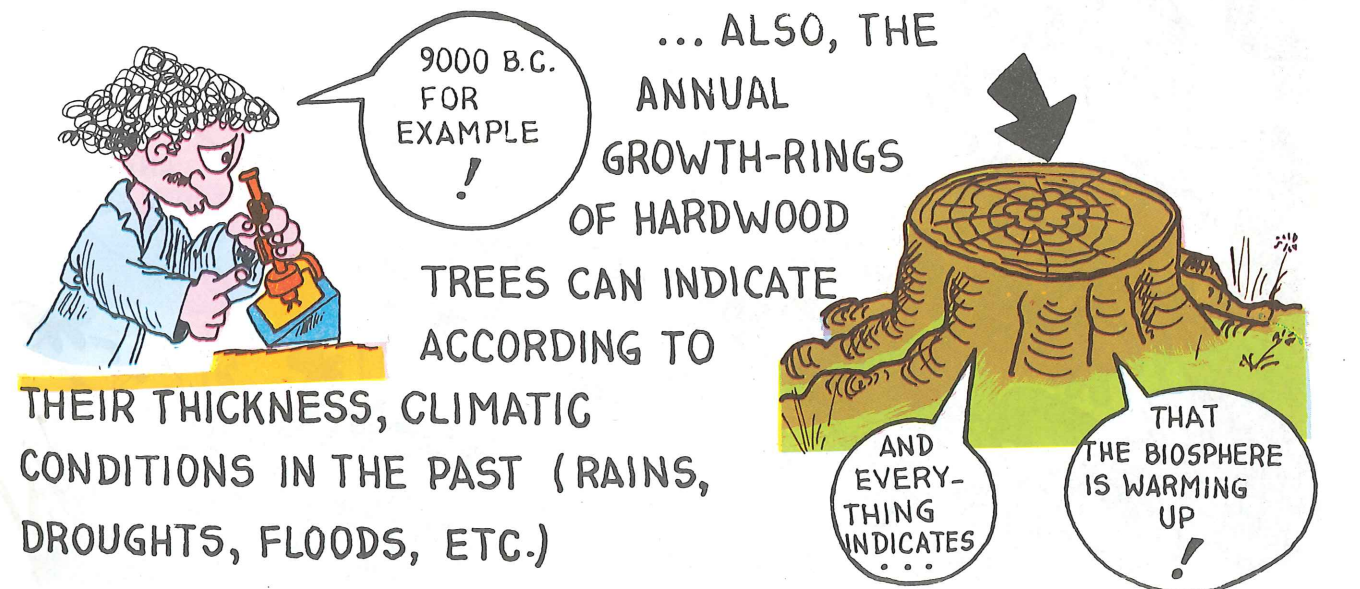
CARBON DIOXIDE IS A GAS THAT IS LONG-LASTING AND STABLE IN THE ATMOSPHERE, AND WHICH ABSORBS RADIATION FROM THE EARTH AND PREVENTS IT FROM PASSING OUT INTO SPACE. CONSEQUENTLY, BY THE END OF THE CENTURY, THE EARTH'S CLIMATE WILL HAVE WARMED UP CONSIDERABLY...



ACCORDING TO OCEANOGRAPHERS, IT WILL TAKE 1000 TO 1500 YEARS FOR THE OCEAN TO ABSORB ONE HALF OF THE CARBON DIOXIDE THAT HAS ACCUMULATED IN THE ATMOSPHERE SO FAR...



... FOSSILS, EVEN OF THE TINIEST CREATURES ARE A SOURCE OF INFORMATION ABOUT THE TEMPERATURE OF THE SEA IN THE DISTANT PAST...



THE TEMPERATURE WILL KEEP INCREASING AS LONG AS THE FELLING OF TREES AND THE BURNING OF FUELS CONTINUE.



SO WHAT HAPPENS WHEN THE CLIMATE CHANGES ?!

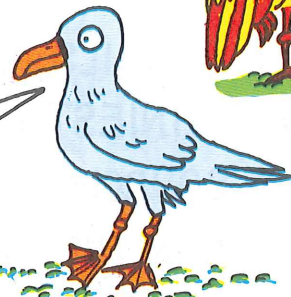
WELL, THE POLAR AREAS WILL WARM UP FASTER THAN THE TROPICS AND AS THE SPREAD OF THE POLAR ICE-CAP CHANGES SO WILL THE SEA-LEVEL...

THE 21st CENTURY WILL BRING A PERIOD OF GENERAL DROUGHT...



THINGS ARE GETTING SERIOUS!

I TOLD YOU EVERYTHING HAD TO DO WITH EVERYTHING ELSE!



... AND THE CHANGES OF TEMPERATURE, WINDS AND RAIN CAUSE GREAT LOSSES IN AGRICULTURE ...

WHEN WILL MAN LEARN TO RESPECT TREES? (SIGH)

AND FORESTS ...

AND JUNGLES ?



FORESTS AND JUNGLES HAVE AN EFFECT ON THE CLIMATE: THEY SERVE TO REGULATE THE AMOUNT OF CARBON DIOXIDE IN THE ATMOSPHERE AND TO MAINTAIN THE EARTH TEMPERATURE...

WHY, WE'RE THE LUNGS OF THE EARTH!

WE ALSO REGULATE THE QUALITY ...

AND THE FLOW OF WATER!



WHAT IS MORE ...



... THE LESS TREES THERE ARE, THE MORE SOIL THE RAIN CAN SWEEP AWAY, THUS REMOVING THE "HUMUS" OR FERTILE TOPSOIL.

(AND TO THINK THAT THE EARTH TAKES CENTURIES TO REGENERATE ITSELF ...)

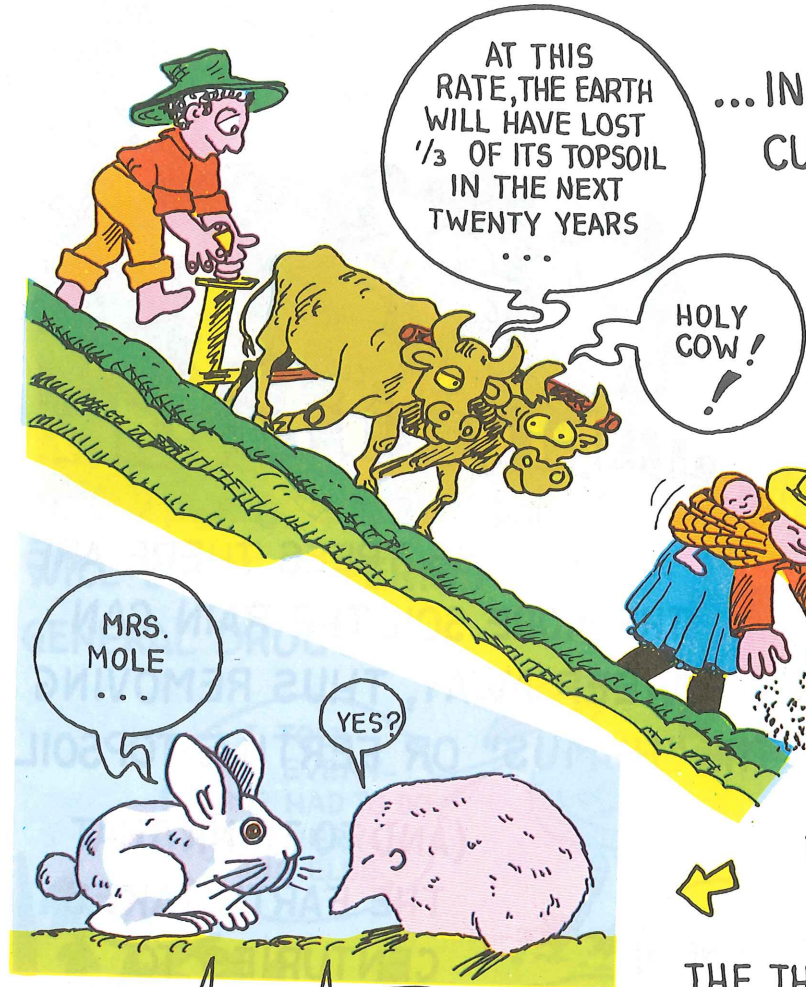
THEY SAY THAT FELLING TREES CAUSES EROSION ...

MY GOODNESS !

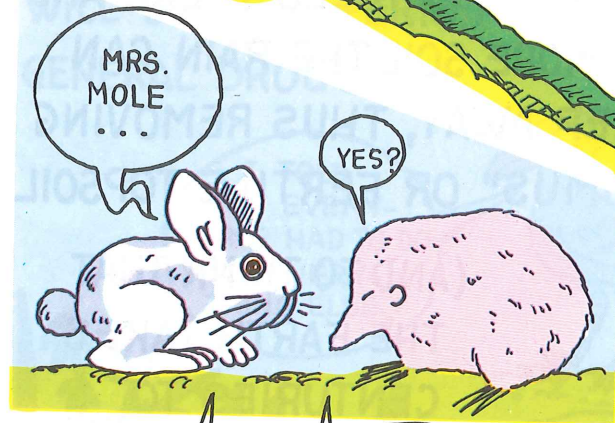


... NATURE REQUIRES 3,000 TO 12,000 YEARS TO PRODUCE 30 CENTIMETERS OF THE SOIL'S TOP LAYER (UH-OH!)

MILLIONS OF TONS OF SOIL ARE LOST EACH YEAR THROUGH DEFORESTATION, FLOODS AND MISMANAGEMENT OR POOR USE OF THE LAND ...

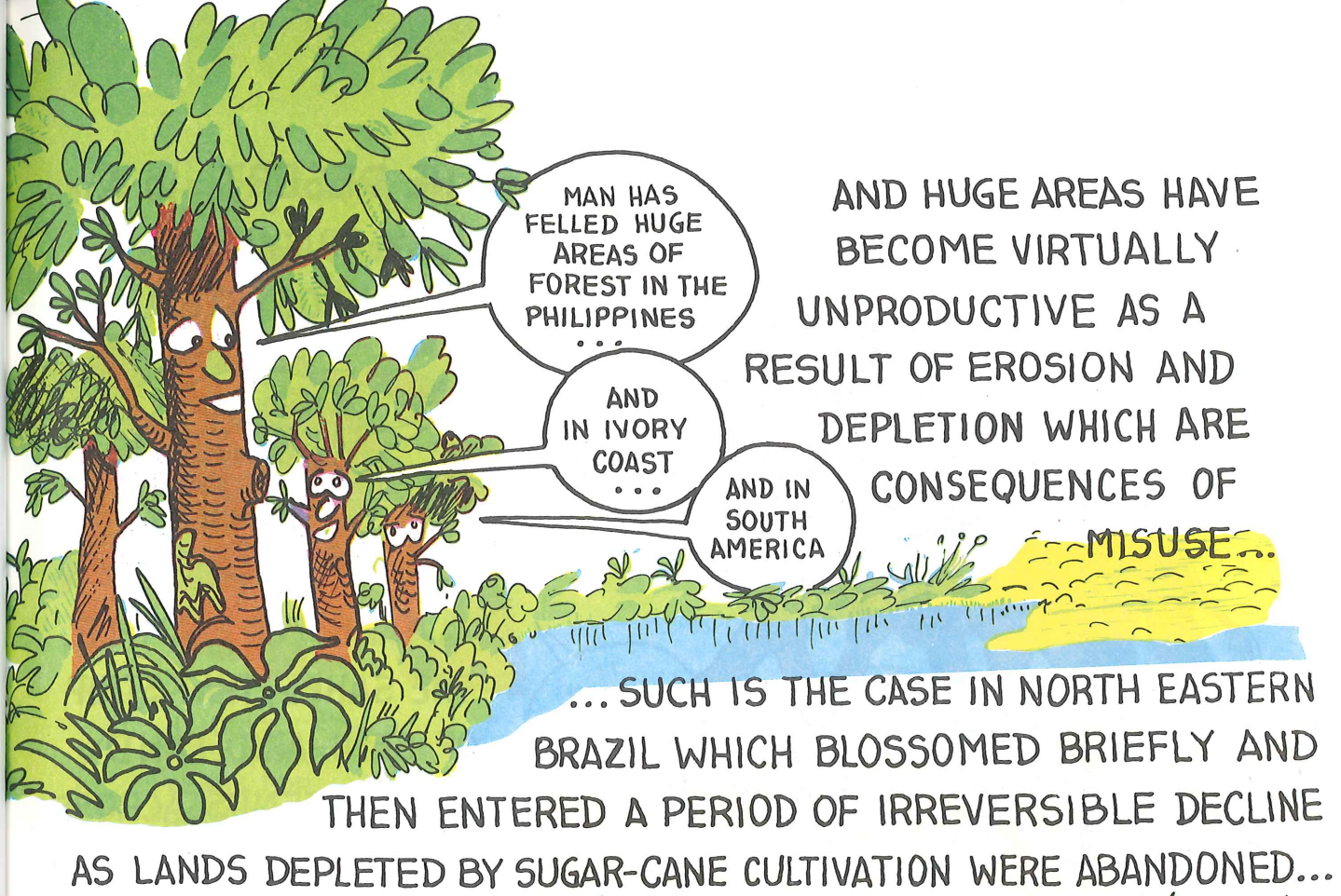
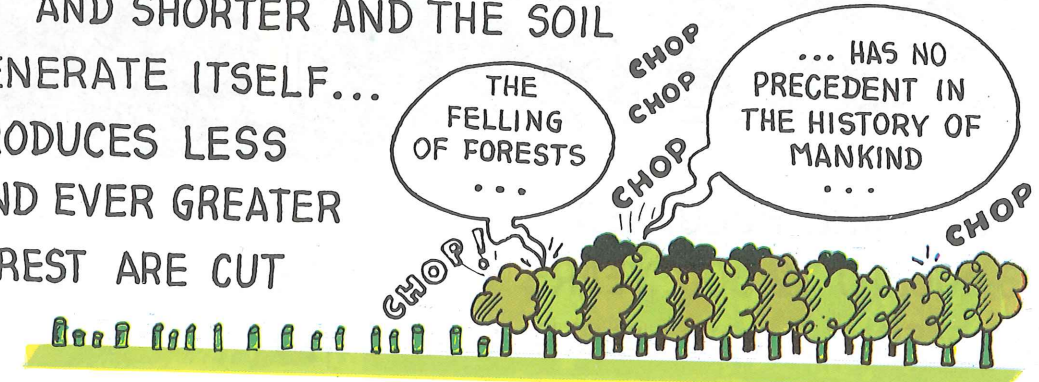


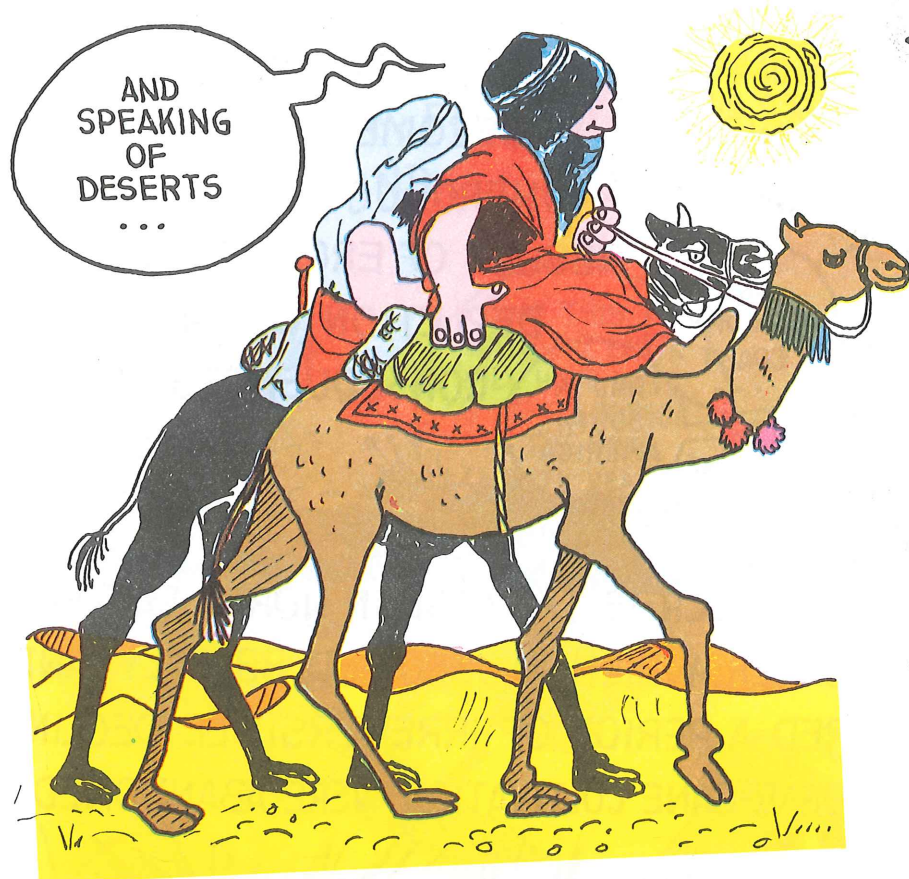
... IN AREAS OF "MIGRATORY" CULTIVATION, FORESTS HELP THE SOILS REGENERATE: ONE AREA IS HARVESTED FOR A NUMBER OF YEARS, THEN ANOTHER IS CLEARED AND USED, PERMITTING THE FIRST TO LAY FALLOW OR "REST" FOR 8 OR 12 YEARS...



... THE THING IS THAT WHEREVER THERE IS AN INCREASE IN DEMOGRAPHIC PRESSURE, THE FALLOW PERIODS GROW SHORTER AND SHORTER AND THE SOIL

CANNOT REGENERATE ITSELF... THE LAND PRODUCES LESS AND LESS, AND EVER GREATER AREAS OF FOREST ARE CUT DOWN...





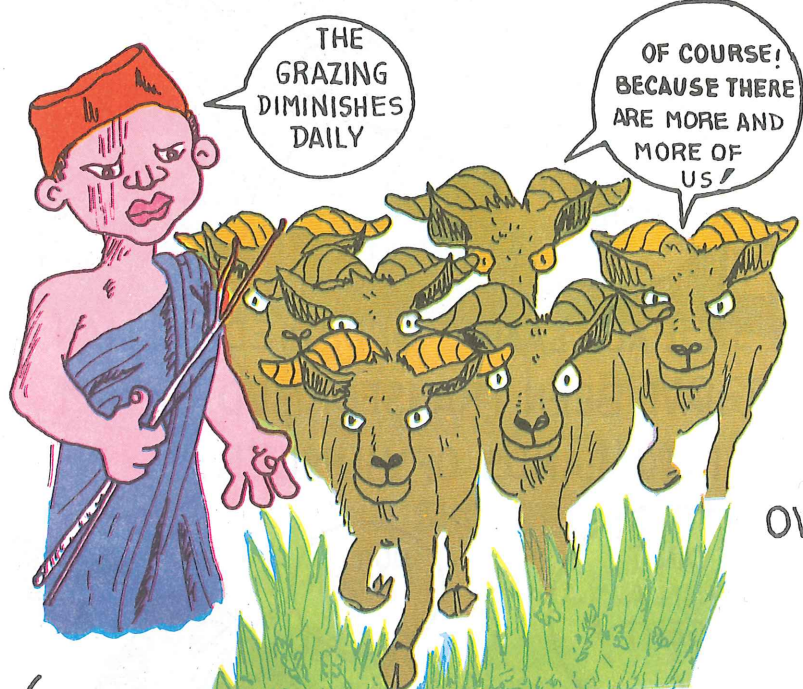
AND SPEAKING OF DESERTS ...

THE DESERT IS A VERY FRAGILE ECOSYSTEM...

WHICH MEANS IT'S IN VERY DELICATE BALANCE !

... TAKE, FOR EXAMPLE, THE SAHEL, THAT STRIP OF SEMI-ARID LAND THAT EXTENDS ACROSS AFRICA (FROM MAURETANIA AND

SENEGAL TO CHAD AND THE SUDANESE BORDER)



THE GRAZING DIMINISHES DAILY

OF COURSE! BECAUSE THERE ARE MORE AND MORE OF US!

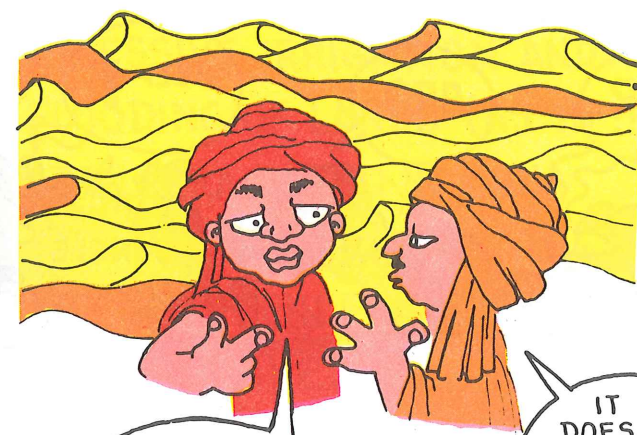
FOR CENTURIES, THE SAHEL WAS A PASTURE LAND FOR NOMADIC HERDSMEN. BUT AS THE NOMAD POPULATION INCREASES, TREES ARE CUT DOWN FOR FUEL AND OVERGRAZING OCCURS...

(IN NIGERIA ALONE, IN 1925 THERE WERE 4 MILLION HEAD OF LIVESTOCK AND IN 1970, 10 MILLION...)

NO LAND CAN STAND THAT KIND OF INCREASE



AND IN FACT, FROM 1969 TO 1973, THERE WAS A TERRIBLE DROUGHT IN THE SAHEL THAT AFFECTED MILLIONS.



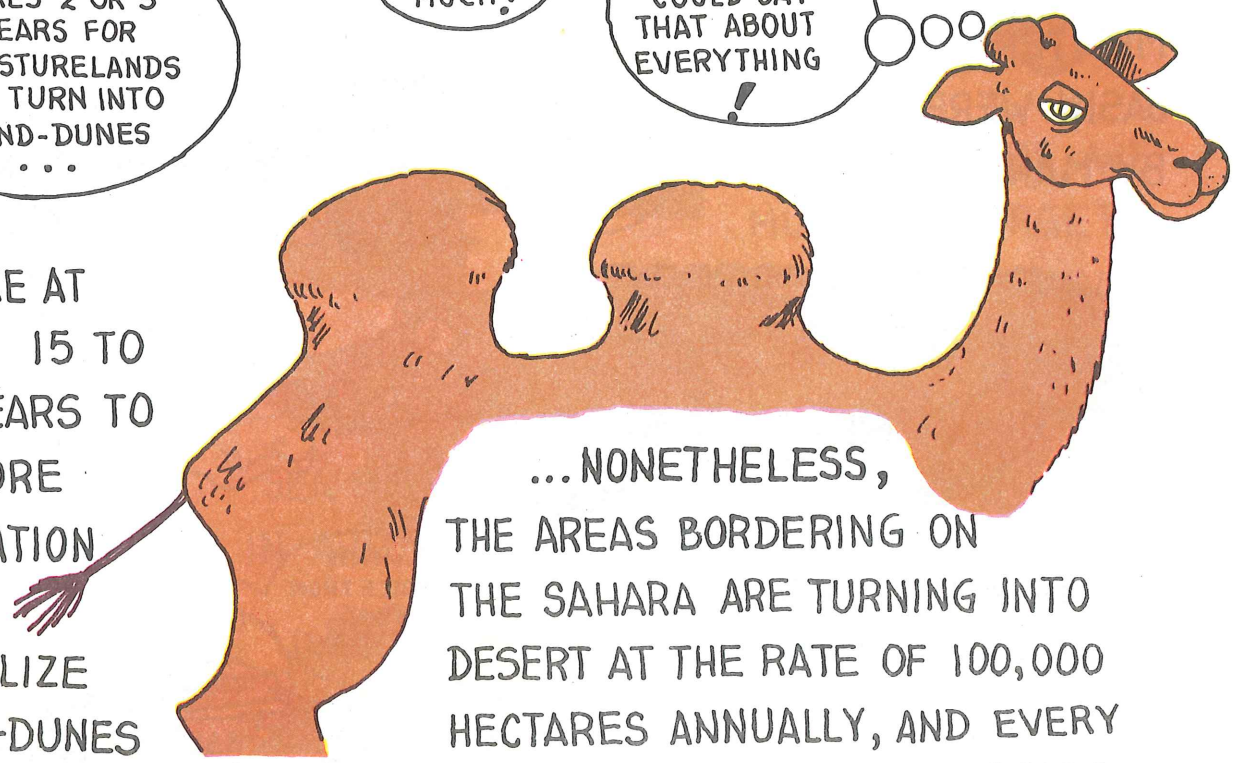
... THOUSANDS OF SQUARE KILOMETERS WERE TURNED INTO THE DRYEST OF DESERTS THROUGH OVERGRAZING AND DEFORESTATION...

IT ONLY TAKES 2 OR 3 YEARS FOR PASTURELANDS TO TURN INTO SAND-DUNES ...

IT DOESN'T TAKE MUCH!

IF ONLY YOU COULD SAY THAT ABOUT EVERYTHING !

IT TAKE AT LEAST 15 TO 20 YEARS TO RESTORE VEGETATION AND STABILIZE SAND-DUNES ...



... NONETHELESS, THE AREAS BORDERING ON THE SAHARA ARE TURNING INTO DESERT AT THE RATE OF 100,000 HECTARES ANNUALLY, AND EVERY YEAR THE SAHARA SPREADS SEVERAL KILOMETERS SOUTH (!)



WHISPER AND I PROMISE! NOT TO TELL ANYONE...

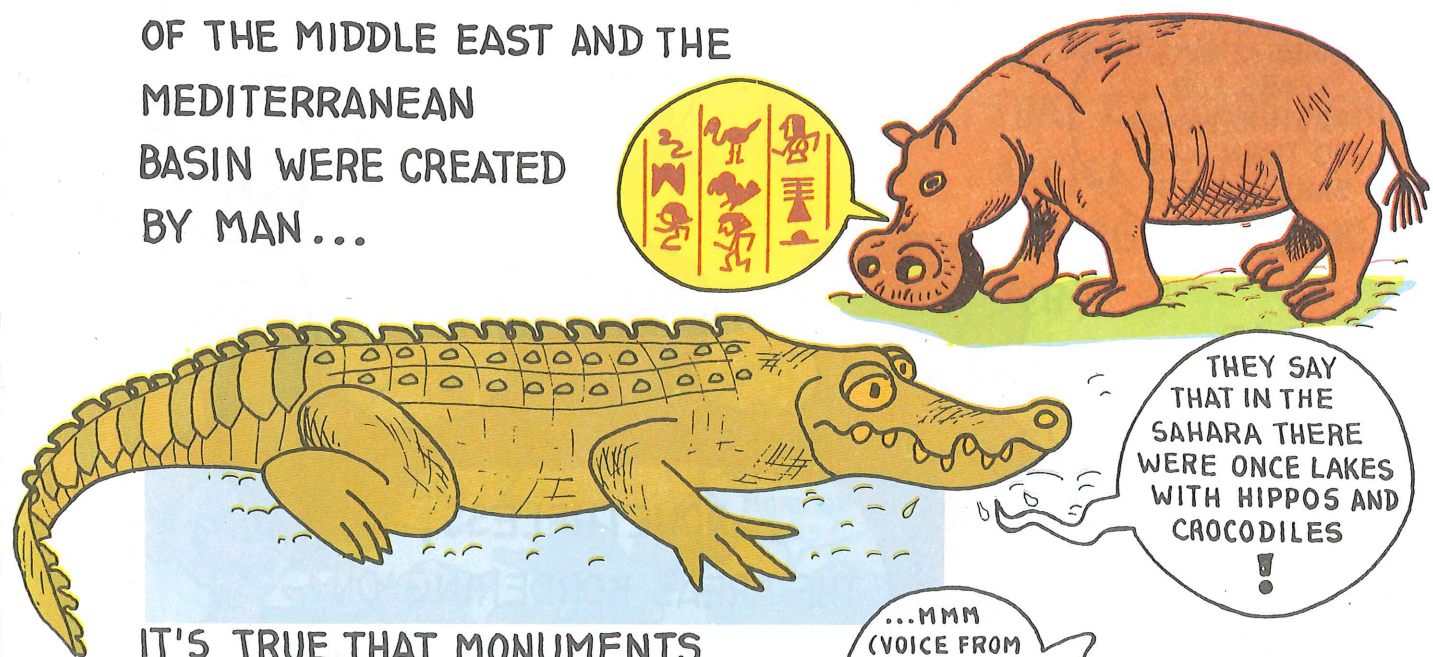
O.K. SAND-DUNES MIGRATE ...

IN ALGERIA, TUNISIA AND MOROCCO...!

IN THE SUDAN, THE SAVANNAH IS TAKING OVER THE JUNGLE, THE STEPPE IS TAKING OVER THE SAVANNAH AND THE DESERT IS TAKING OVER THE STEPPE...



MANY PEOPLE BELIEVE THAT THE DESERTS OF THE MIDDLE EAST AND THE MEDITERRANEAN BASIN WERE CREATED BY MAN...

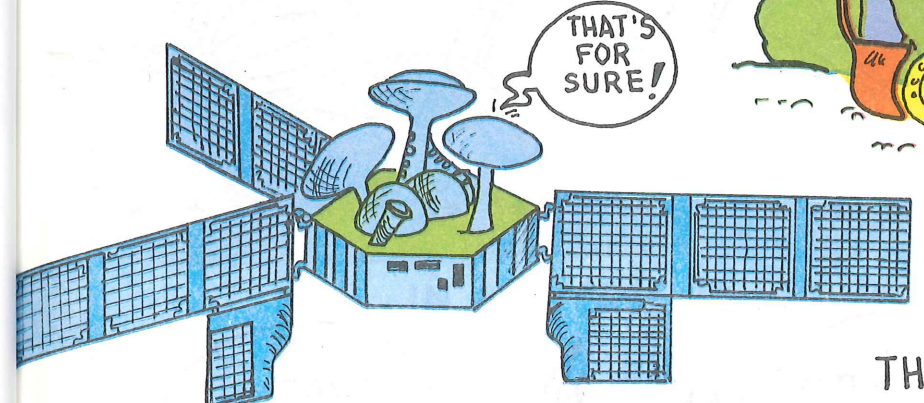


IT'S TRUE THAT MONUMENTS OF GREAT CIVILIZATIONS LIE BENEATH THE SANDS IN INDIA, PAKISTAN, THE SUDAN, YEMEN, PERU AND OTHER COUNTRIES

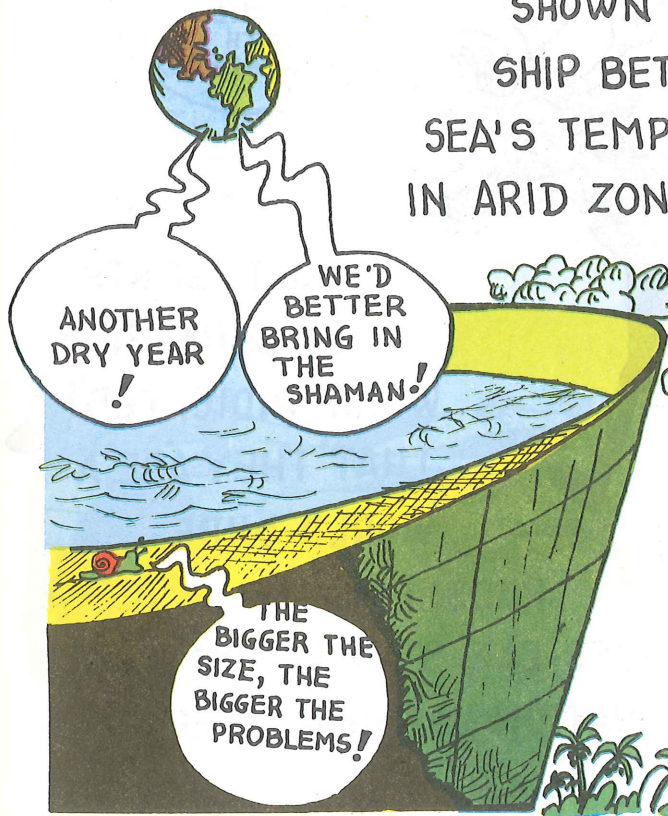


WELL IT SEEMS TO BE BECAUSE OF IRRIGATION!

MANY ANCIENT CIVILIZATIONS PROSPERED IN RIVER VALLEYS; TODAY IT IS KNOWN THAT EXCESSIVE IRRIGATION AND FLOODING OF LANDS (AS IS STILL PRACTICED IN INDIA AND PAKISTAN), SALINATE THE SOIL, RENDERING IT INFERTILE...



WHAT IS MORE, WE MUSTN'T FORGET THAT SATELLITES HAVE SHOWN THAT THERE IS A DIRECT RELATIONSHIP BETWEEN THE ANOMALIES IN THE SEA'S TEMPERATURE AND THE RAINFALL IN ARID ZONES...



... TO FIGHT ARIDITY, DIKES AND DAMS ARE BUILT, BUT THEY CAUSE INCREASED EVAPORATION AND CONSEQUENTLY: SALINATION ... WHICH MAKES THE SOIL INFERTILE!



I DON'T LIKE DAMS BECAUSE THEY CAN CAUSE EARTHQUAKES ...

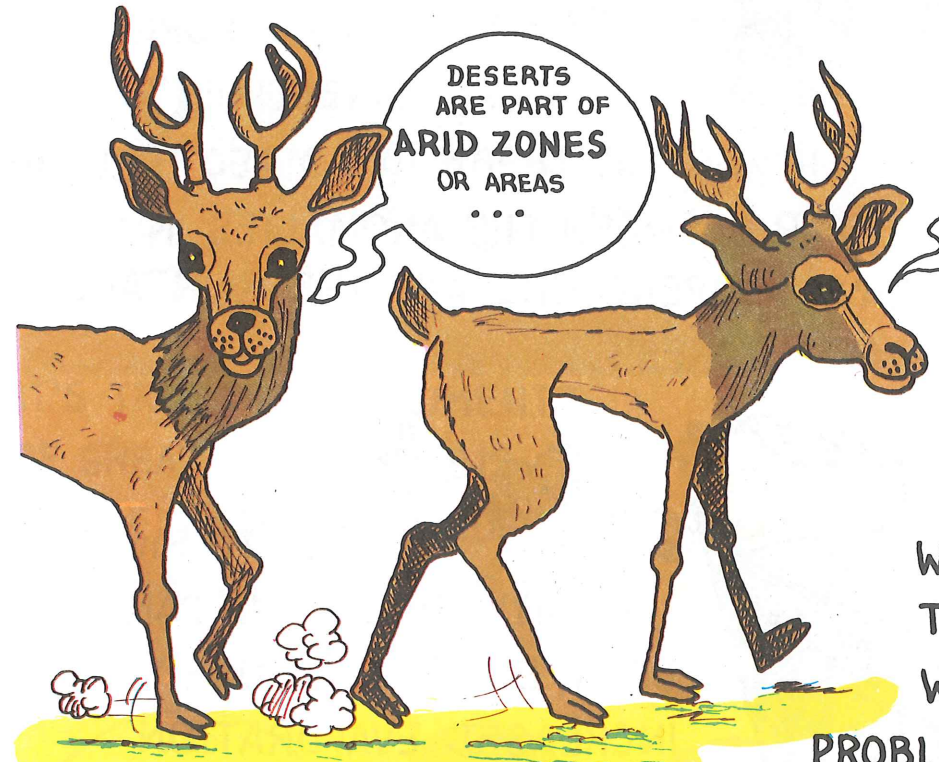
WHO TOLD YOU THAT ?

... ON TOP OF ALL THE PROBLEMS CAUSED BY BIG DAMS, THE EFFECT ON THE FLORA AND FAUNA OF THE SURROUNDING REGION CAN BE DISASTROUS.

AND THAT'S NO JOKE !



* * * * *



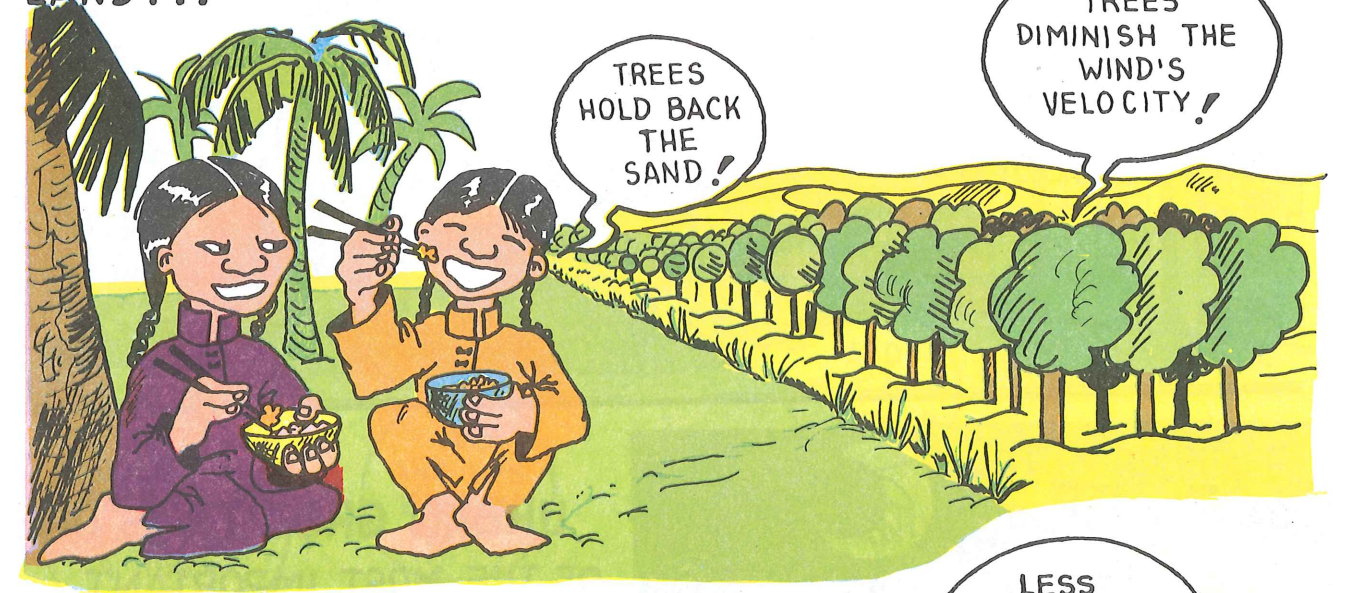
DESERTS ARE PART OF ARID ZONES OR AREAS ...

... ARID ZONES COVER 1/3 OF THE EARTH SURFACE ...

... THERE ARE DESERTS IN 60 COUNTRIES, WHICH INDICATES THAT THEY ARE A WORLD-WIDE PROBLEM. ONLY A

RATIONAL USE OF NATURAL RESOURCES CAN STOP THE IMPENDING DISASTER: LET US LOOK AT THE SITUATION IN CHINA WHERE

TO CONTAIN THE DESERT AND STOP ITS ADVANCE, BELTS OF TREES WERE PLANTED ROUND OASES. IN THIS WAY, WHAT HAD BEEN MOVING DUNES BECAME RICH AGRICULTURAL LAND ...

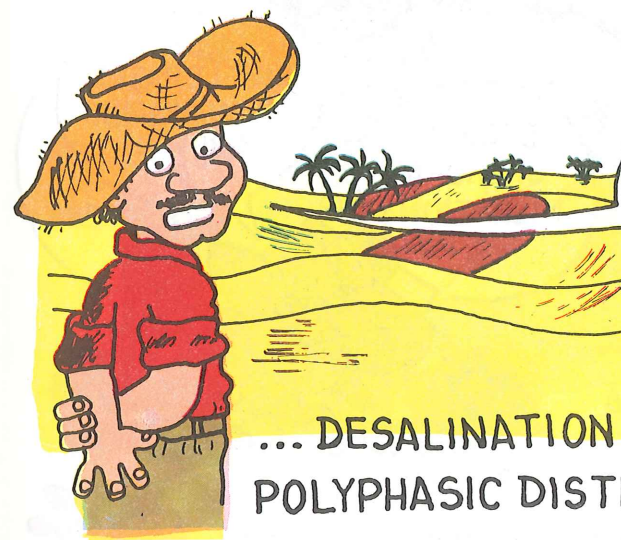
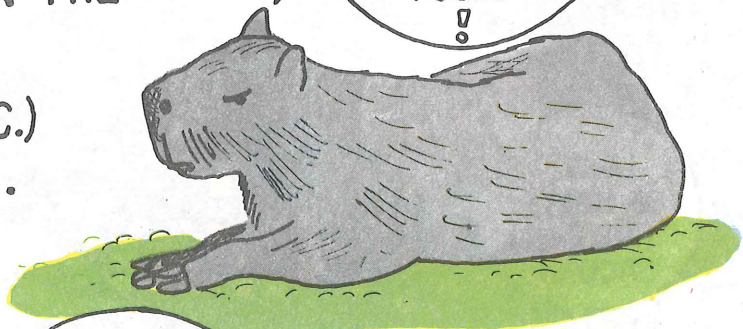


TREES HOLD BACK THE SAND !

TREES DIMINISH THE WIND'S VELOCITY !

... IN ANY CASE, A WORLD-WIDE STUDY OF EXISTING HYDRAULIC RESOURCES (IN THE SUBSOIL, RAIN-CYCLES, CLIMATIC TENDENCIES, ETC.) SHOULD BE CARRIED OUT ...

LESS COSTLY SOURCES OF FRESH WATER MUST BE FOUND !



WHERE THE HECK ARE WE GOING TO GET WATER FROM ?

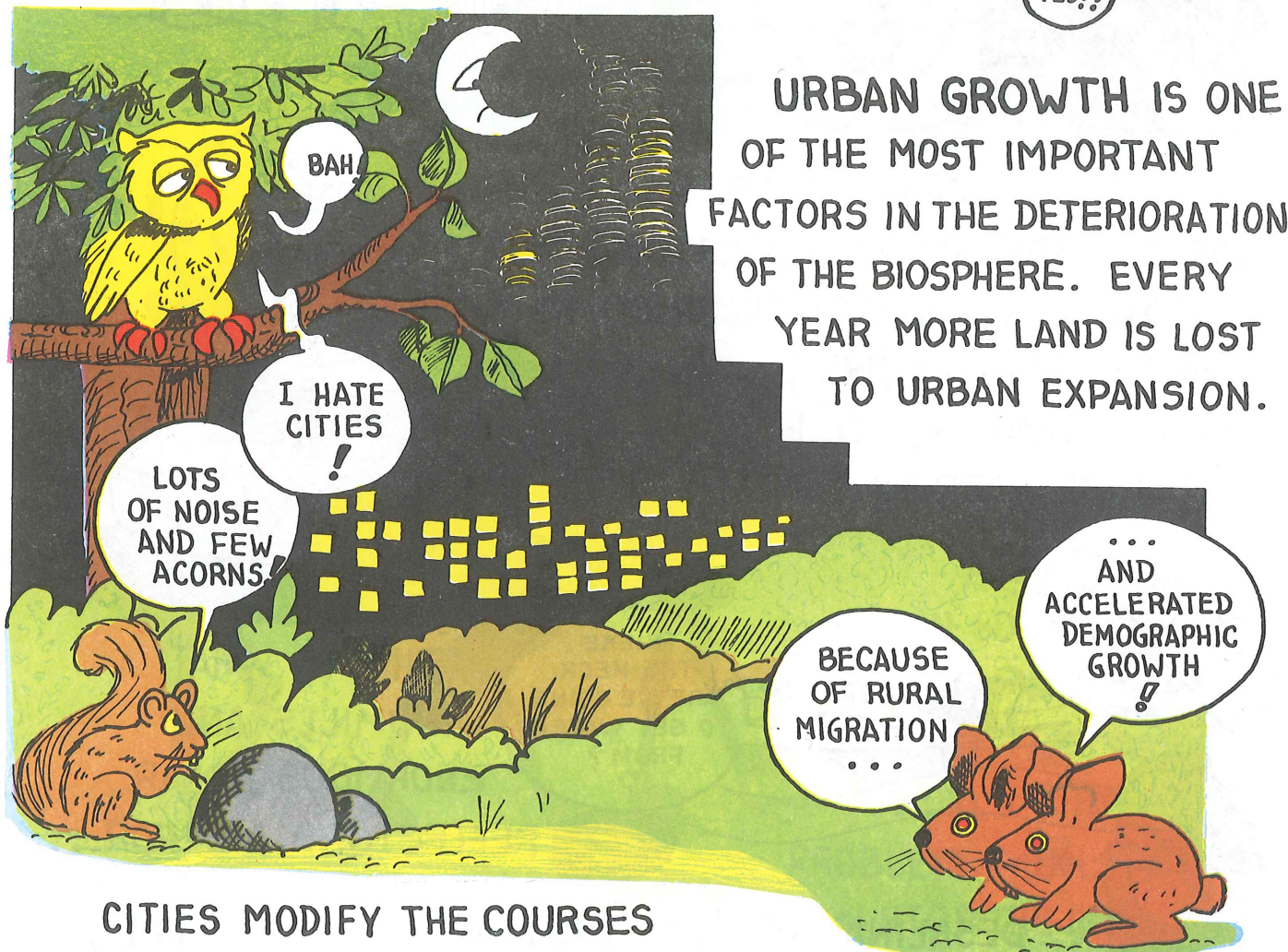
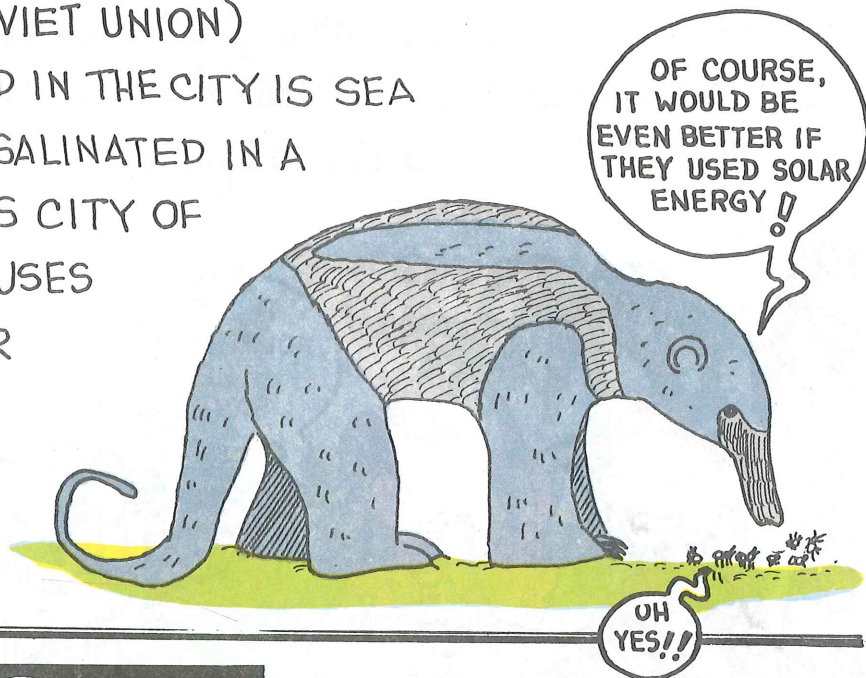
... THIS IS WHAT WINDMILLS AND ENORMOUS SOLAR REFLECTORS ARE FOR ...

... DESALINATION (I.E. INSTANT POLYPHASIC DISTILLATION TO OBTAIN DRINKING WATER FROM THE SEA ...)

!!!

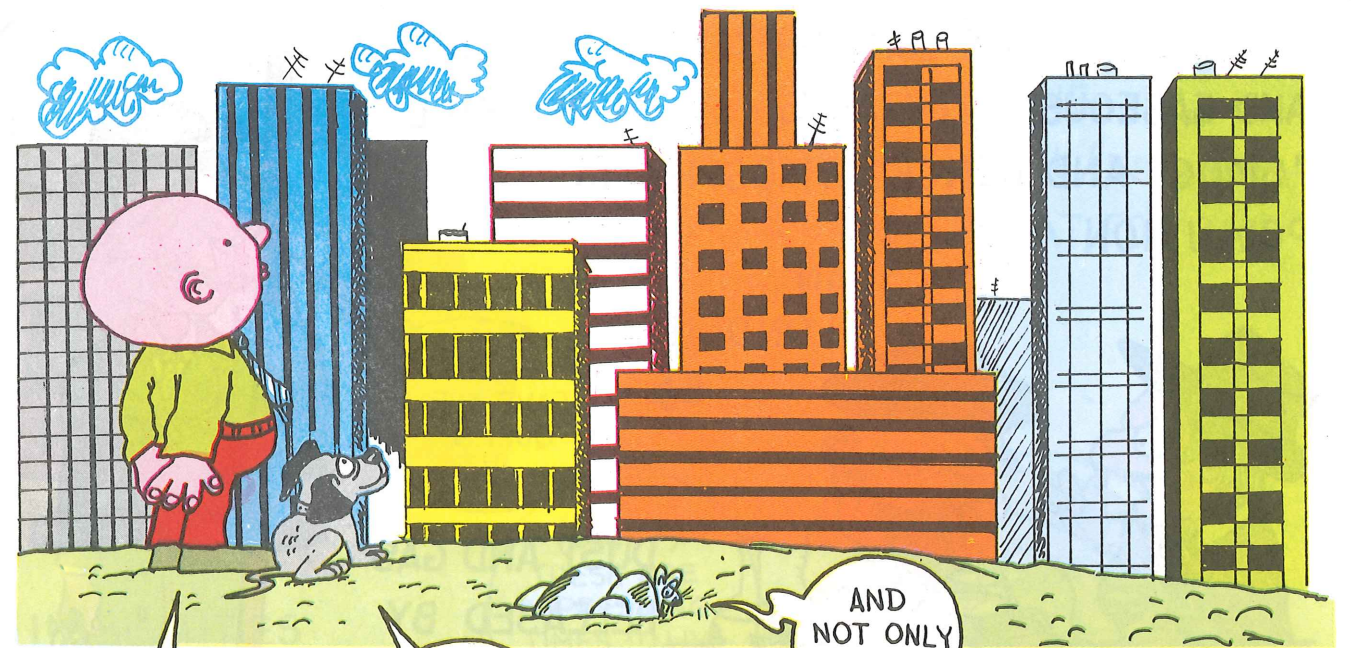


IN SCHEVCHENKO (SOVIET UNION)
ALL THE WATER USED IN THE CITY IS SEA
WATER WHICH IS DESALINATED IN A
NUCLEAR PLANT. THIS CITY OF
8,000 INHABITANTS USES
NUCLEAR ENERGY FOR
OTHER PURPOSES
THAN WAR...



URBAN GROWTH IS ONE
OF THE MOST IMPORTANT
FACTORS IN THE DETERIORATION
OF THE BIOSPHERE. EVERY
YEAR MORE LAND IS LOST
TO URBAN EXPANSION.

CITIES MODIFY THE COURSES
OF RIVERS AND POLLUTE THEM. THIS IS WHY
EVERY CITY REQUIRES WATER-PURIFICATION PLANTS...



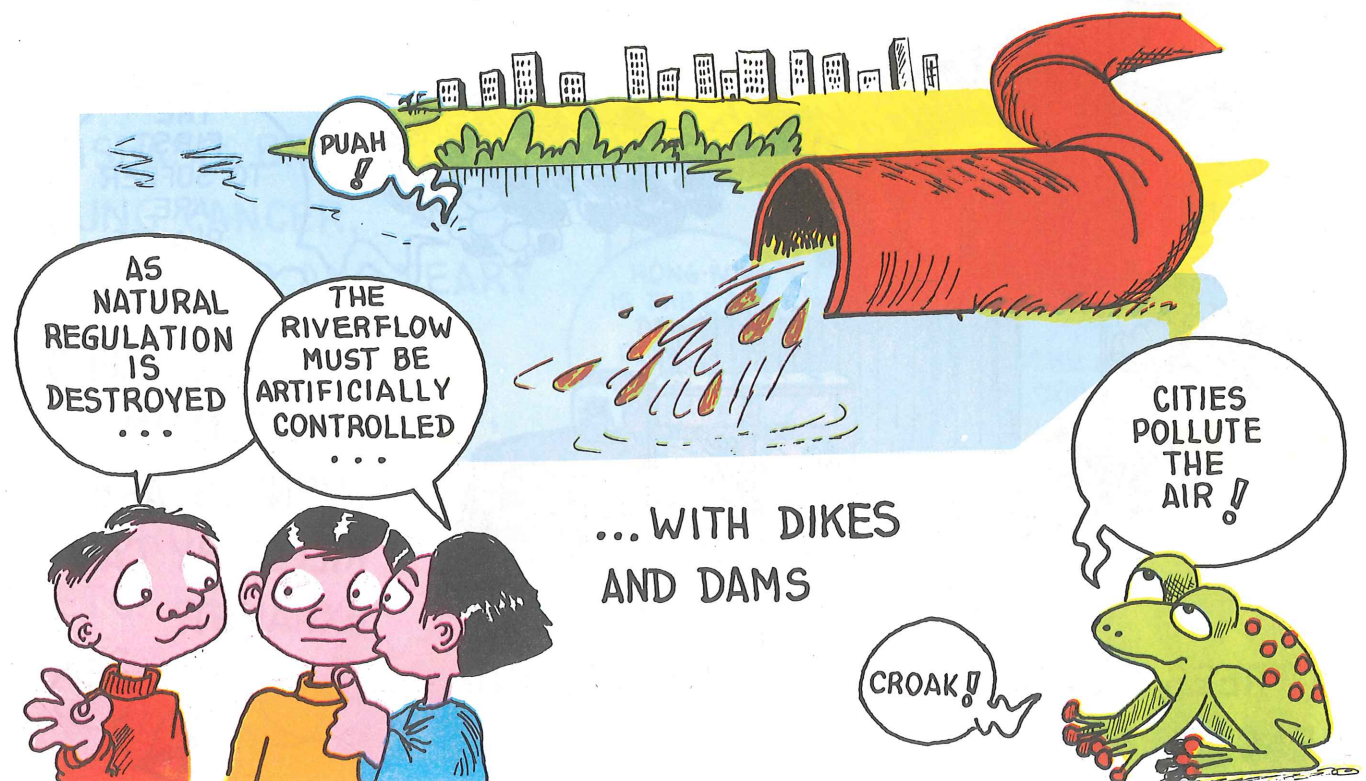
DOES THAT
MEAN THAT
CITIES MAKE
A MESS
?

... YES
AND IT'S
PRETTY
SAD
...

AND
NOT ONLY
THAT!

... CITIES INCREASE

THE SPATE AND FLOODING OF
RIVERS: BECAUSE OF CONCRETE
AND ASPHALT, RAINWATER, INSTEAD
OF BEING ABSORBED BY THE SOIL, FLOWS
THROUGH THE SEWAGE SYSTEMS INTO THE RIVERS...



AS
NATURAL
REGULATION
IS
DESTROYED
...

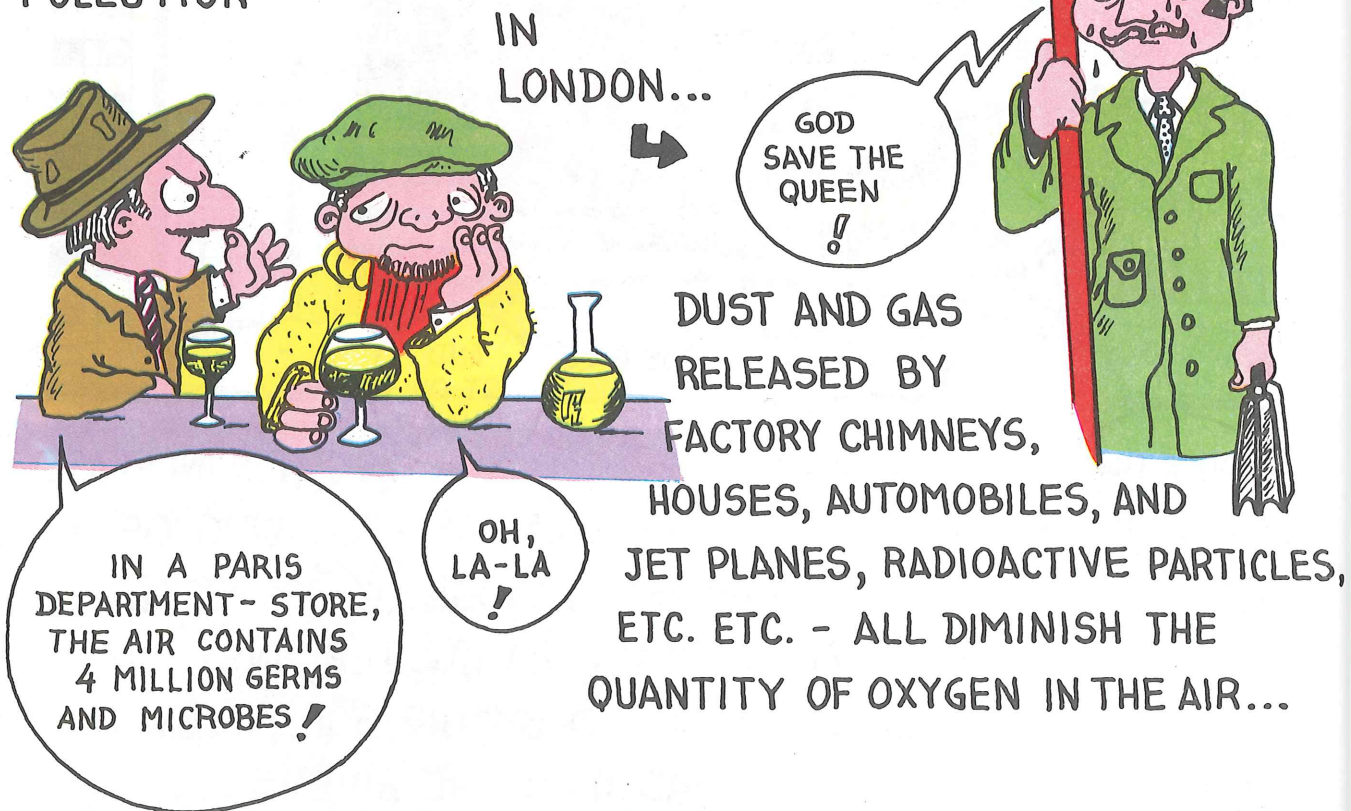
THE
RIVERFLOW
MUST BE
ARTIFICIALLY
CONTROLLED
...

... WITH DIKES
AND DAMS

CITIES
POLLUTE
THE
AIR!

CROAK!

IN BIG CITIES, THE AIR CONTAINS SOLID, LIQUID AND GASEOUS POLLUTANTS - WHICH PRODUCE "SMOG" AND HENCE ATMOSPHERIC POLLUTION



IN LONDON...

DUST AND GAS RELEASED BY FACTORY CHIMNEYS, HOUSES, AUTOMOBILES, AND JET PLANES, RADIOACTIVE PARTICLES, ETC. ETC. - ALL DIMINISH THE QUANTITY OF OXYGEN IN THE AIR...



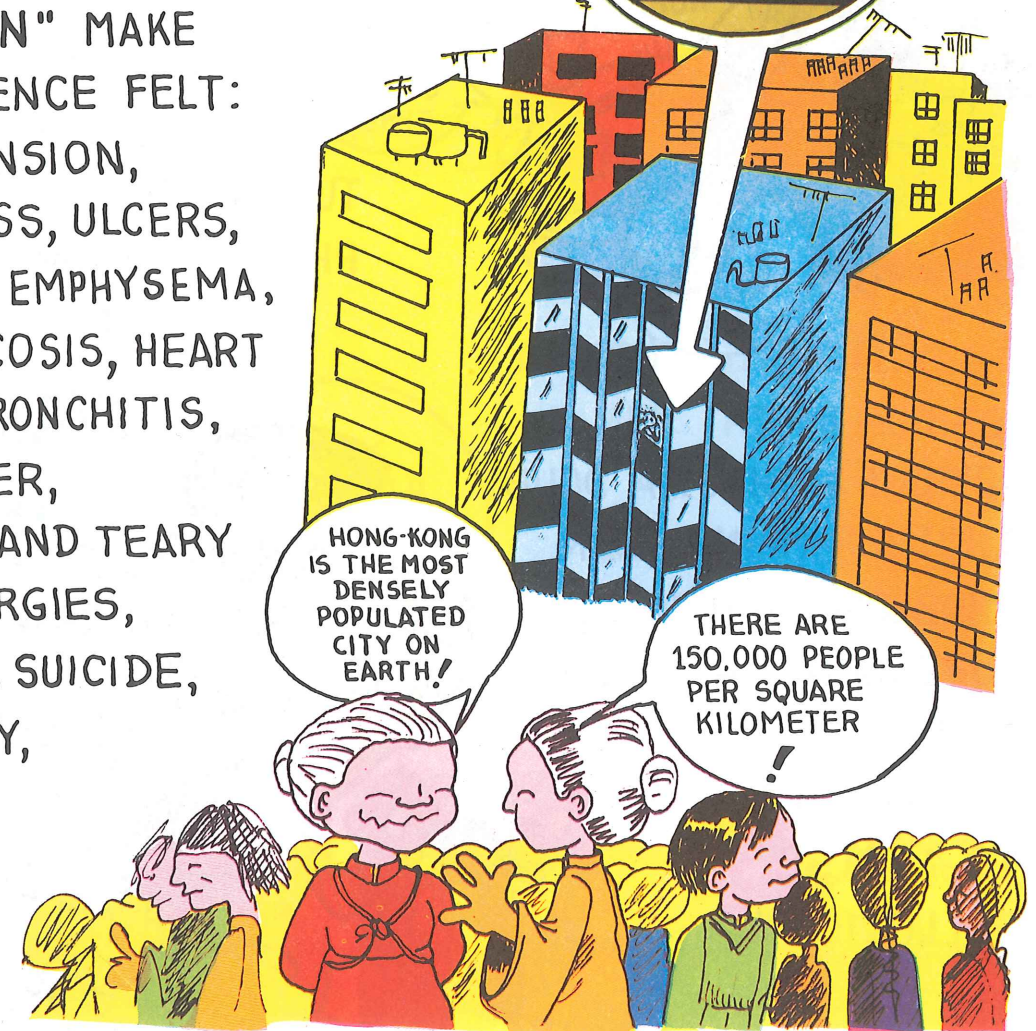
... THE TREES LINING MAIN AVENUES ARE KILLED BY CAR EXHAUST.

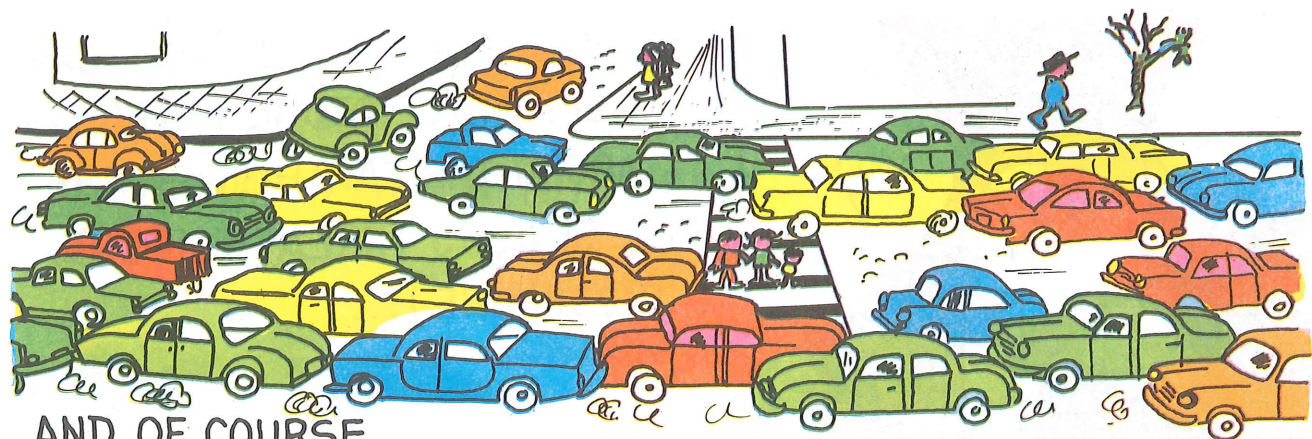
(TREES AND SENSITIVE PLANTS AROUND FACTORIES DIE, TOO...)



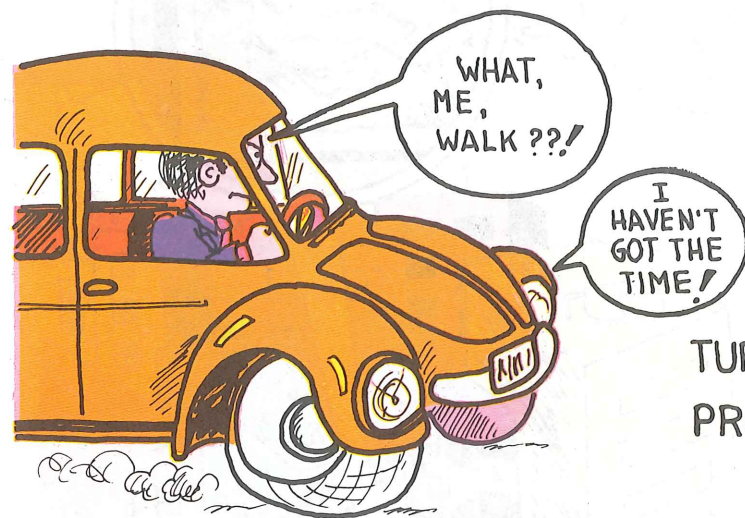
ATMOSPHERIC POLLUTION WEAKEN THE OZONE AROUND THE EARTH (WHICH IS A SERIOUS THREAT FOR THE BIOSPHERE)...

IN BIG CITIES SO-CALLED "DISEASES OF CIVILIZATION" MAKE THEIR PRESENCE FELT: STRESS, TENSION, NERVOUSNESS, ULCERS, PULMONARY EMPHYSEMA, THYROTOXICOSIS, HEART DISEASE, BRONCHITIS, LUNG CANCER, IRRITATED AND TEARY EYES, ALLERGIES, PSYCHOSIS, SUICIDE, CRIMINALITY, NEUROSI, ETC. ETC. ETC.





AND OF COURSE...
HEAVY TRAFFIC, POLLUTION, THE DIFFICULTIES OF GETTING AROUND, VERY HIGH NOISE-LEVEL, ALL CAUSE STRESS AND TENSION. IN SOME CITIES PEDESTRIAN STREETS ARE BEING CREATED...



HUMANS ARE DEVELOPING A "DRIVER'S MENTALITY". THEY ARE BECOMING LIKE TURTLES WITHIN THE PROTECTIVE SHELLS OF THEIR CARS.

NOISE IS WITHOUT A DOUBT ANOTHER MAIN URBAN PROBLEM. HIGHWAYS, SUPERSONIC AIRCRAFT, TRAINS AND AIRPORTS ALL CONTRIBUTE TO "NOISE POLLUTION".



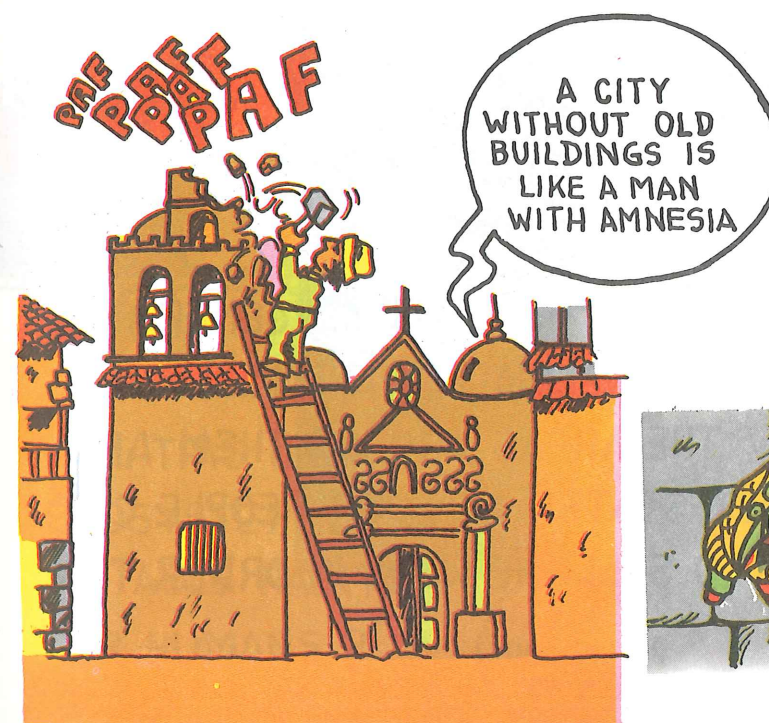
IN LARGE APARTMENT-COMPLEXES, ANONYMITY AND THE LACK OF NEIGHBORS MEANS THAT PEOPLE ARE MORE AND MORE ISOLATED...



HISTORIC CENTERS ARE THE SECTOR MOST GRAVELY AFFECTED BY DEMOGRAPHIC PRESSURE, "DEVELOPMENT", PUBLIC SERVICES, SPECULATIONS AND AUTOMOBILE TRAFFIC...



ANCIENT STRUCTURES ARE THE MEMORIES OF TIMES PAST, WHEN CITIES WERE BUILT BY ARTISANS (ON A HUMAN SCALE)...



WHEN SPEAKING OF

HISTORIC CENTERS, OF
HUMAN ENVIRONMENT, OR
THE QUALITY OF LIFE,
THE ALTERNATIVE

IS:

"...TO
BE OR NOT
TO BE..."

CULTURE OR
"MASS-CULT";
"THAT IS THE
QUESTION!"

CITIES DOUBLE IN
SIZE EVERY TEN
YEARS. MEANWHILE, MORE

THAN ONE THIRD OF THE EARTH'S POPULA-
TION IN AFRICA, LATIN AMERICA AND ASIA DO NOT HAVE
HOMES, OR LIVE IN HOUSES WELL BELOW MINIMUM LEVEL...

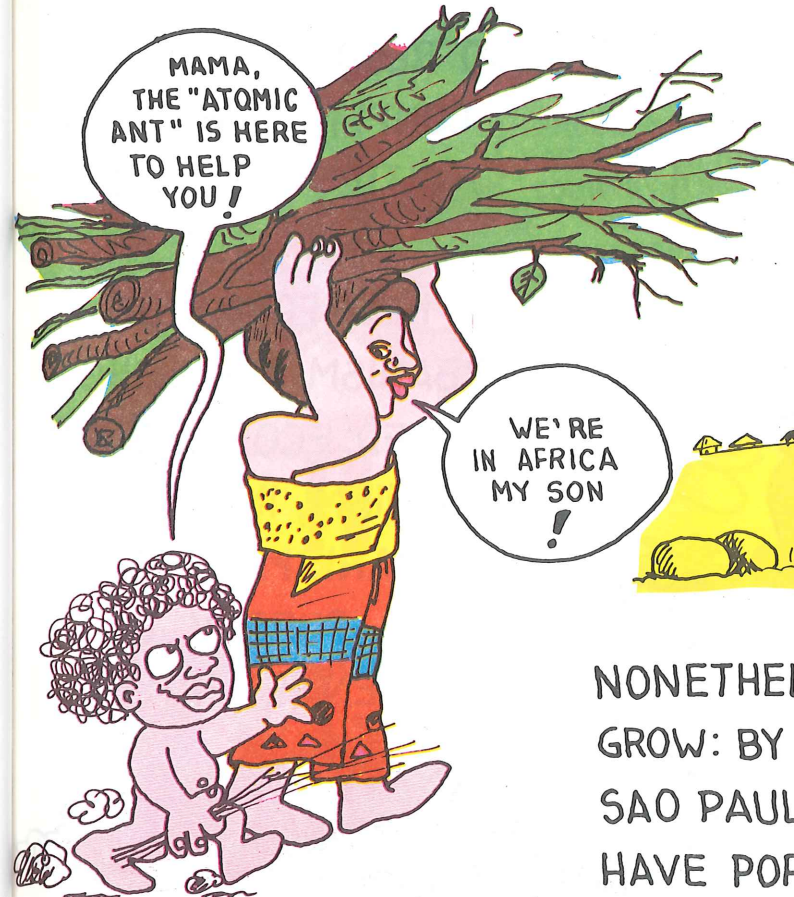
WELL,
IT'S NOT A
MATTER OF
LIVING ANY
OLD WAY!

MY
GOODNESS,
NO!

CITIES GENERATE
INEQUALITY AND MISERY.

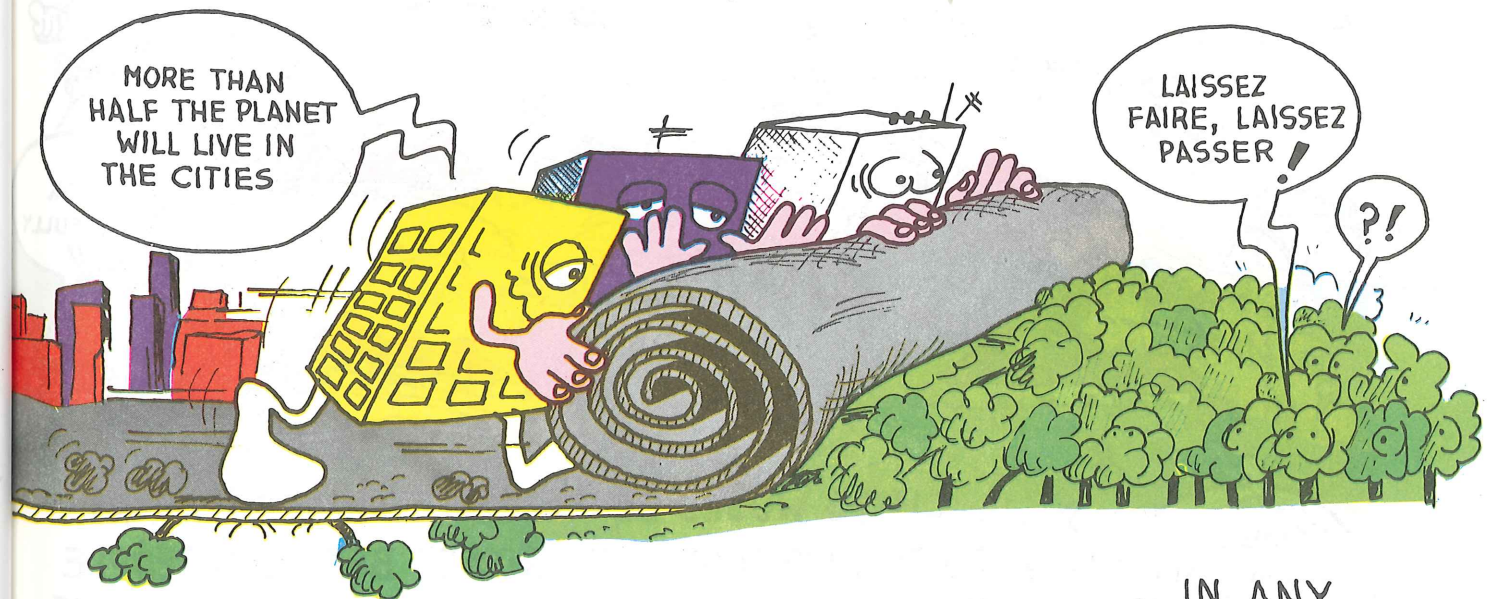
THE AREAS AROUND THEM ARE
DEVASTATED AS POOR PEOPLE CUT

DOWN TREES FOR FUEL OR TO SELL THE WOOD IN ORDER TO
SURVIVE...



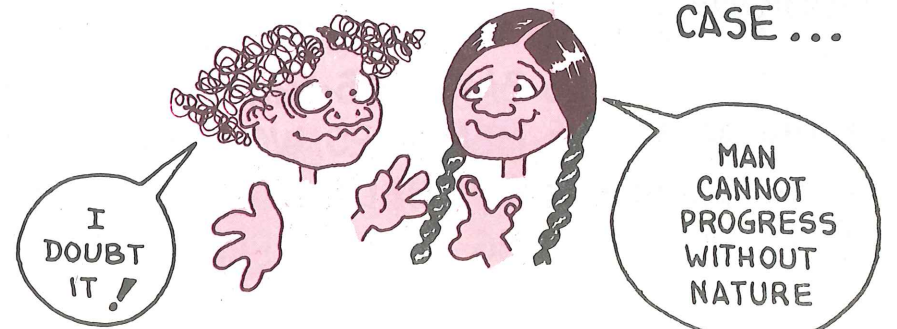
...SCARCITY OF FIREWOOD
IS BECOMING EVER MORE
CHRONIC IN THIRD WORLD
COUNTRIES...

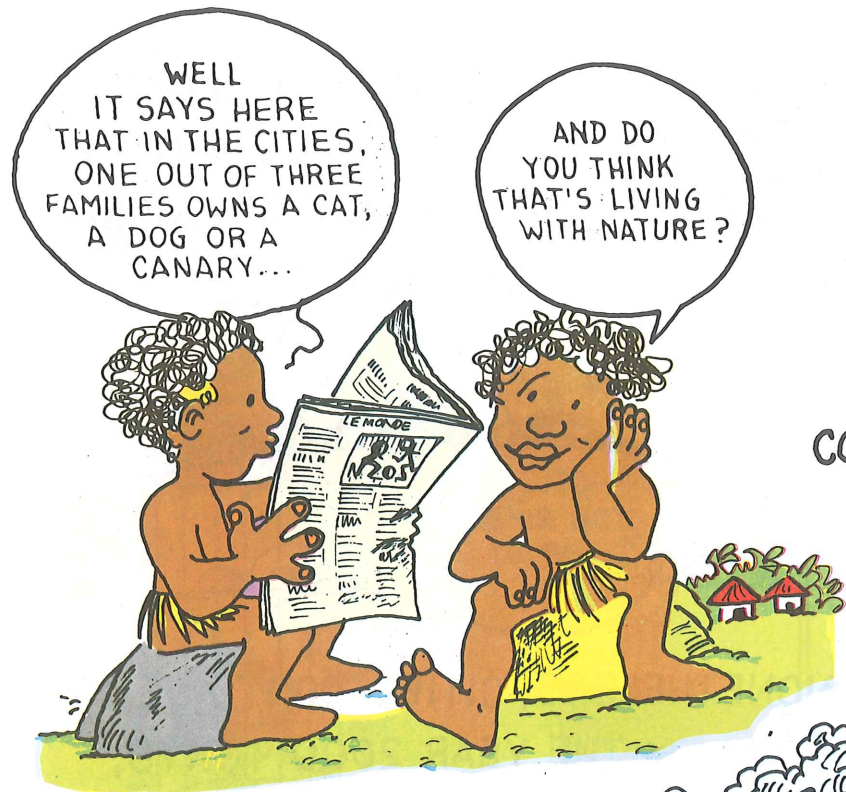
NONETHELESS, CITIES CONTINUE TO
GROW: BY THE YEAR 2000 TOKYO,
SAO PAULO, AND MEXICO CITY WILL
HAVE POPULATIONS CLOSE TO 30
MILLION...



WILL THIS URBAN
ECOSYSTEM BE A
SUITABLE HABITAT
FOR HUMANS?

...IN ANY
CASE...



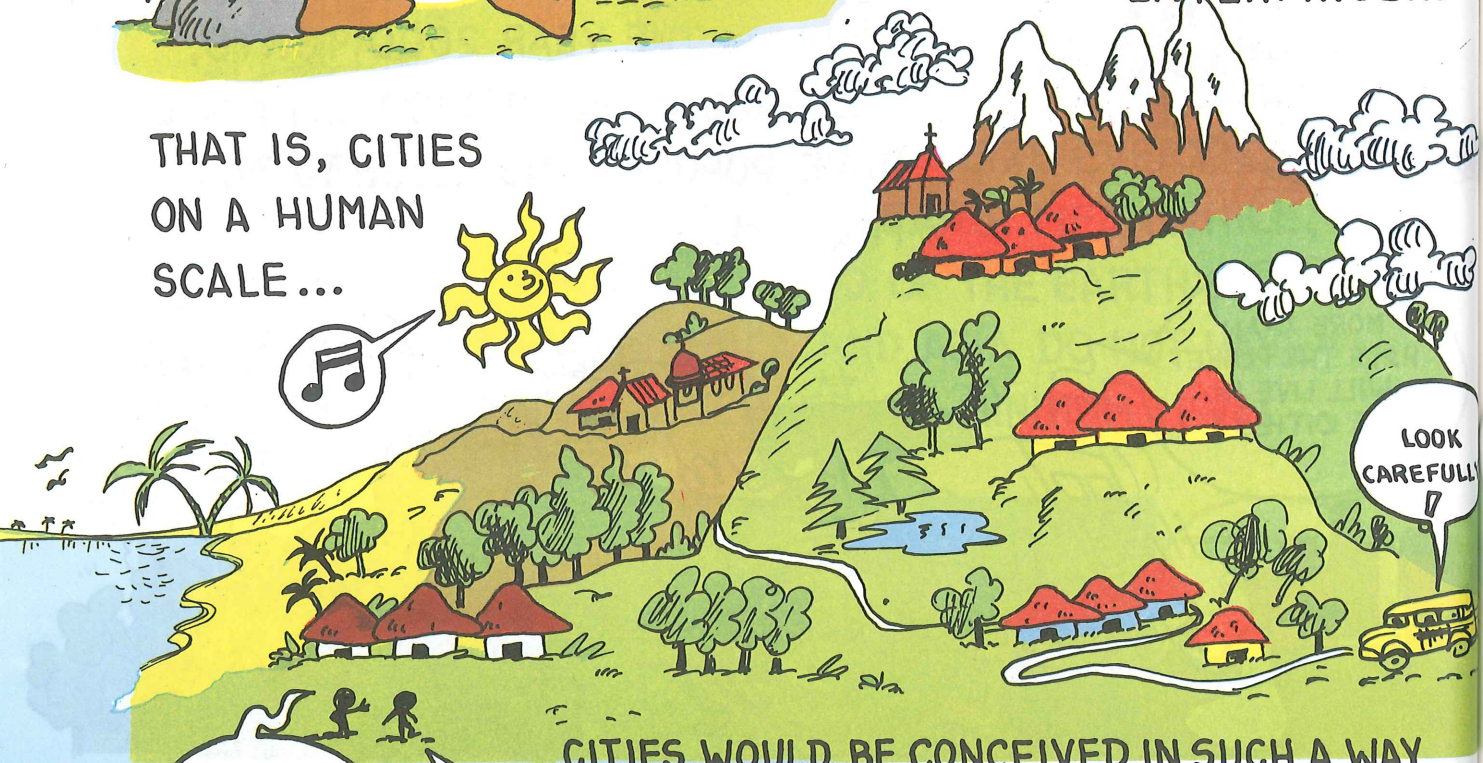


WELL IT SAYS HERE THAT IN THE CITIES, ONE OUT OF THREE FAMILIES OWNS A CAT, A DOG OR A CANARY...

AND DO YOU THINK THAT'S LIVING WITH NATURE?

...TO RESOLVE THE CONFLICT BETWEEN CITIES AND THE ENVIRONMENT, NEW FORMS OF URBANISM ARE BEING CONSIDERED: ECOLOGICAL URBANISM, INSTEAD OF URBANISM BASED PURELY ON ENTERPRISE...

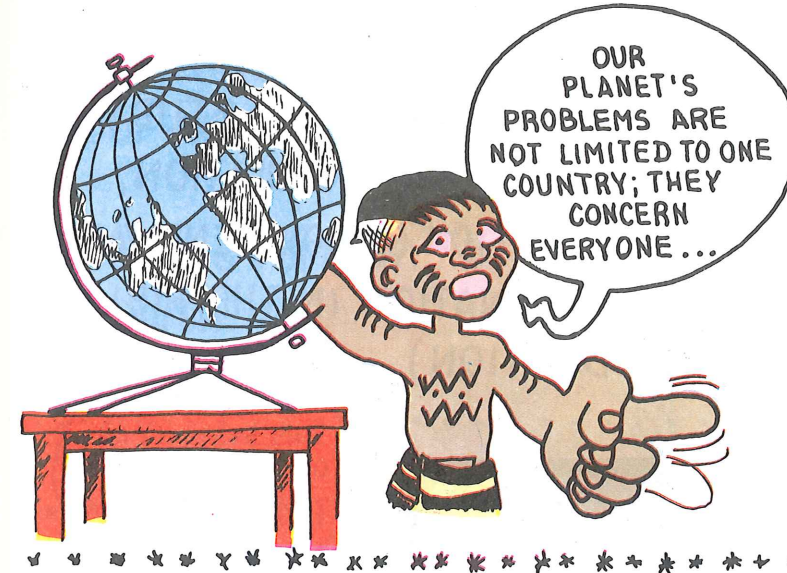
THAT IS, CITIES ON A HUMAN SCALE ...



LOOK CAREFULLY!

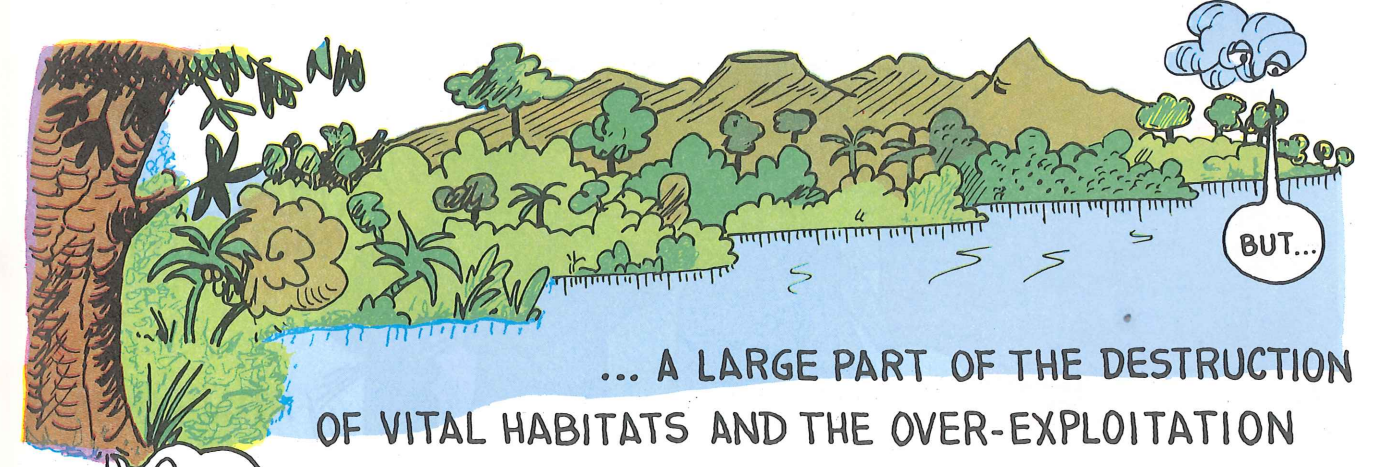
"SMALL IS BEAUTIFUL" SAID SCHUMACHER!

OH! ...CITIES WOULD BE CONCEIVED IN SUCH A WAY AS TO INCREASE THE CONTACT BETWEEN PEOPLE INSTEAD OF ISOLATING THEM; THEY WOULD HAVE MANY GREEN AREAS AND ROWS OF TREES THAT WOULD ACT AS BARRIERS AGAINST NOISE AND POLLUTION; PUBLIC TRANSPORTATION; MEASURES WOULD BE TAKEN TO CONTROL POLLUTION THE LANDSCAPE AND VISUAL ENVIRONMENT WOULD BE PRESERVED ... CITIES WOULD AT LONG LAST BE PLACES TO LIVE !!!



OUR PLANET'S PROBLEMS ARE NOT LIMITED TO ONE COUNTRY; THEY CONCERN EVERYONE ...

... THE RIVERS, MARINE FAUNA, MIGRATORY BIRDS, ADVANCING DESERTS, SMALLPOX, POVERTY OR THE THREAT OF NUCLEAR WAR ARE THINGS THAT KNOW NO BORDERS...



BUT...

... A LARGE PART OF THE DESTRUCTION OF VITAL HABITATS AND THE OVER-EXPLOITATION OF LIVING RESOURCES IS CAUSED BY POVERTY, WHICH IS ACCENTUATED BY DEMOGRAPHIC GROWTH...

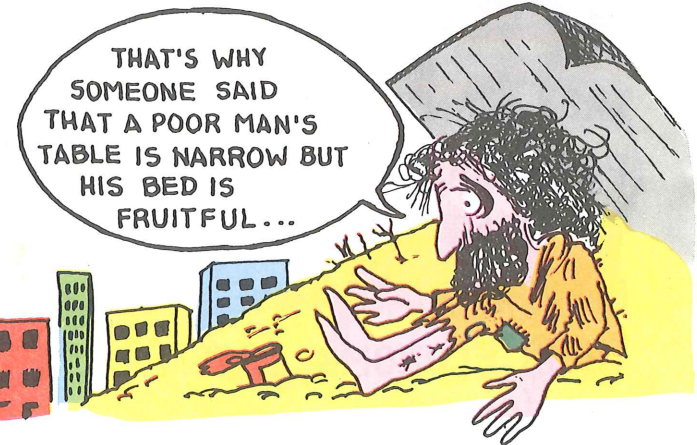


THERE ARE 40 BIRTHS IN THE WORLD EVERY MINUTE...

WHICH MEANS 55,000 MORE PEOPLE EACH DAY ...

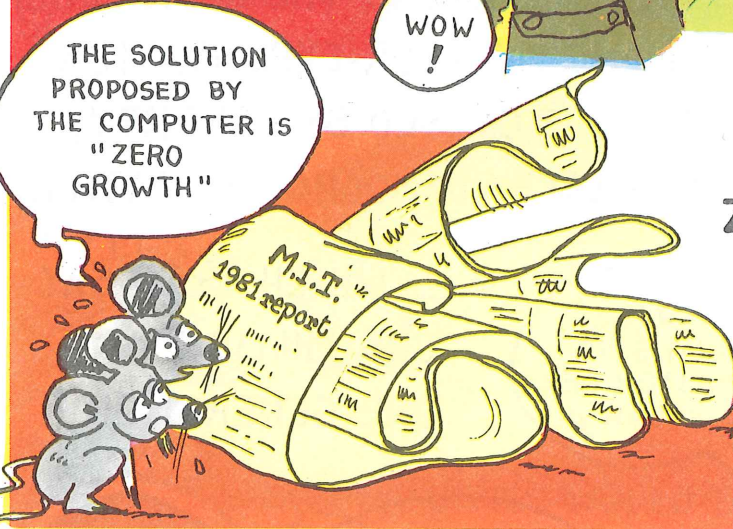
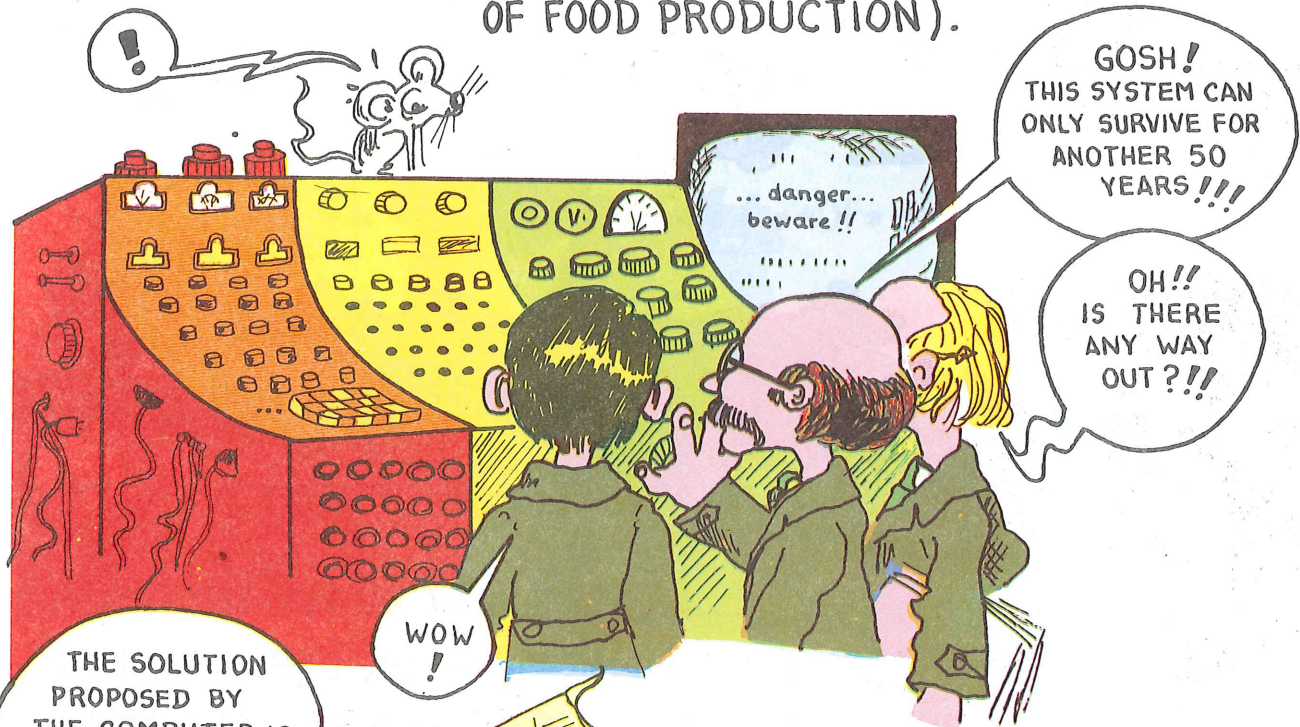
WOW! THAT'S 20 MILLION PER YEAR!

... WHICH IS TO SAY 500 MILLION IN ONE GENERATION!



THAT'S WHY SOMEONE SAID THAT A POOR MAN'S TABLE IS NARROW BUT HIS BED IS FRUITFUL...

A TEAM OF RESEARCHERS FROM M.I.T. (MASSACHUSETTS INSTITUTE OF TECHNOLOGY) MADE A COMPUTERIZED STUDY OF THE CONSEQUENCES OF CONTINUOUS GROWTH OF POPULATION, INDUSTRIALIZATION, POLLUTION, CONSUMPTION OF NON-RENEWABLE RESOURCES (AND AT THE SAME TIME, STAGNATION IN THE FIELD OF FOOD PRODUCTION).



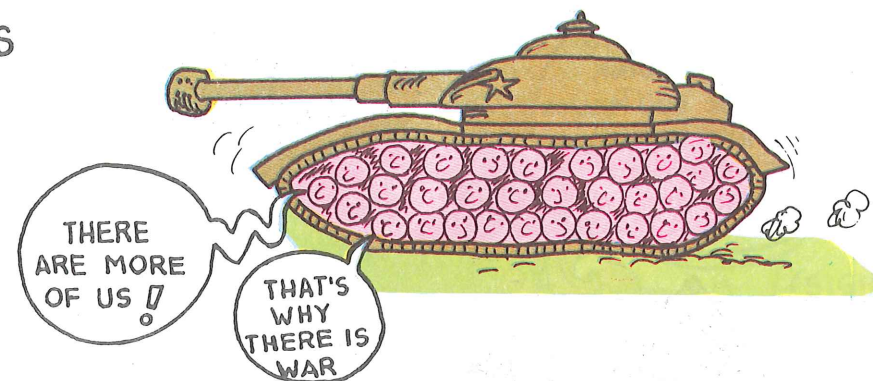
ZERO GROWTH IMPLIES THAT DEVELOPED COUNTRIES WILL HALT THEIR ECONOMIC GROWTH, THEIR INDUSTRIALIZATION AND TECHNOLOGICAL DEVELOPMENT (THAT IS, IF

THEY WANT TO PRESERVE A LIVEABLE ENVIRONMENT); AND POOR COUNTRIES WILL, ON THE CONTRARY, MAKE A BIG EFFORT TO DEVELOP THEIR ECONOMIC GROWTH...

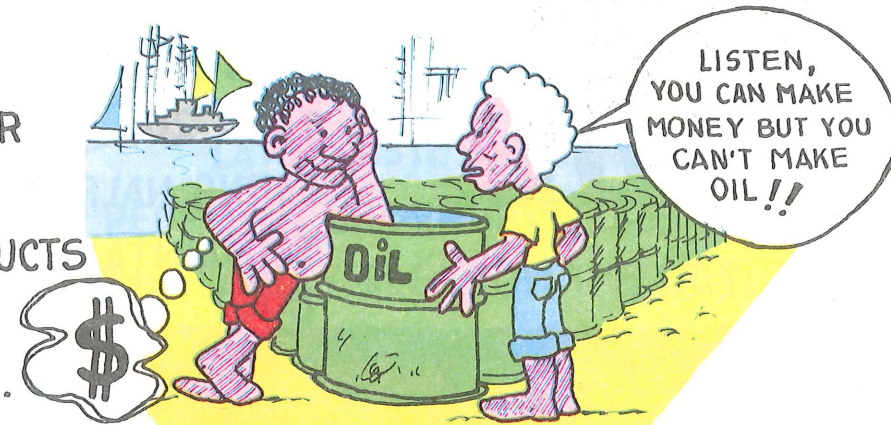


"Z.G." POLICY ALSO MEANS ALL OF THE FOLLOWING:

- STOPPING POPULATION GROWTH...



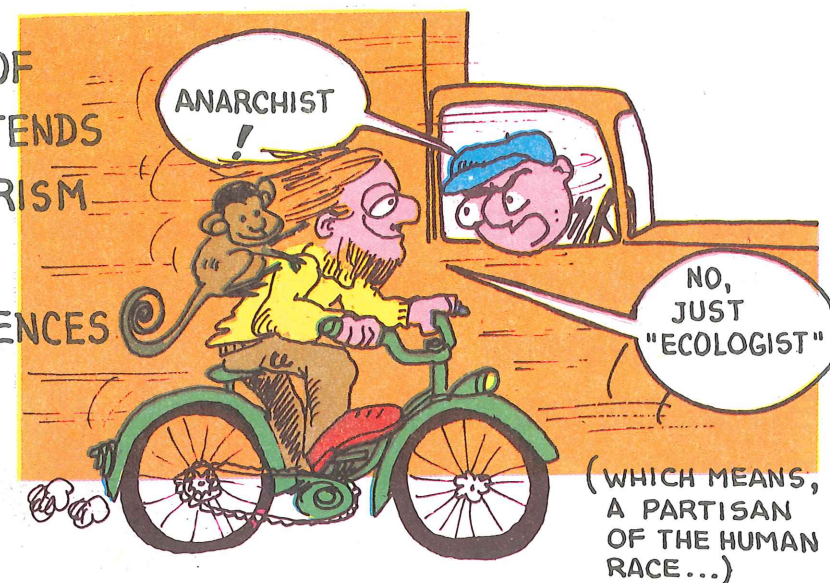
- INCREASE IN FOOD PRODUCTION RATHER THAN INDUSTRY.
- ECONOMIZING PRODUCTS
- SLOW DOWN CAPITAL GROWTH...

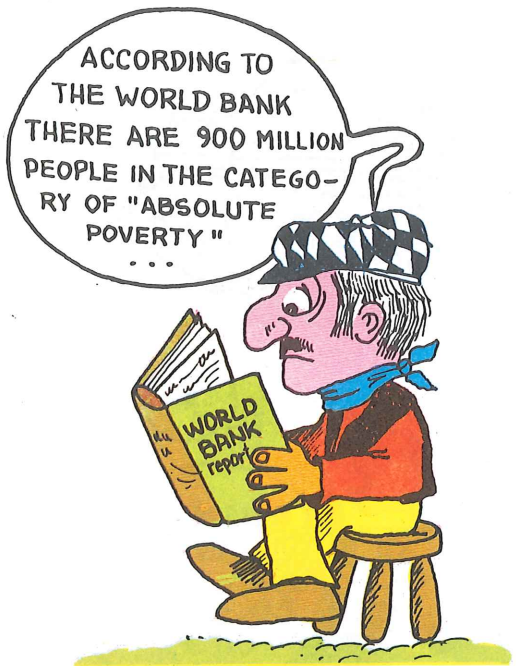


- ALONG WITH RECYCLING OF NATURAL RESOURCES AND WASTES ...



THE WESTERN MODEL OF DEVELOPMENT, WHICH TENDS TO INCREASE CONSUMERISM AND CATER TO IT, HAS DEVASTATING CONSEQUENCES FOR THE ENVIRONMENT: IN GENERAL TERMS IT WOULD BE A DISASTER FOR HUMANITY...

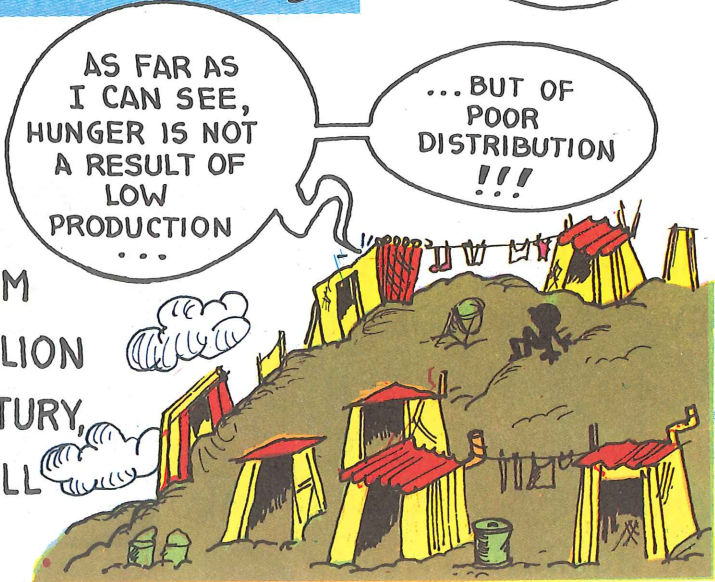




... THAT IS, HUMANS WHO SUFFER FROM ILLITERACY, MALNUTRITION AND LACK OF PROTEINS:
 - 500 MILLION PEOPLE ARE UNDERNOURISHED
 - 800 MILLION DESTITUTE PEOPLE CANNOT SATISFY THEIR BASIC NEEDS WITH AN ANNUAL SALARY OF LESS THAN 200 DOLLARS (A POOR PERSON EARNS HALF THE AMOUNT IT TAKES TO MAINTAIN A PEDIGREED DOG).



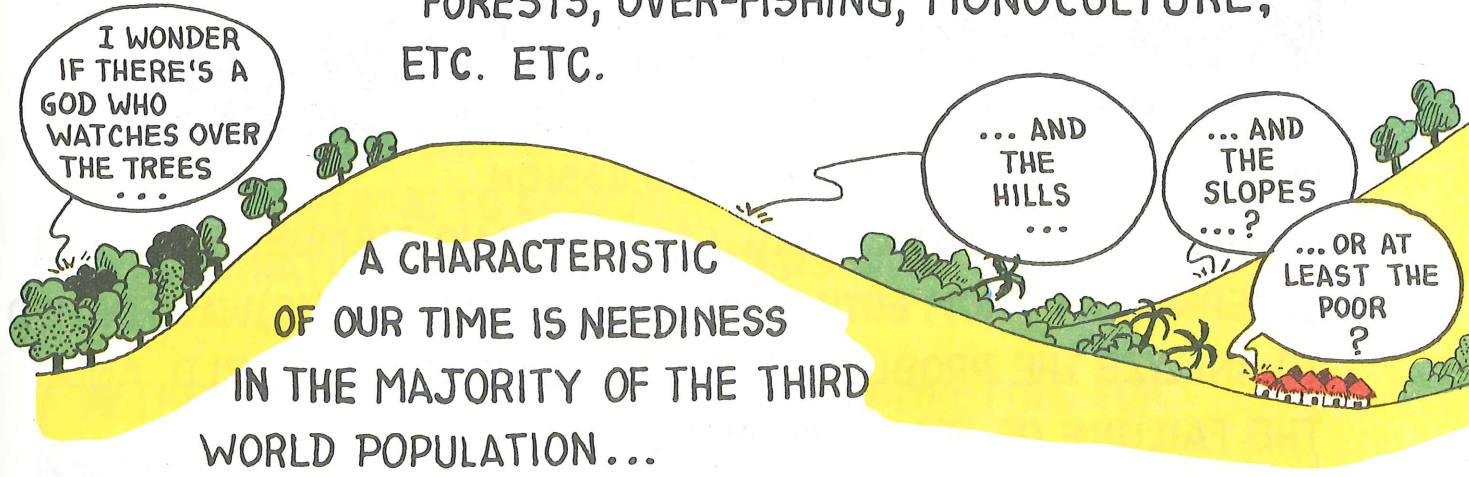
ACCORDING TO UNICEF 12 MILLION CHILDREN UNDER 5 YEARS OF AGE DIED OF HUNGER IN 1978. OUT OF EVERY 3 MEN, 2 SUFFER FROM HUNGER... IF THERE ARE 7 BILLION OF US BY THE END OF THE CENTURY, 6 BILLION WILL BE HUNGRY, WILL DIE OF STARVATION...



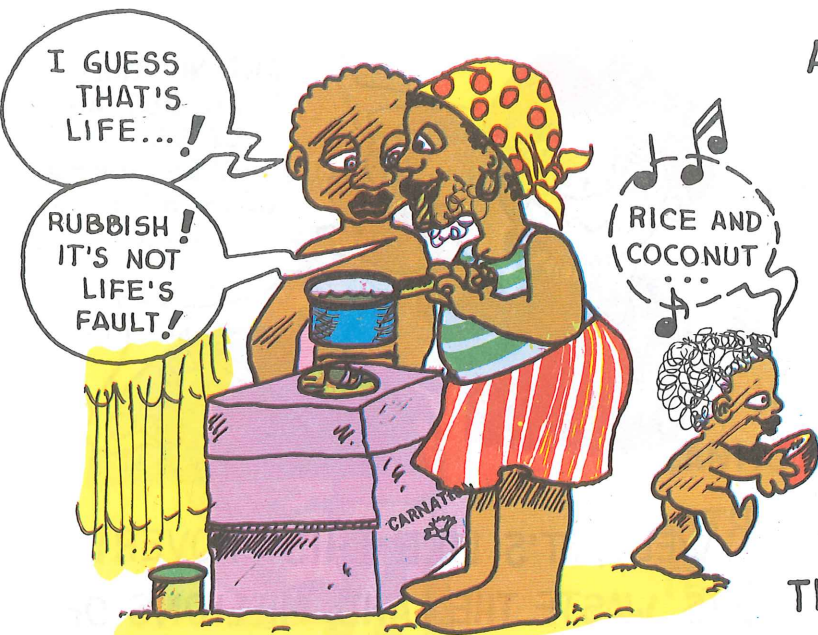
THE GAP BETWEEN POOR AND RICH COUNTRIES WIDENS DAILY. DEVELOPMENT IS VERY UNEQUAL AND CANNOT BE A HOPE FOR POOR COUNTRIES...



... WELL, IT'S LIKE THIS: POVERTY LAYS WASTE THE LAND, MILLIONS OF PEOPLE IN UNDERDEVELOPED COUNTRIES UNWITTINGLY DESTROY THE NATURAL RESOURCES THROUGH THE FELLING OF FORESTS, OVER-FISHING, MONOCULTURE, ETC. ETC.



BUT... THE CONSEQUENCES OF POVERTY ARE IRREPARABLE AND WILL EVENTUALLY OVERTAKE ALL OF HUMANITY.

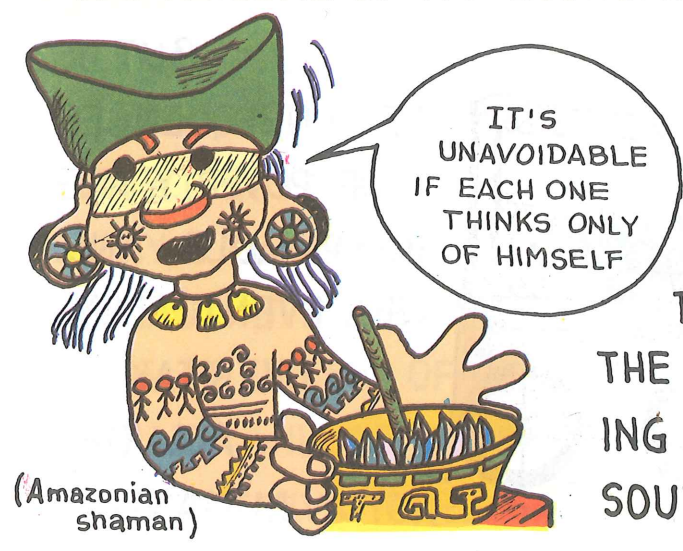


AND TO THINK THAT POVERTY COULD BE REMEDIED BY A CHANGE IN INTERNATIONAL RELATIONS!

IN ANY EVENT, DIMINISHING THE GAP BETWEEN RICH AND POOR COUNTRIES, DIMINISHING THE INEQUALITY IN THE DISTRIBUTION OF KNOWLEDGE, POWER AND USE OF NATURAL RESOURCES WOULD ALL BE FOR THE GOOD OF THE WORLD...

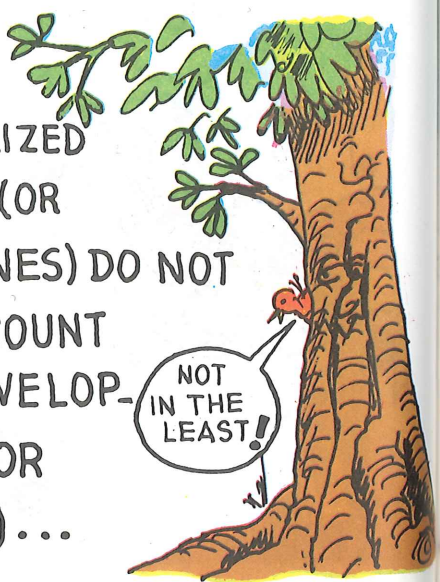


IN 1977 AN INDEPENDENT COMMISSION (MADE UP OF OUTSTANDING LEADERS AND MEMBERS OF GOVERNMENT FROM BOTH RICH AND POOR COUNTRIES) WAS FORMED TO ANALYZE THE PROBLEM OF INEQUALITY IN THE WORLD, AND THE FAILURE OF ITS ECONOMIC SYSTEM...

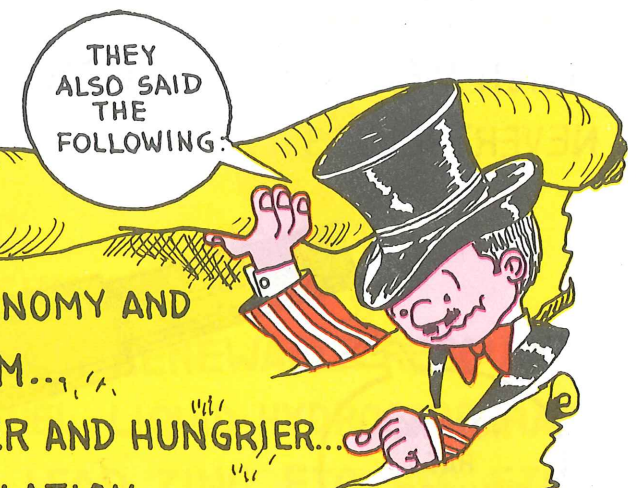


(Amazonian shaman)

INDUSTRIALIZED COUNTRIES (OR NORTHERN ONES) DO NOT TAKE INTO ACCOUNT THE NEEDS OF DEVELOPING COUNTRIES (OR SOUTHERN ONES)...



...LIKE MANY THIRD WORLD COUNTRIES. IN VIEW OF THIS, THE 20 MEMBERS OF THE NORTH-SOUTH COMMISSION AGREED THAT IT WAS OF PRIMARY IMPORTANCE AND URGENCY TO CREATE A NEW WORLD ECONOMIC ORDER...



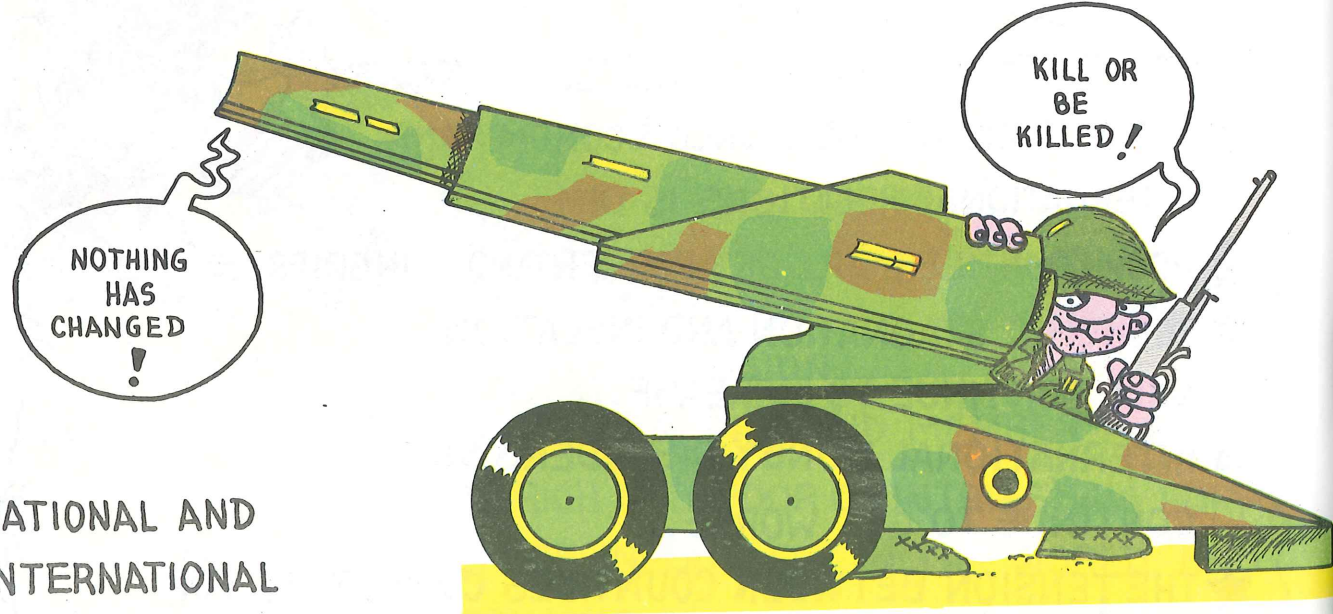
- ★ THE FUTURE OF THE WORLD ECONOMY AND INTERNATIONAL RELATIONS IS DIM...
- ★ POOR COUNTRIES WILL GET POORER AND HUNGRIER...
- ★ ECONOMIC STAGNATION AND INFLATION WILL CONTINUE TO INCREASE...
- ★ INTERNATIONAL MONEY DISORDERS WILL CONTINUE TO GET WORSE...
- ★ THE TENSION BETWEEN COUNTRIES COMPETING FOR ENERGY, FOOD AND RAW MATERIALS WILL INCREASE...
- ★ POPULATION AND UNEMPLOYMENT WILL INCREASE BOTH IN THE NORTH AND IN THE SOUTH...
- ★ THE ENVIRONMENT WILL BE INCREASINGLY THREATENED BY DEFORESTATION, EXPANDING DESERT AREAS, OVERFISHING, AND AIR AND WATER POLLUTION...
- ★ LASTLY, ON TOP OF EVERYTHING ELSE, IS THE DANGER OF THE NUCLEAR ARMS RACE...





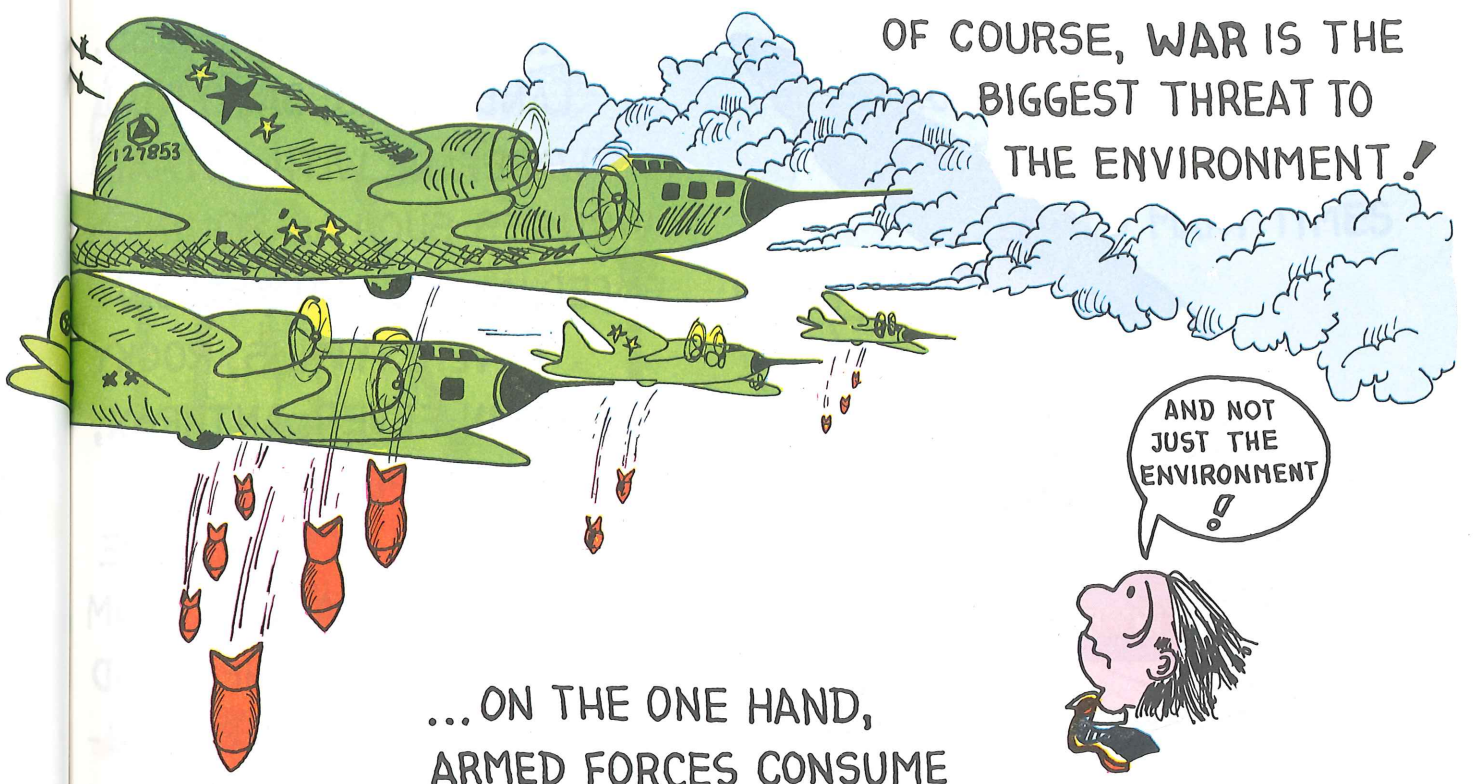
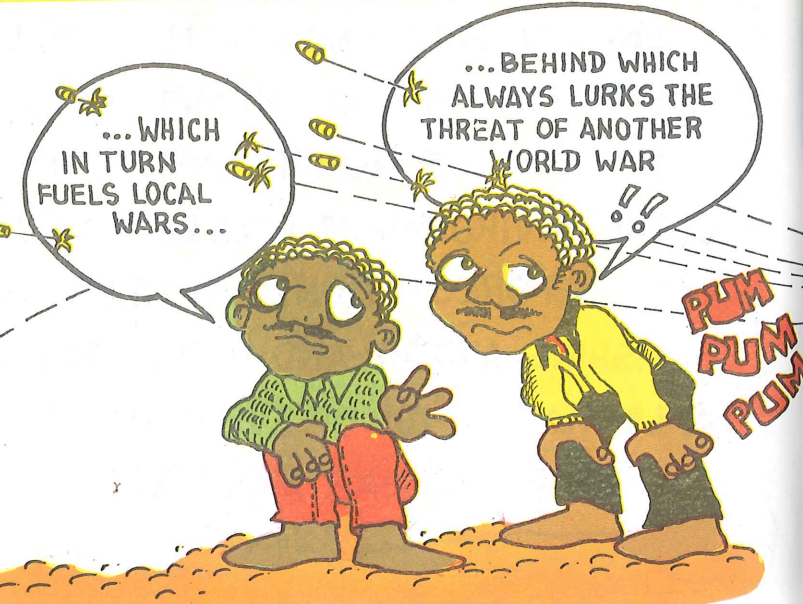
...WILLY BRANDT, EDUARDO FREI, EDWARD HEATH, AMIR JAMAL DAR-ES-SALAAM, ADAM MALIK, OLOF PALME AND MANY OTHER WORLD LEADERS AGREED THAT THE WORLD SITUATION REQUIRES EMERGENCY ACTION,

WHICH MEANS APPLICATION OF A SURVIVAL PROGRAM NEVERTHELESS...

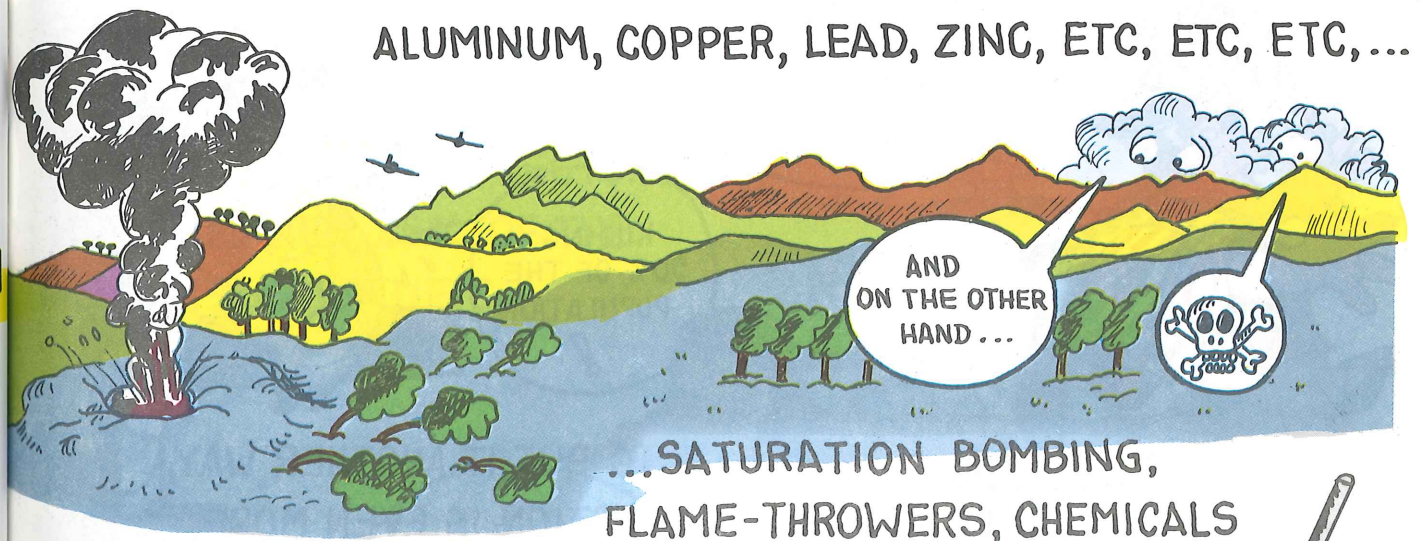


NOTHING HAS CHANGED!

NATIONAL AND INTERNATIONAL RELATIONS CONTINUE TO BE CHARACTERIZED BY INEQUALITY. TENSION, MISTRUST AND CONFLICTS OF INTEREST STIMULATE THE GROWTH OF MILITARY ARSENALS



...ON THE ONE HAND, ARMED FORCES CONSUME A WIDE VARIETY OF NON-RENEWABLE RESOURCES, SUCH AS AIRPLANE FUEL, LIQUID HYDROCARBURATES, ALUMINUM, COPPER, LEAD, ZINC, ETC, ETC, ETC,...



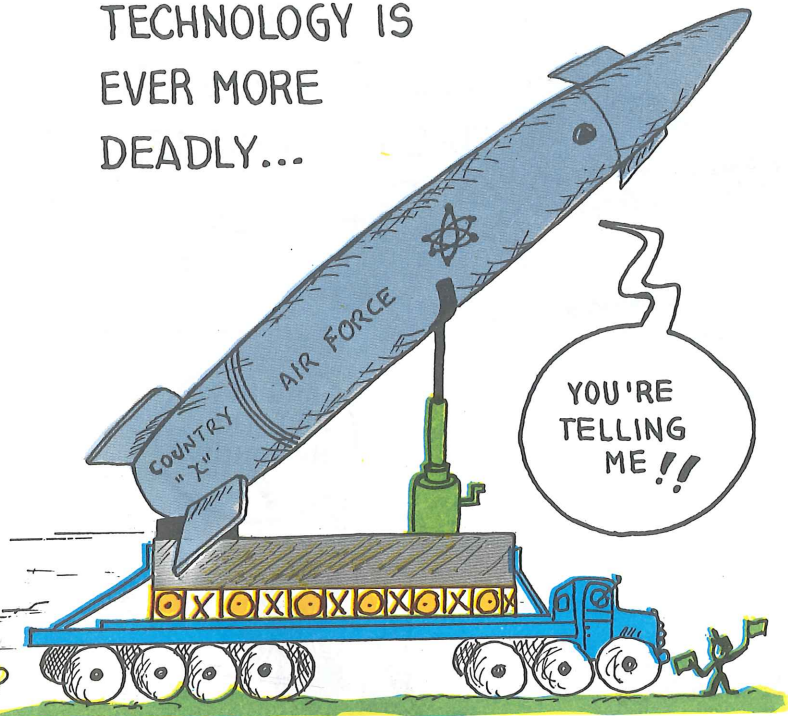
...SATURATION BOMBING, FLAME-THROWERS, CHEMICALS

AND NUCLEAR EXPLOSIVES CAN CAUSE VERY LONG-LASTING RAVAGES...

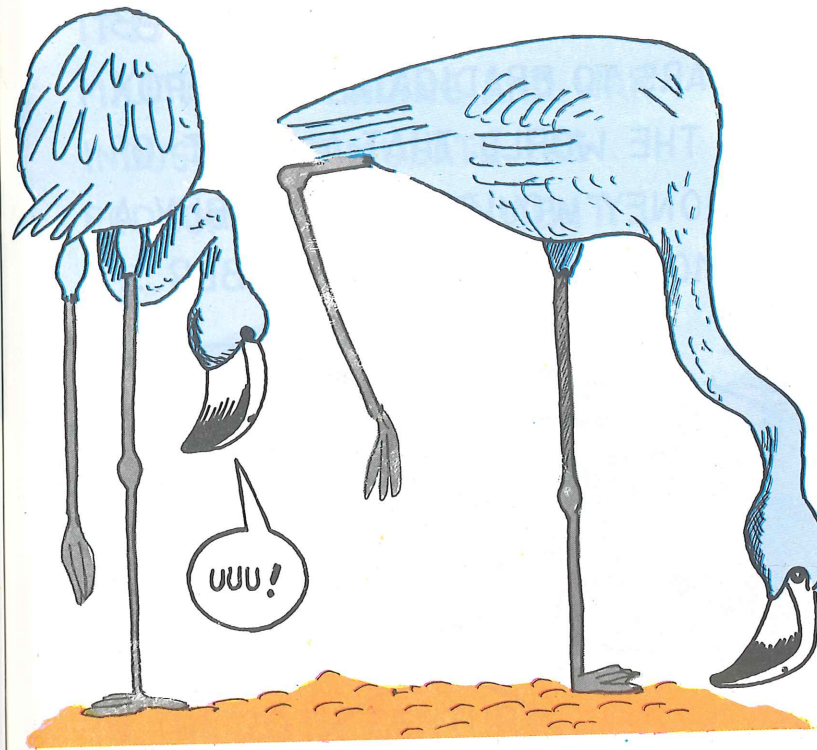
(FOR EXAMPLE, IN VIETNAM THEY DROPPED 100 KG. OF PURE DIOXIN)



TECHNOLOGY IS
EVER MORE
DEADLY...



... AIR-TO-AIR MISSILES,
LAND-MINES, BACTERIAL
WAREFARE WITH LETHAL
VIRUSES SUCH AS EQUINE
ENCEPHALITIS AND YELLOW
FEVER, TYPHUS, ROCKY
MOUNTAIN FEVER, ANTHRAX,
CHOLERA, PLAGUE, ETC...
ALL OF WHICH ARE
OBTAINED FROM
VACCINE - AND
ANTIBIOTIC-
RESISTANT SOURCES...

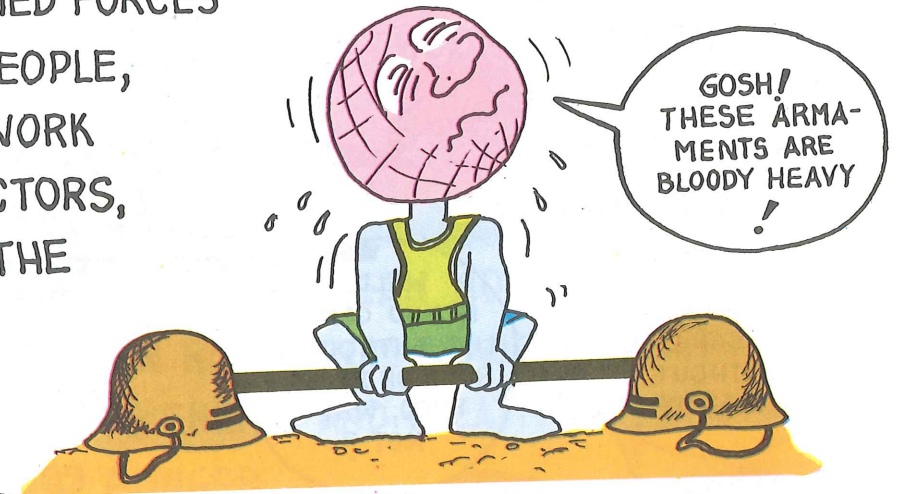


THERE ARE NOW ENOUGH
NUCLEAR WEAPONS
STORED AWAY TO DESTROY
THE WORLD MANY TIMES
OVER...

WAR DIVERTS MASSIVE

AMOUNTS OF HUMAN AND FINANCIAL RESOURCES.

IN THE WHOLE WORLD, ARMED FORCES
AMOUNT TO 22 MILLION PEOPLE,
AND 60 MILLION PEOPLE WORK
IN MILITARY-RELATED SECTORS,
WHICH IMPLIES 25% OF THE
WORLD'S SCIENTIFIC
PERSONNEL...



...THERE ARE
TWICE AS MANY
SOLDIERS AS THERE
ARE DOCTORS,
TEACHERS AND NURSES

250 BILLION DOLLARS ARE
SPENT ANNUALLY ON WAR.
MEANWHILE, 2 AND A HALF
BILLION PEOPLE, MEN,
WOMEN AND CHILDREN, ARE
STRUGGLING TO SURVIVE...

MM...

THE CARGO
OF A SINGLE
BOMBER CAN
CONTAMINATE
10,000 KM²...



KILLING
50% OF THE
POPULATION



...TO PUT IT ANOTHER WAY,

ITS DESTRUCTIVE ACTION IS EVEN MORE
GENERAL THAN AN ATOMIC BOMB (!!)

... IT BLOCKS THE
TRANSMISSION OF
NERVE IMPULSES AND THE
VICTIM DIES OF
ASPHYXIATION...

AND
THIS LETHAL
CHEMICAL
WEAPON OR
"VX" ??

THE WORLD HEALTH ORGANIZATION SPENT 83 MILLION DOLLARS TO ERADICATE SMALLPOX IN THE WORLD. THAT AMOUNT OF MONEY WOULD NOT EVEN BUY A SINGLE MODERN STRATEGIC BOMBER...

THAT'S NO GOOD!

OH...

IF A TANK ALONE COSTS ONE MILLION DOLLARS ...

A WAR JET COSTS 20 MILLION DOLLARS ...

WITH THIS AMOUNT OF MONEY, SCHOOLROOMS COULD BE BUILT FOR 30,000 CHILDREN... AND WITH THIS AMOUNT 40,000 VILLAGE PHARMACIES COULD BE BUILT...

DO YOU THINK WE CAN LIVE WITHOUT THE ARMY?

WELL, IF YOU CAN LIVE WITHOUT A ROOF OR DECENT FOOD, WHY NOT?

TAKE COSTA RICA, FOR EXAMPLE, A COUNTRY THAT HAS LIVED WITHOUT AN ARMY FOR THE PAST 30 YEARS...

INSTEAD OF WEAPONS, BOOKS AND EDUCATION!

IT IS WRONG TO THINK THAT MILITARY SPENDING AND WAR INDUSTRY STIMULATE THE ECONOMY OR EMPLOYMENT...

IT'S BETTER TO HAVE INDUSTRIES THAT PRODUCE MARKET GOODS ...

THAT'S RIGHT! THEY ALSO CREATE JOBS

AND MORE OF THEM!

IN THE 20TH CENTURY 100 MILLION LIVES HAVE BEEN WASTED IN WAR...

IT'S TIME TO STOP!

I THINK SO!

...DISARMAMENT WOULD MEAN NOT ONLY SAVING THE HUMAN RACE FROM SLAUGHTER BUT ALSO THE CHANNELING OF ITS ENERGY AND CREATIVITY TO WIN THE BATTLE AGAINST HUNGER, DISEASE AND POVERTY...

THERE IS A WAY TO END HUMANITY'S TERRIBLE PROBLEMS...

YEAH!

YES!

WOULDN'T IT BE LOVELY!

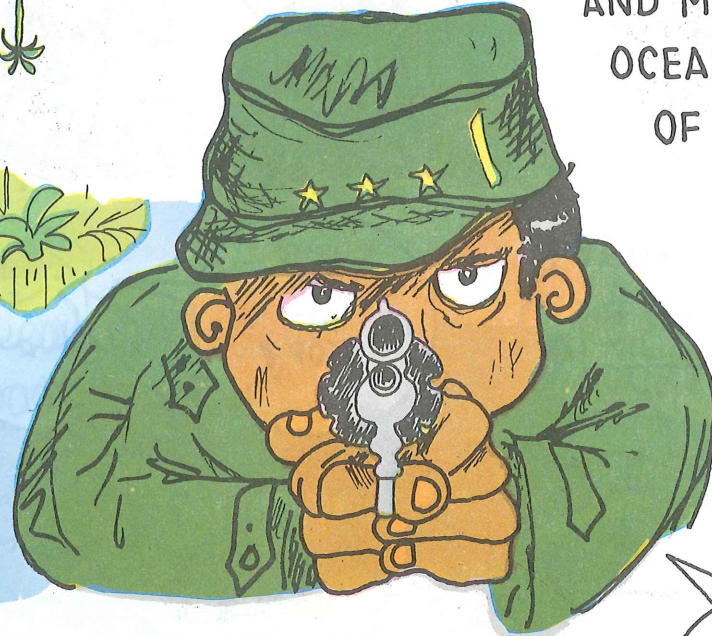


MAKE LOVE, NOT WAR!

DISARMAMENT WOULD ALLOW VAST RESOURCES TO BE USED FOR THE GOOD OF HUMANITY.

WHAT DO YOU MEAN?

IT WOULD MEAN EXPLOITING NEW RESOURCES OF FOOD AND MINERALS IN THE OCEANS; DEVELOPMENT OF NEW SOURCES OF ENERGY; PROTECTION OF THE ENVIRONMENT; IT WOULD MEAN...

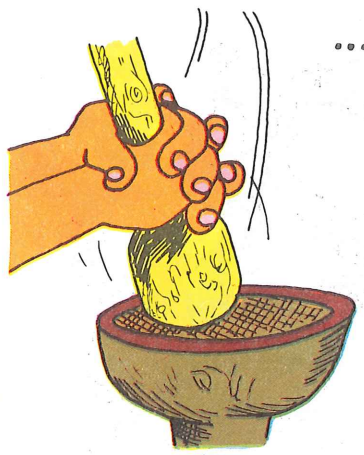


SUBVERSIVES !

BY STOPPING THE ARMS RACE WITH ITS ECONOMIC, POLITICAL AND SOCIAL COSTS, AN IMPORTANT OBSTACLE TO A NEW ECONOMIC ORDER WOULD BE OVERCOME. THEN, A FRESH APPROACH COULD BE TAKEN TO THE RELATIONS BETWEEN COUNTRIES !!



A FIRST STEP TOWARDS A GLOBAL VISION OF OUR PLANET !



... ALONG WITH A NEW ECONOMIC ORDER, A FAIRER DISTRIBUTION OF RESOURCES WOULD BE SOUGHT, AND FULLER DEVELOPMENT OF EVERY NATION'S POTENTIAL...

ALL ROADS LEAD TO ROME...



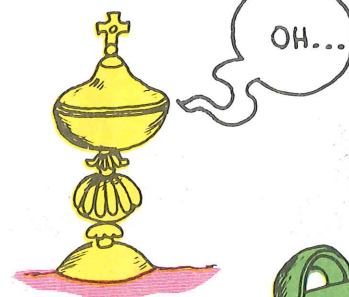
THAT'S RIGHT ! THAT'S WHY POPE JOHN PAUL II SAID IN HIS ENCYCLICAL "LABORUM EXERCENS" THAT RELATIONS BETWEEN COUNTRIES MUST BE MUTUALLY BINDING...

JOHN XXIII SAID IT, TOO !

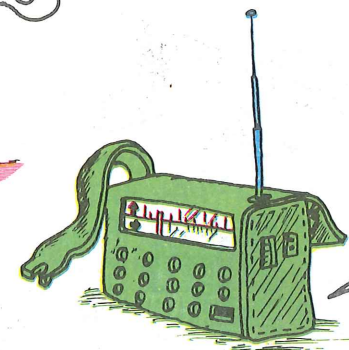
AND THAT WAS 20 YEARS AGO ...



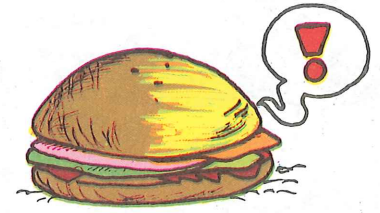
... HE SAID THAT RICH COUNTRIES MUST NOT BE INDIFFERENT TO THE HUNGER AND DESTITUTION OF POOR ONES...



OH...



DID YOU KNOW THAT ONE SWISS PERSON CONSUMES AS MUCH AS 40 SOMALIANS?



OR THAT THE MOST CRITICAL DISORDER IN THE USA IS OBESITY, MORE THAN CANCER OR POLIO?

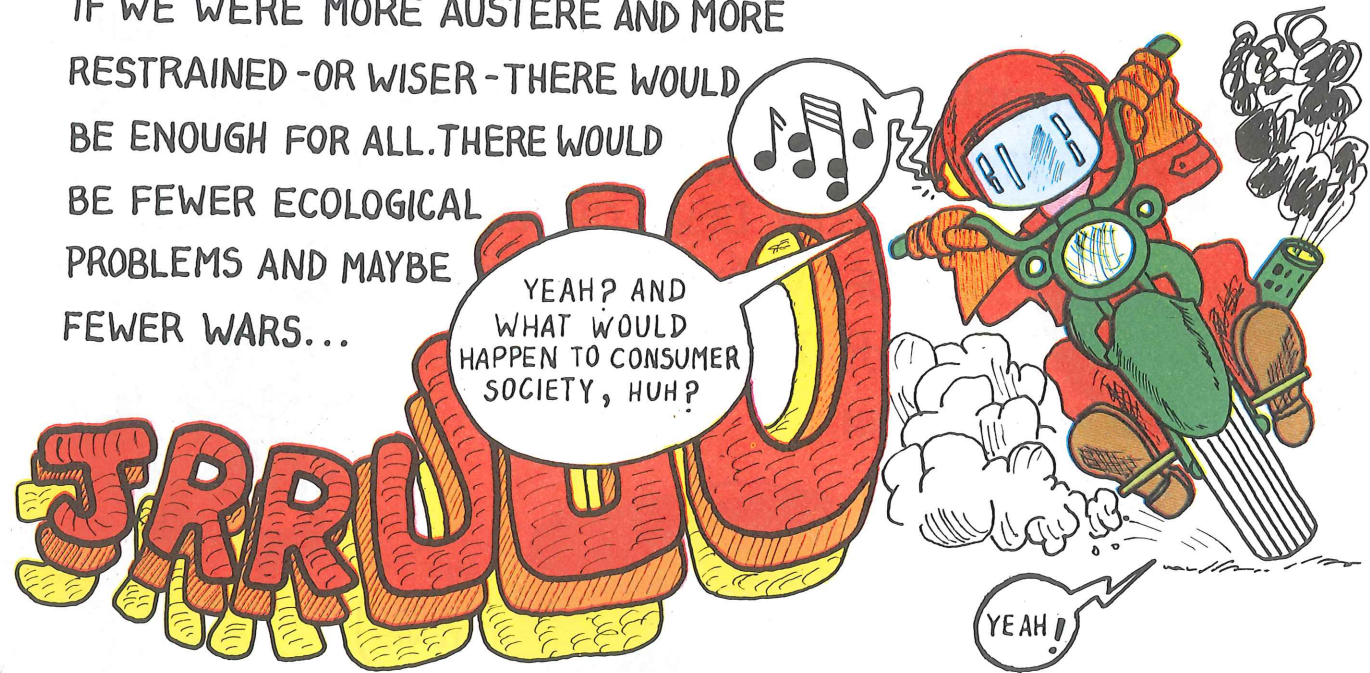


THERE CAN BE NO FRIENDSHIP WITHOUT AUSTERITY SAID ARISTOTLE ...

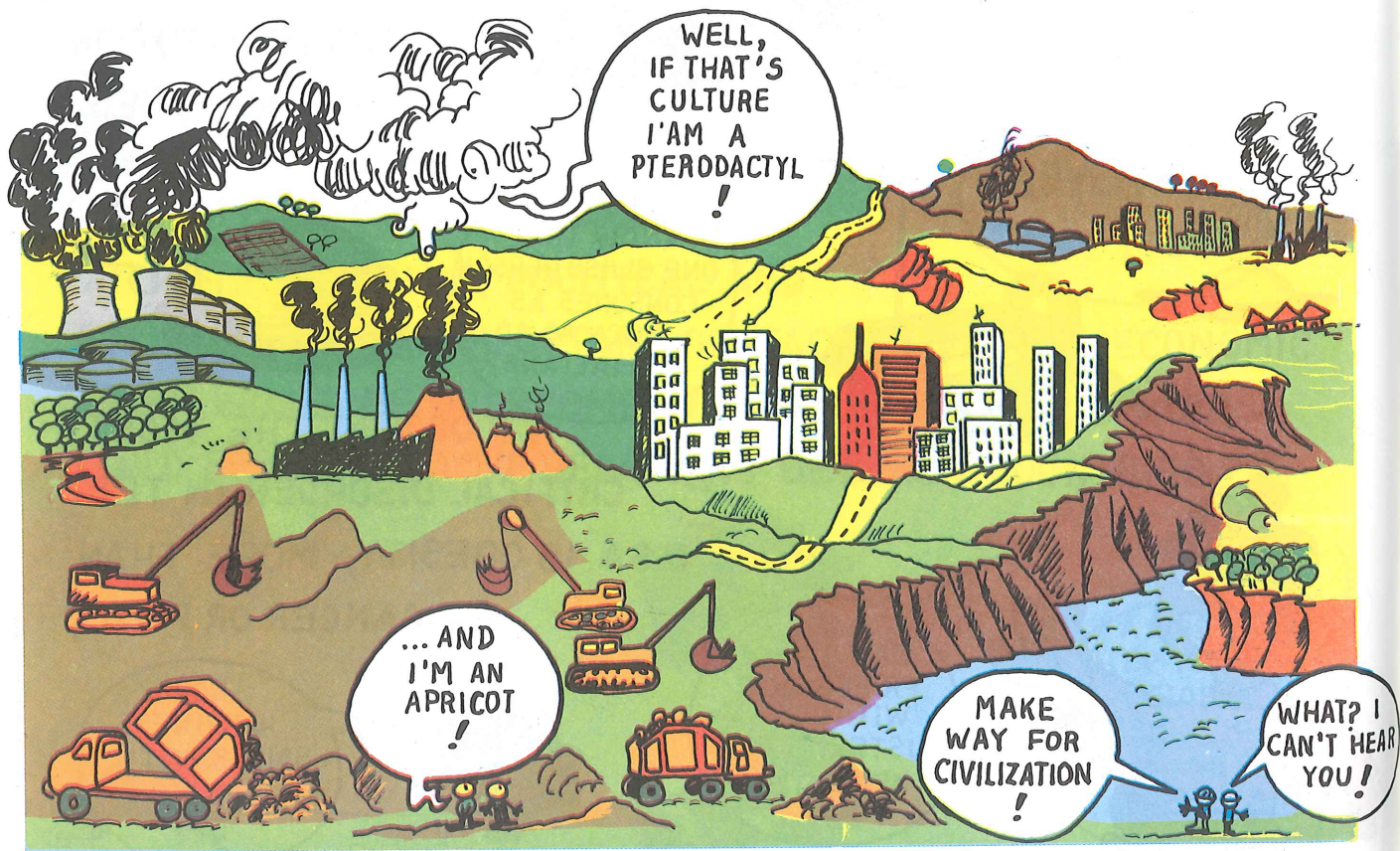


NOR HAPPINESS, SAID SAINT THOMAS !

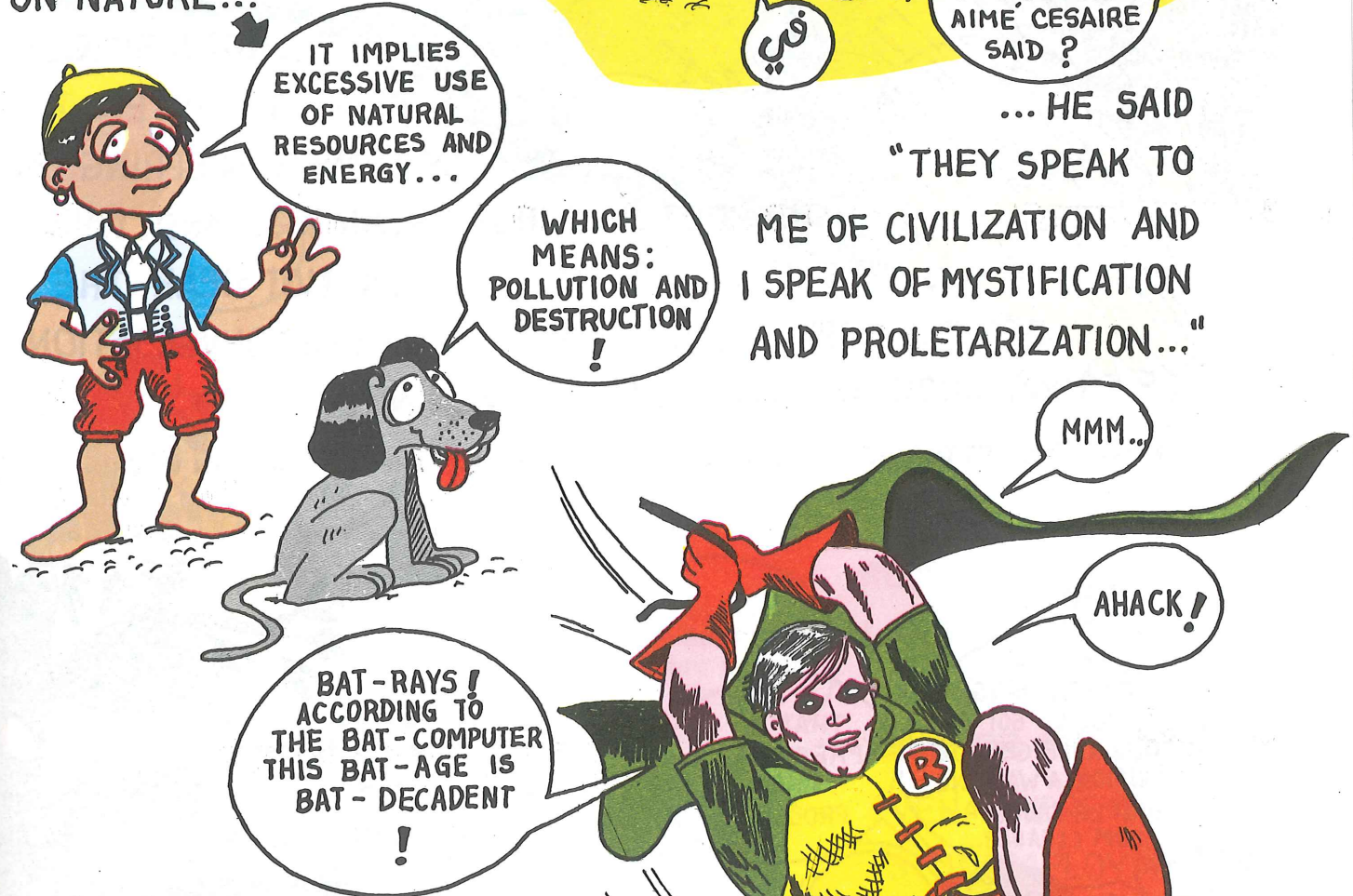
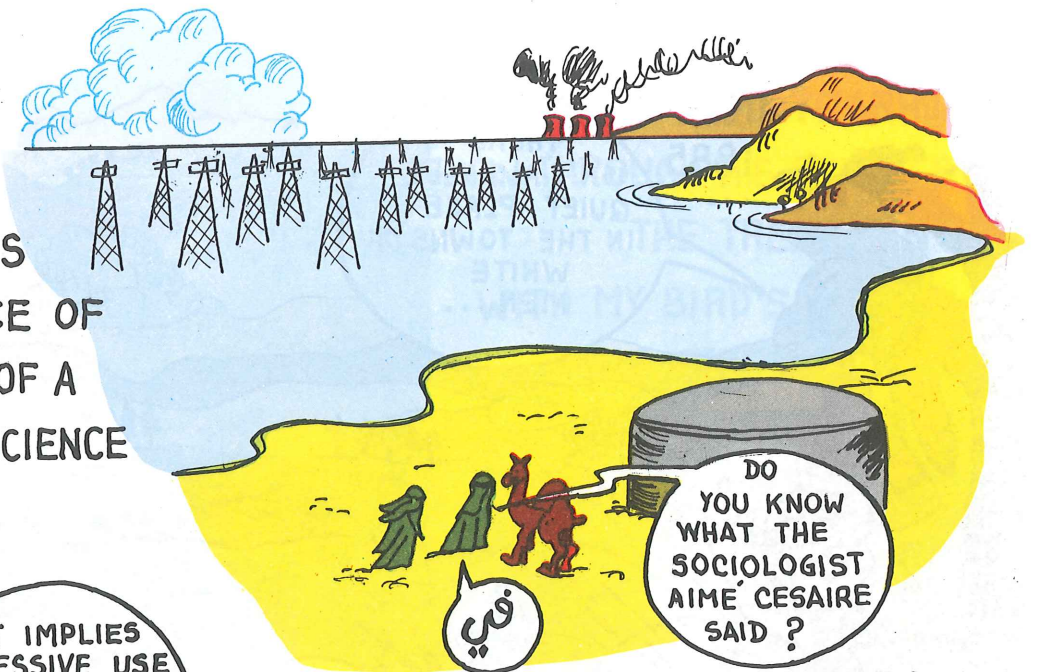
IF WE WERE MORE AUSTERE AND MORE RESTRAINED -OR WISER- THERE WOULD BE ENOUGH FOR ALL. THERE WOULD BE FEWER ECOLOGICAL PROBLEMS AND MAYBE FEWER WARS...



.....
 ECOLOGICAL IMBALANCES ARE CAUSED BY THE RELATIONSHIP EXISTING BETWEEN A CULTURAL FORM (OR WORLD-VISION) AND THE PHYSICAL -NATURAL ENVIRONMENT IN WHICH IT TAKES PLACE...

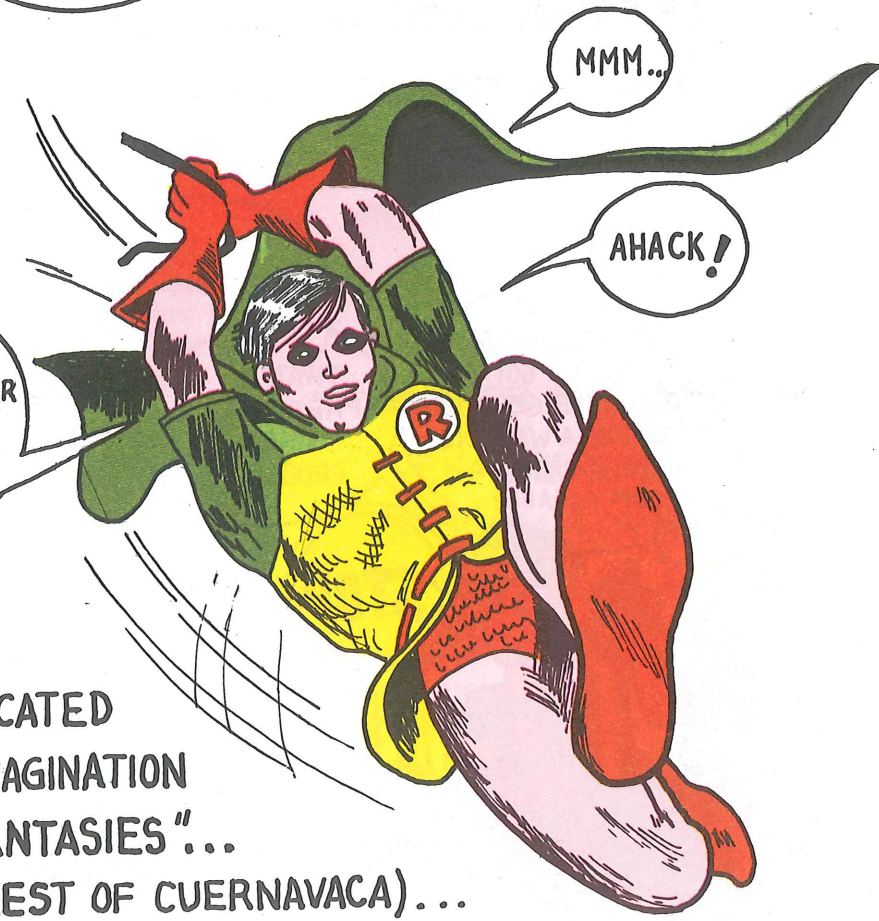


THE CULTURE THAT CORRESPONDS TO TODAY'S SOCIETY IS THE CONSEQUENCE OF THE APPLICATION OF A CERTAIN KIND OF SCIENCE AND TECHNOLOGY ON NATURE...



... HE SAID "THEY SPEAK TO ME OF CIVILIZATION AND I SPEAK OF MYSTIFICATION AND PROLETARIZATION..."

... "IT IS CERTAIN THAT INDUSTRIALIZATION ONLY PRODUCES PREFABRICATED DREAMS, INDUSTRIALIZED IMAGINATION AND PREPROGRAMMED FANTASIES"... SAID IVAN ILLICH (THE PRIEST OF CUERNAVACA)...



ALREADY IN 1885 ...

THERE ISN'T A SINGLE QUIET PLACE IN THE TOWNS OF WHITE MEN ...



THE LAST SEATHL INDIAN CHIEF

WELL SAID!

... NOT A SINGLE PLACE TO LISTEN TO THE LEAVES IN SPRING OR THE RUSTLE OF INSECT-WINGS... AND WHAT

IS LEFT IN A MAN'S LIFE IF HE CANNOT HEAR THE

BEAUTIFUL CRY OF THE NIGHT BIRD OR THE CONVERSATION OF FROGS AROUND A LAKE IN THE EVENING?"

(FROM THE LETTER SENT BY THE INDIAN CHIEF TO "THE BIG CHIEF IN WASHINGTON")

IN 1982...

WHAT ARE YOU COMPLAINING ABOUT? YOU'VE GOT A STEREO, A REFRIGERATOR, A TELEVISION, A WASHING MACHINE, A RADIO, A VACUUM CLEANER...

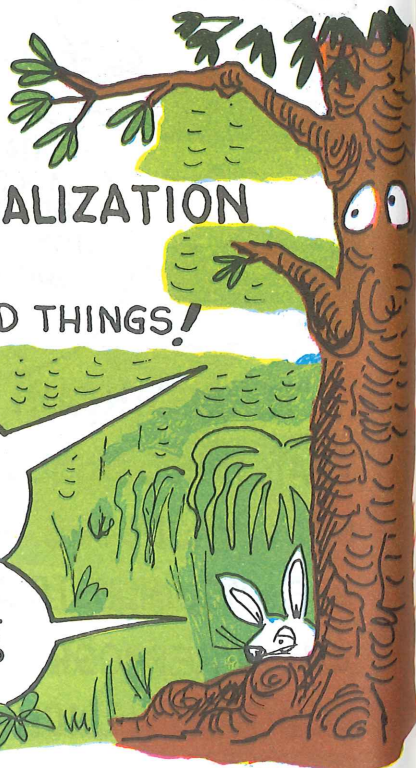
THAT'S PRECISELY THE PROBLEM!



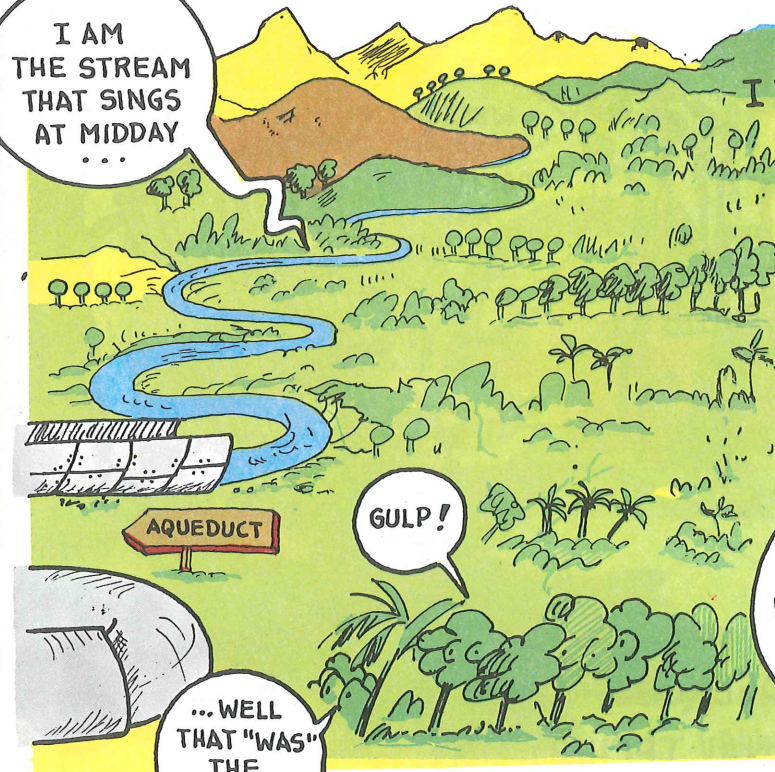
INDUSTRIALIZATION INCREASES PEOPLE AND THINGS!

BUT EVERYTHING COMES FROM THE EARTH...

AND WHERE ELSE?



I AM THE STREAM THAT SINGS AT MIDDAY ...



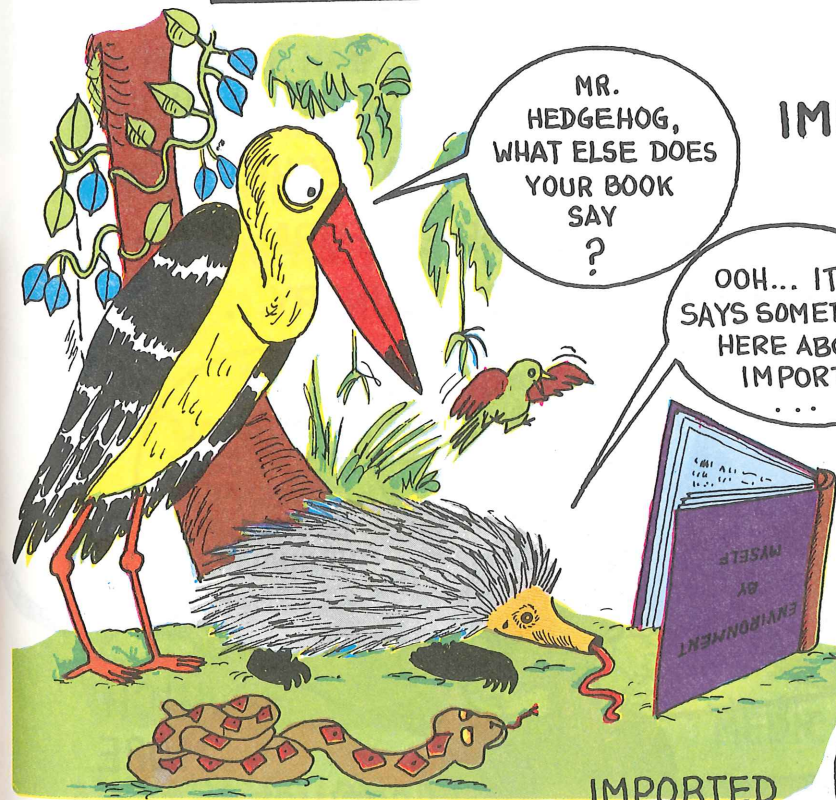
GULP!

... WELL THAT "WAS" THE STREAM ...

"I AM THE STREAM, I FLOW THROUGH THE PRAIRIES THE TREES SING WITH MY BIRD'S HEART THE STREAMS SING WITH MY ARMS..." (JAVIER HERAUD)

HMMM... WE MUST RETURN TO NATURE WHAT SHE LENDS US...

THAT'S RIGHT!



MR. HEDGEHOG, WHAT ELSE DOES YOUR BOOK SAY?

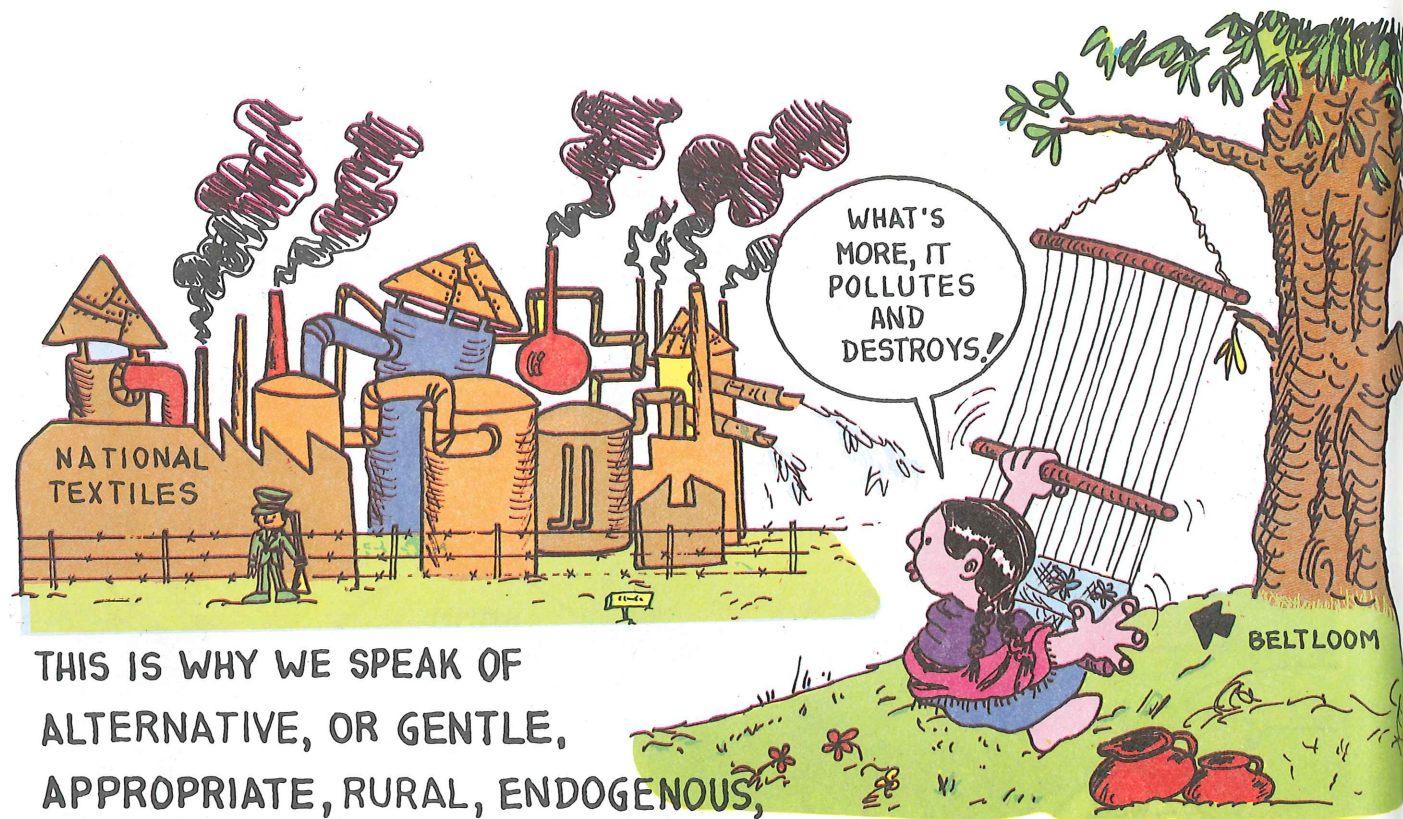
OOH... IT SAYS SOMETHING HERE ABOUT IMPORTS ...

IMPORTED PRODUCTION TECHNIQUES REQUIRE AN EVER LARGER CAPITAL AND REDUCE THE NUMBER OF JOBS EVEN WHERE THERE IS UNEMPLOYMENT...

IMPORTED TECHNOLOGY POLARIZES SOCIETY CAUSING BACKWARDNESS ON ONE HAND AND A BRAINDRAIN ON THE OTHER...

EVEN POLLUTION IS IMPORTED!

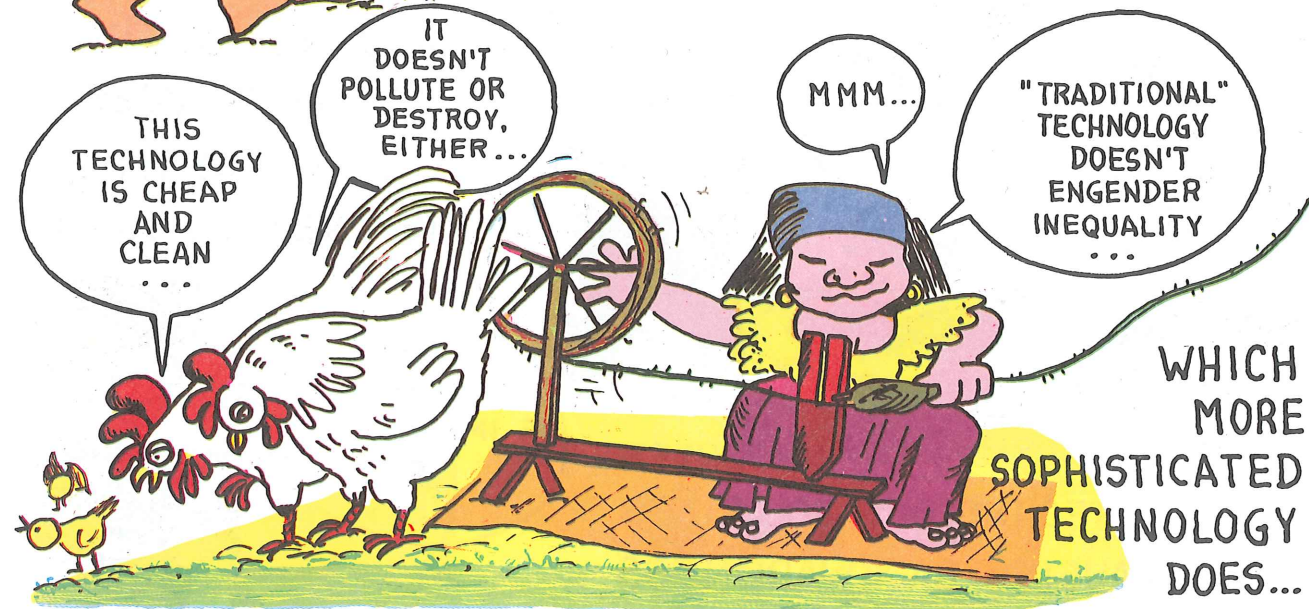




THIS IS WHY WE SPEAK OF ALTERNATIVE, OR GENTLE, APPROPRIATE, RURAL, ENDOGENOUS, INTERMEDIATE OR TRADITIONAL TECHNOLOGY...



ALL WORDS WHICH DESIGNATE A TECHNOLOGY BASED ON THE CULTURAL TRADITIONS OF EACH COUNTRY...



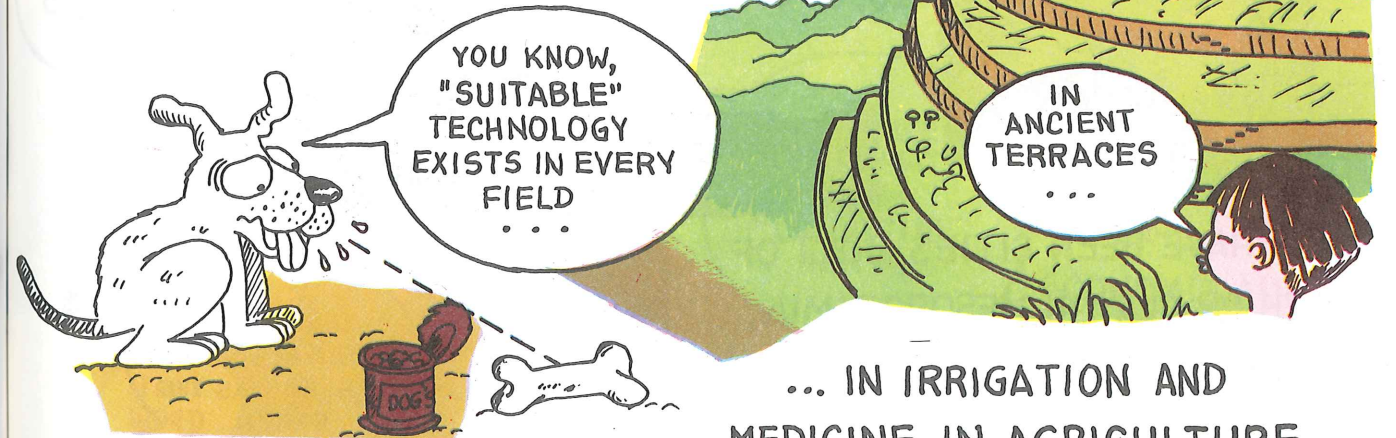
WHICH MORE SOPHISTICATED TECHNOLOGY DOES...



... "APPROPRIATE" TECHNOLOGY ALLOWS MAN TO BE CREATIVE AND LET HIM CHOOSE HIS OWN WAY OF LIFE...

WHICH MEANS THAT TECHNOLOGY SERVES MAN, AND NOT "MAN SERVES TECHNOLOGY"!

IN ALL CIVILIZATIONS AND PEOPLES A GREAT RESPECT FOR NATURE HAS EXISTED. THAT IS WHY TRADITIONAL TECHNOLOGY WAS "APPROPRIATE" AND ALLOWED NATURE TO REGENERATE ITSELF...



... IN IRRIGATION AND MEDICINE, IN AGRICULTURE AND TRADITIONAL CONSTRUCTION METHODS, IN THE CONSERVATION OF FOODSTUFFS AND THE MANUFACTURE OF ALL TYPES OF PRODUCTS SUCH AS CLOTH OR COOKING-POTS...



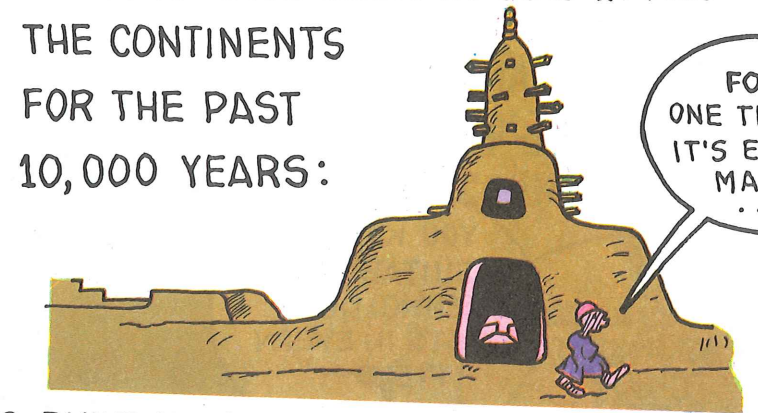
...SO, CERAMIC ROOF-TILES ARE ALSO "APPROPRIATE" TECHNOLOGY ...

...THAT IS TO SAY THAT THEY ARE CHEAP, THEIR MANUFACTURE REQUIRES LITTLE ENERGY, THEY MAINTAIN A CONSTANT TEMPERATURE (NO EXTREMES OF HEAT OR COLD), THEY ARE RESISTANT TO HAIL AND WHAT'S MORE, THEY'RE PLEASING TO THE EYE. (NO FACTORY-MADE TILES HAVE ALL OF THESE QUALITIES...)



YEAH ...

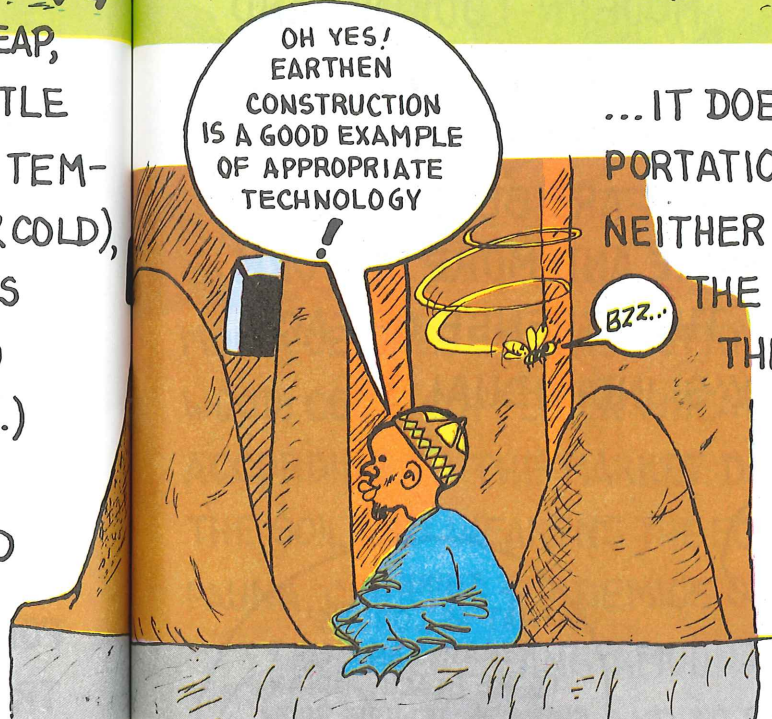
...ADOBE, SUNBAKED EARTH, AND MUD-BRICKS HAVE BEEN IN USE IN ALL THE CONTINENTS FOR THE PAST 10,000 YEARS:



FOR ONE THING IT'S EASY TO MAKE ...

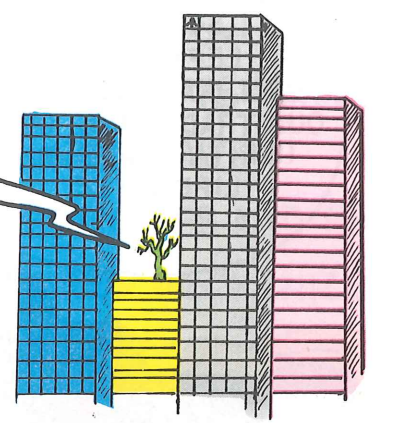
THERE HAVE BEEN CITIES BUILT OF EARTH OR CLAY IN MESOPOTAMIA, PHARAONIC EGYPT, THE ROMAN EMPIRE, IN INDIA, CHINA, MEXICO (TOLTECS AND AZTECS), IN PERU (MOCHICA, CHIMU AND INCA), IN ANCIENT EUROPE, BLACK AFRICA AND NORTH AMERICA ...

...IN GENESIS IT SAYS IN THE BEGINNING THERE WAS THE EARTH ...



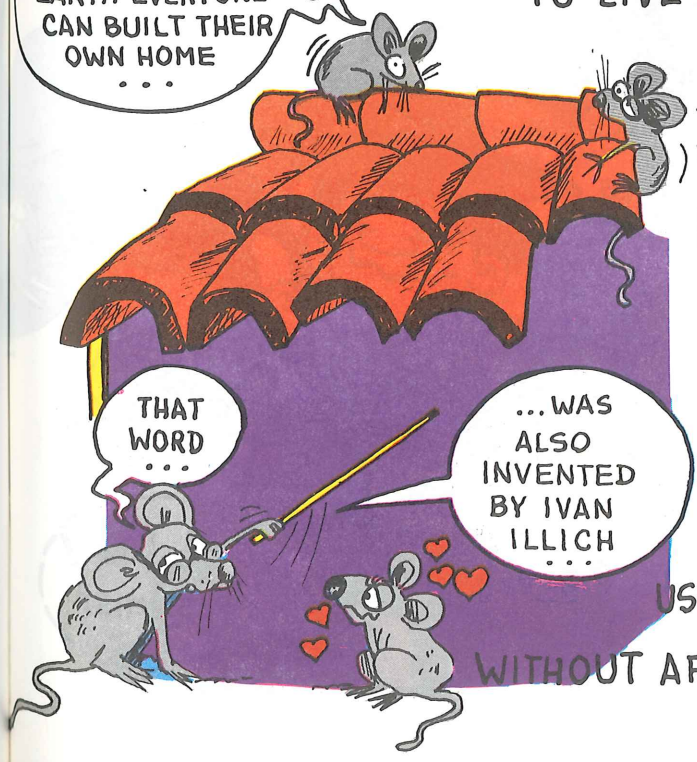
...IT DOES NOT IMPLY EITHER COSTLY TRANSPORTATION OR INDUSTRIAL TRANSFORMATION; NEITHER WASTE NOR POLLUTION; IT MAINTAINS THE ECOLOGICAL BALANCE, IT RESPECTS THE ENVIRONMENT AND THE QUALITY OF LIFE...

WHAT'S THAT ABOUT QUALITY OF LIFE?



...WELL, IT MEANS TO LIVE MORE AND TO LIVE BETTER

WHEN IT'S MADE OF EARTH EVERYONE CAN BUILD THEIR OWN HOME ...



HOLY MICE! THAT'S WHAT YOU CALL "CONVIVIAL" LIVING ...

THAT MEANS HAVING THE FREEDOM OF CHOICE OF ENERGY-FORMS TO USE, IT MEANS ECONOMIC AND CULTURAL INDEPENDENCE...

"...A TECHNIQUE IS CONVIVIAL IN AS MUCH AS EACH PERSON CAN USE IT HOW AND WHEN BEST SUITS HIM WITHOUT AFFECTING THE FREEDOM OF OTHERS..."

BUT...

...AND WHY DON'T YOU USE MUD-BRICK? ?

ARE YOU CRAZY? THEY'LL SAY THAT WE'RE IGNORANT AND BACKWARD !

... A FALSE IDEA OF ECONOMIC AND SOCIAL PROGRESS REPLACES TRADITIONAL HOUSES WITH OTHERS MADE OF MODERN-LOOKING AND COSTLY MATERIALS. DWELLINGS THE WORLD OVER ARE BECOMING MORE AND MORE UNIFORM AT THE EXPENSE OF EACH CITY'S INDIVIDUALITY...



SO, WHAT'S LEFT OF OUR CULTURAL IDENTITY, OUR TRADITIONS, OUR HERITAGE AND OUR LIFESTYLE ?

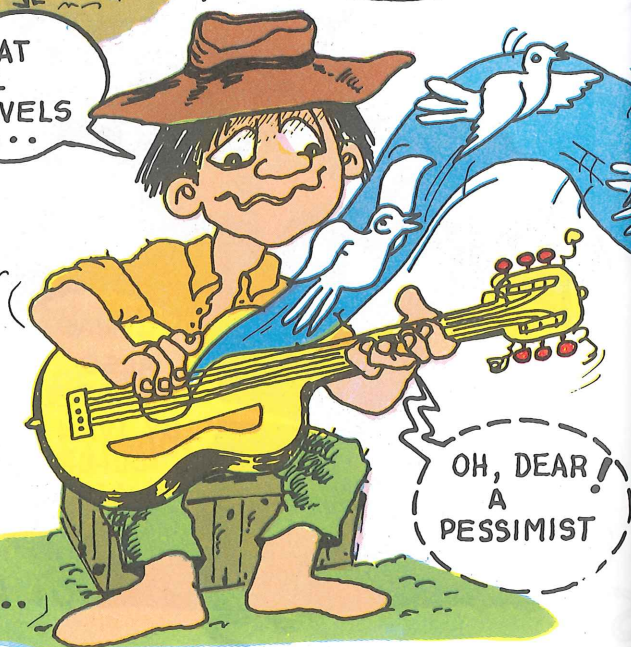
I THINK I THAT AS LONG AS IT REMAINS AN INSULT TO BE BLACK, INDIAN, CHINESE, JEWISH, POOR, FOREIGN, FEMALE, ETC. ETC. THINGS WILL KEEP GETTING WORSE ...

AT ALL LEVELS ...

... DREAMS AND REALITIES WILL CONTINUE TO BE EXCHANGED FOR COPIED MODELS ... CULTURAL IDENTITY FOR THE DECEIT OF MODERNITY... FREEDOM OF CHOICE AND AUTONOMY FOR THE MIRAGE OF WEALTH AND DEVELOPMENT...



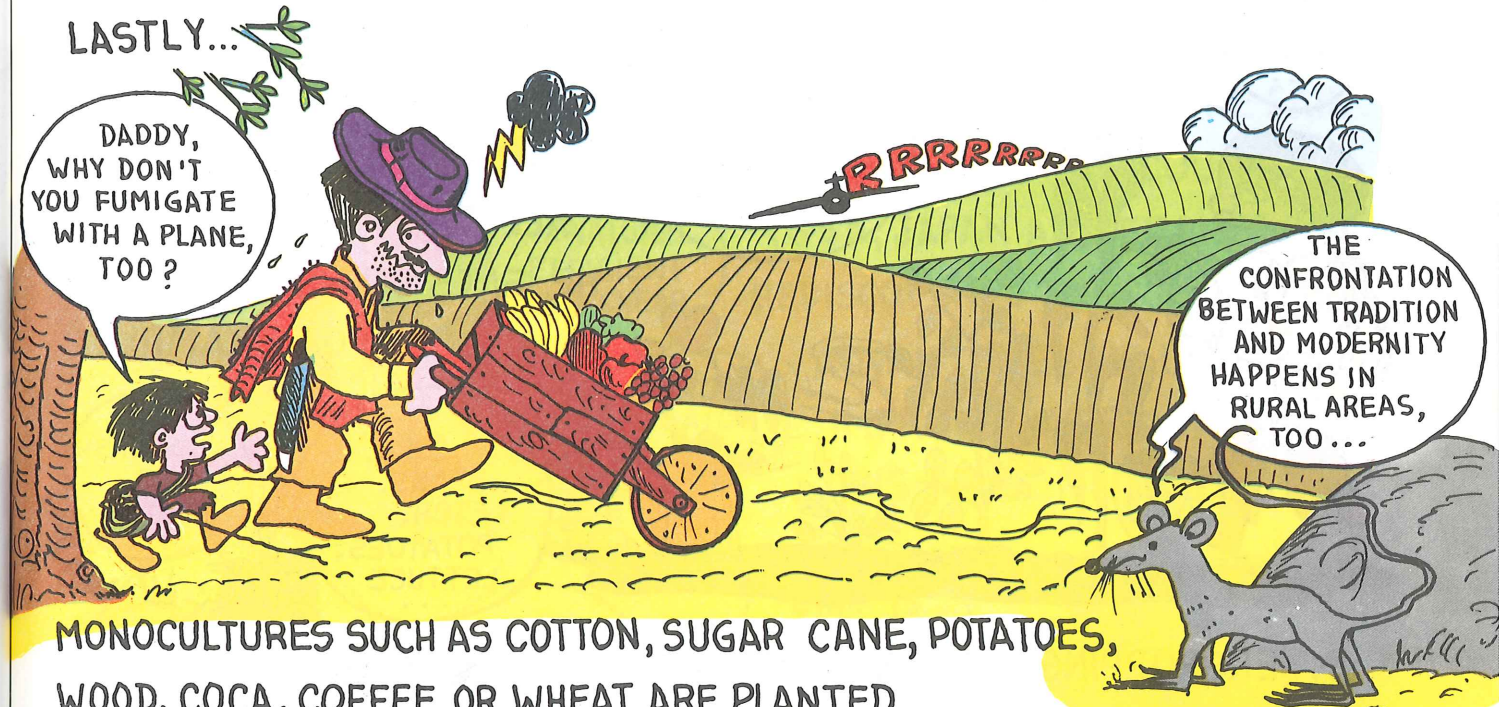
HIC!



OH, DEAR! A PESSIMIST

LASTLY...

DADDY, WHY DON'T YOU FUMIGATE WITH A PLANE, TOO ?



THE CONFRONTATION BETWEEN TRADITION AND MODERNITY HAPPENS IN RURAL AREAS, TOO ...

MONOCULTURES SUCH AS COTTON, SUGAR CANE, POTATOES, WOOD, COCA, COFFEE OR WHEAT ARE PLANTED ACCORDING TO THE MARKET DEMAND. BUT MONOCULTURE IMPOVERISHES THE SOIL AND WEAKENS THE ECOLOGICAL BALANCE, IT DESTROYS NATURAL FAUNA, CREATES EPIDEMICS OF PLANT-DISEASES, REQUIRES EVER-INCREASING AMOUNTS OF FUNGICIDES, INSECTICIDES AND FERTILIZERS, AND TO BE PROFITABLE, IT REQUIRES MECHANIZED FARMING AND CONCENTRATION OF LANDS...

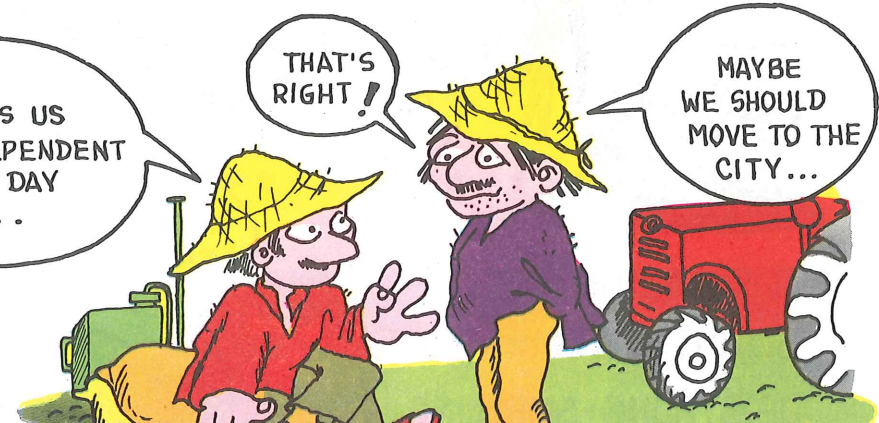


IT MAKES US MORE DEPENDENT EACH DAY ...

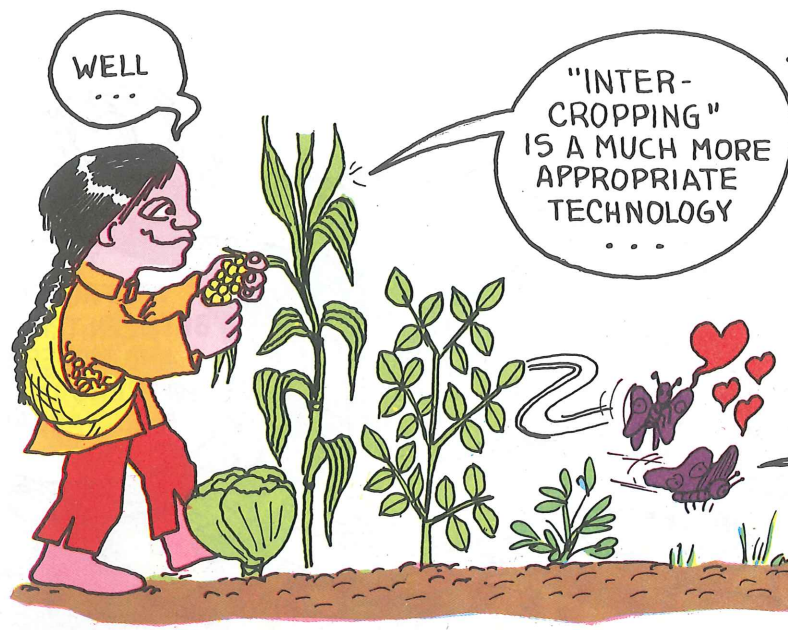
THAT'S RIGHT!

MAYBE WE SHOULD MOVE TO THE CITY...

A SMALL NUMBER OF LANDOWNERS RUN A MECHANIZED AGRIBUSINESS FORCING THE PEASANTS TO MIGRATE TO FACTORIES AND SLUMS...



I GUESS YOU COULD SAY THAT MONO-CULTURE IS NOT APPROPRIATE TECHNOLOGY ...

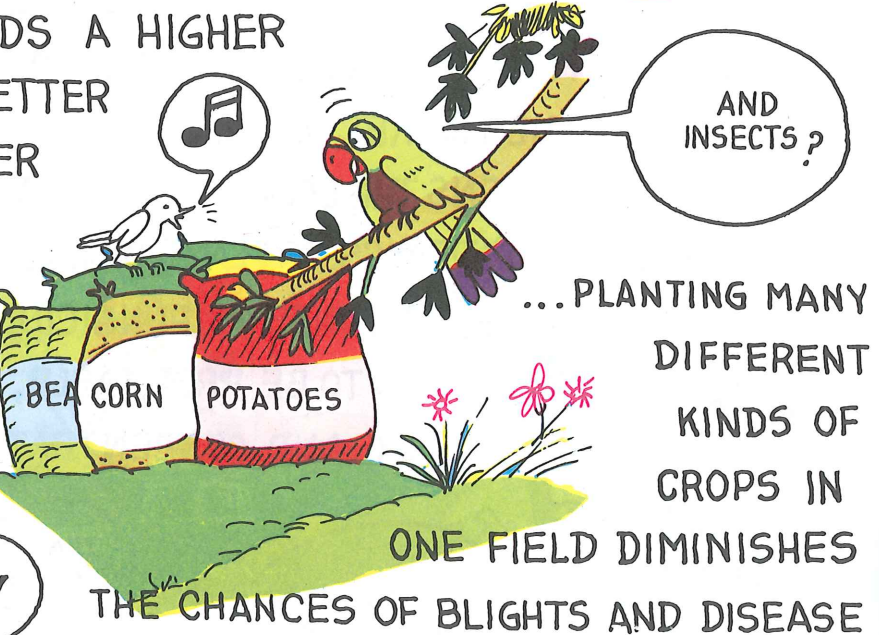


...THIS KIND OF CULTIVATION
 ALLOWS THE FARMER
 TO PLANT PRACTICALLY
 ALL THE PRODUCTS THAT
 HE EATS ON HIS LAND.
 FOR EXAMPLE:

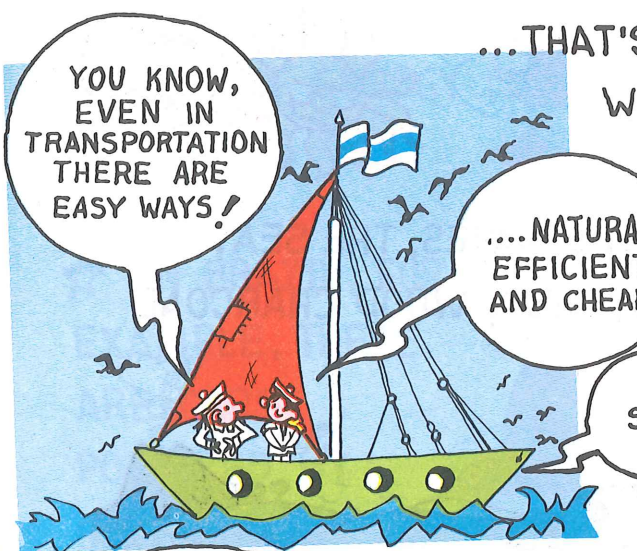
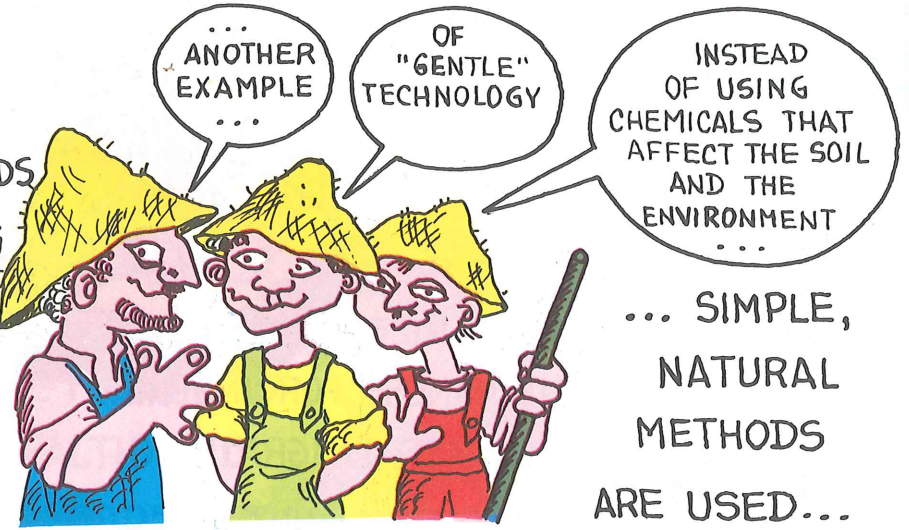
CORN,
 BEANS,
 VETCH,
 POTATOES,
 LETTUCE ...

... SQUASH
 AND
 SPICES

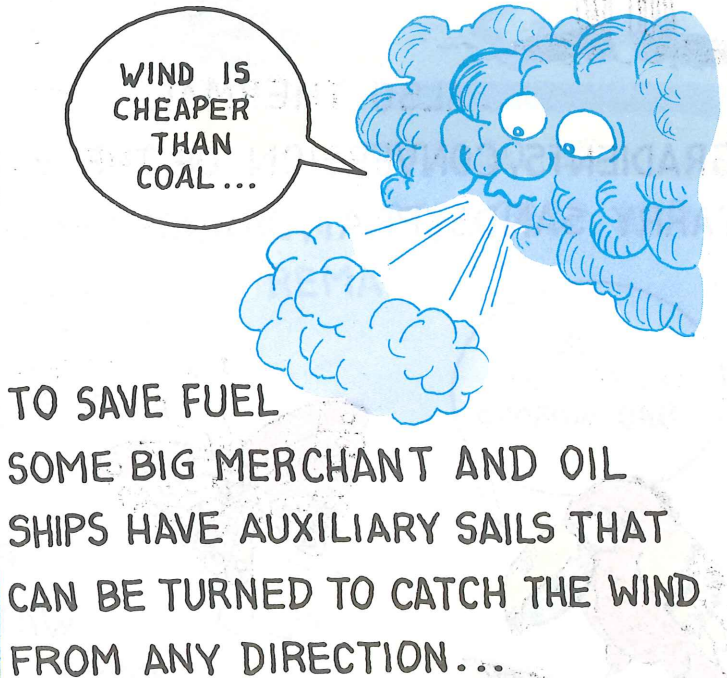
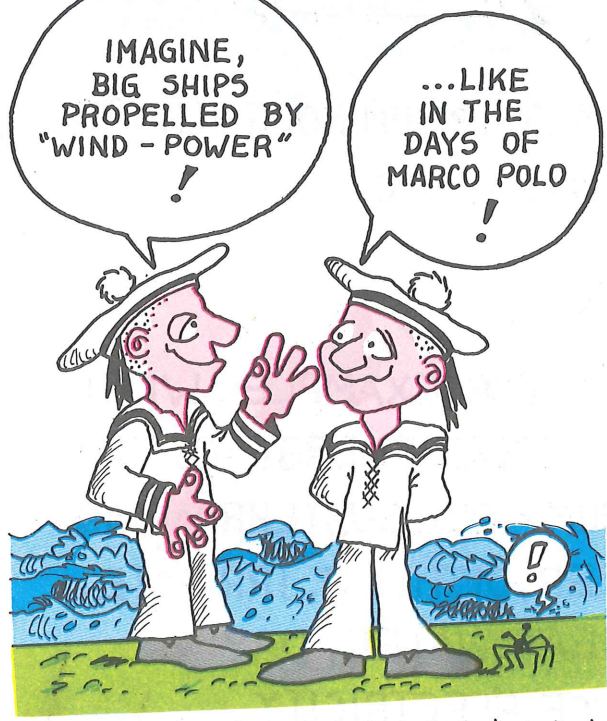
INTERCROPPING YIELDS A HIGHER
 PRODUCTION AND BETTER
 USE IS MADE OF WATER
 AND THE MINERALS
 IN THE SOIL ...



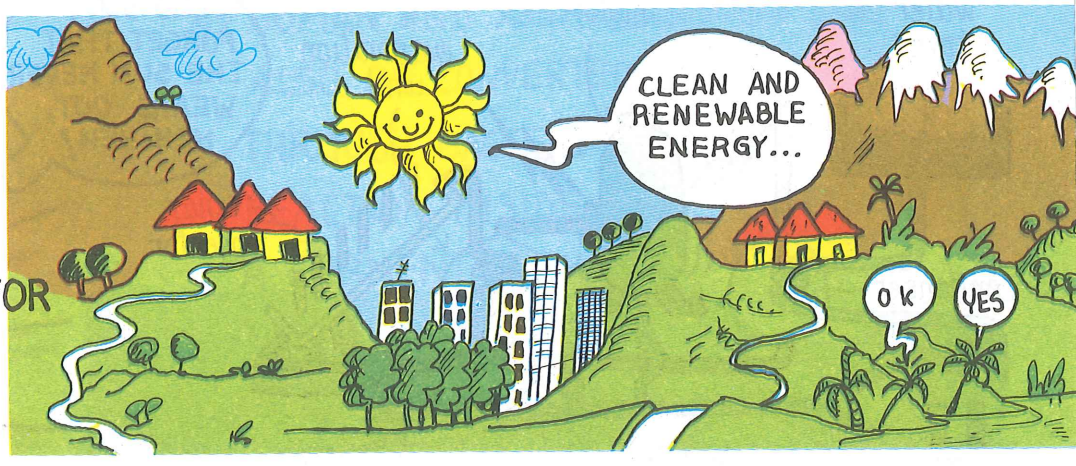
... SPEAKING OF
 BLIGHTS, SOME KINDS
 OF STRONG-SMELLING
 PLANTS ACTUALLY
 HELP REPEL
 HARMFUL
 INSECTS ...

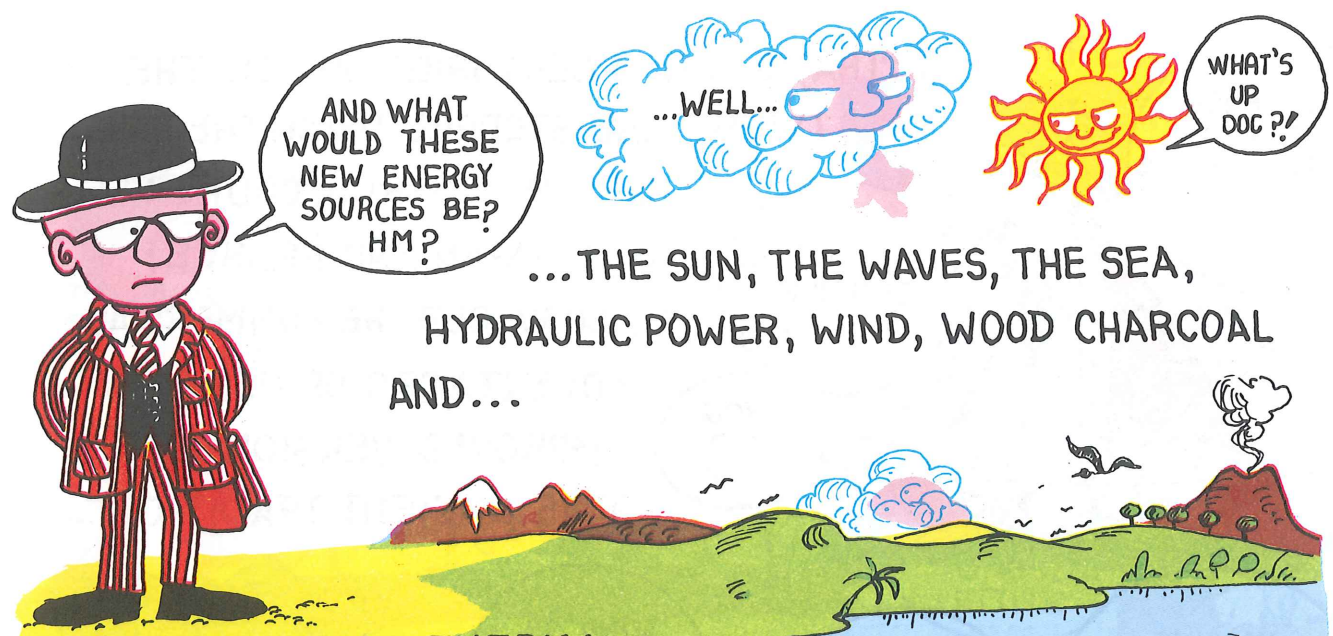


...THAT'S WHY, 3 CENTURIES AFTER THE
 WEST HAD STOPPED USING THE SAIL
 THREE INDUSTRIAL COUNTRIES
 (USA, JAPAN AND FRANCE)
 REDISCOVERED THE COMMERCIAL
 ADVANTAGES OF USING AN
 IMPROVED VERSION OF
 THIS ANCIENT TRADITION ...



IN PRESENT
 TIMES BOTH
 RICH AND POOR
 COUNTRIES HAVE
 CAUSE TO LOOK FOR
 NEW ENERGY
 SOURCES ...



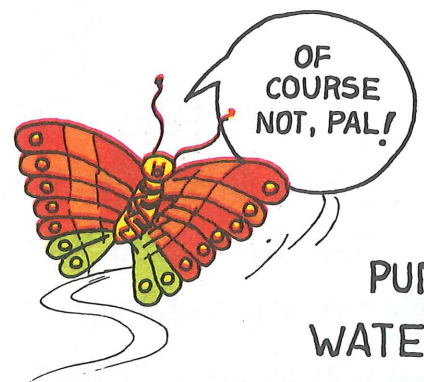


AND WHAT WOULD THESE NEW ENERGY SOURCES BE? HM?

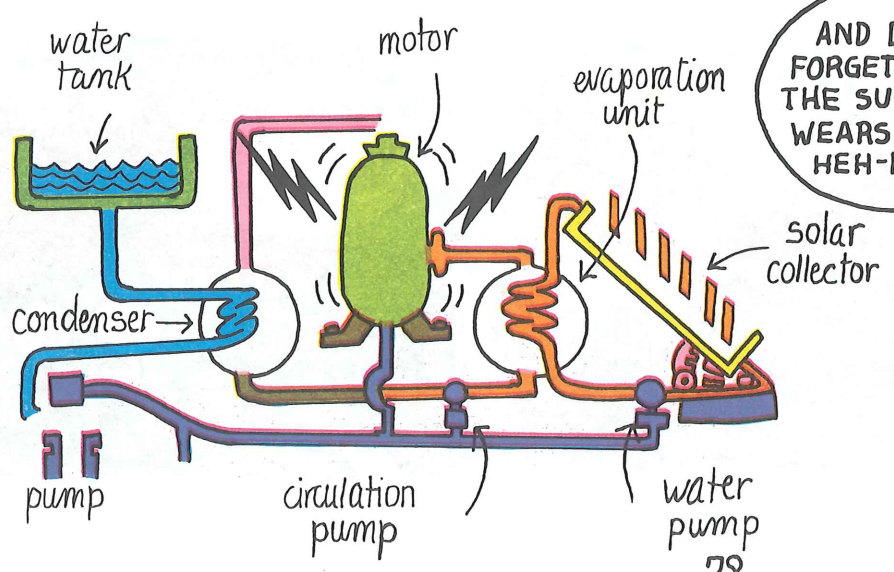
...WELL...
WHAT'S UP DOC??

...THE SUN, THE WAVES, THE SEA, HYDRAULIC POWER, WIND, WOOD CHARCOAL AND...

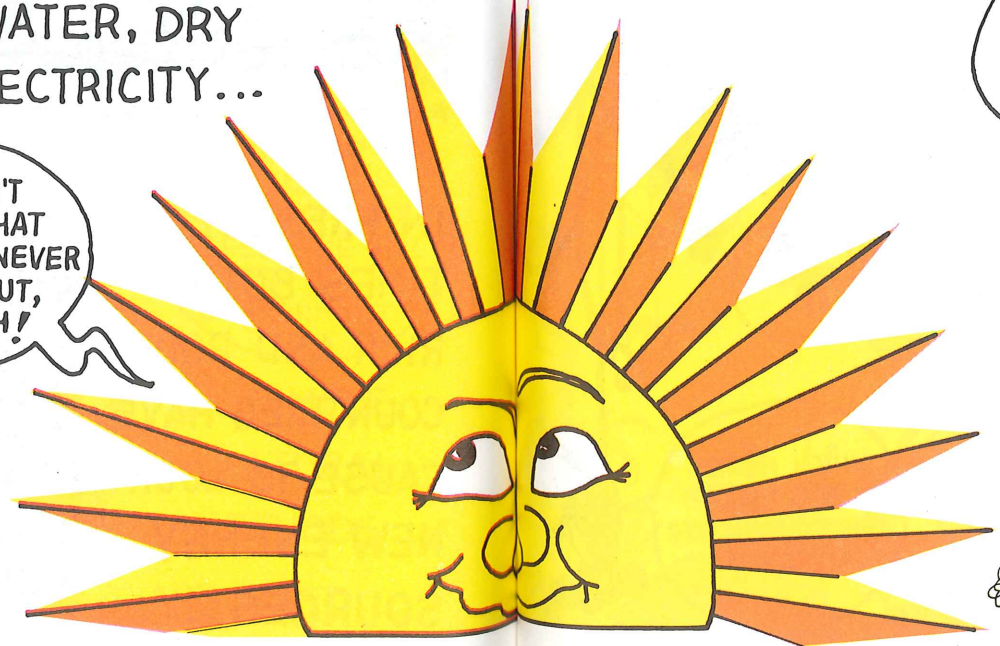
...ALSO THERMAL GRADIENTS, CONVERSION OF THE BIOMASS, BITUMINOUS SCHISTS, TARRY SANDS, PEAT, DRAUGHT-ANIMALS, ETC.



FOR EXAMPLE, WITH SOLAR ENERGY YOU CAN PUMP OUT SUBTERRANEAN WATER, DISTILL IT, IRRIGATE, COOK, HEAT WATER, DRY CROPS, PRODUCE ELECTRICITY...

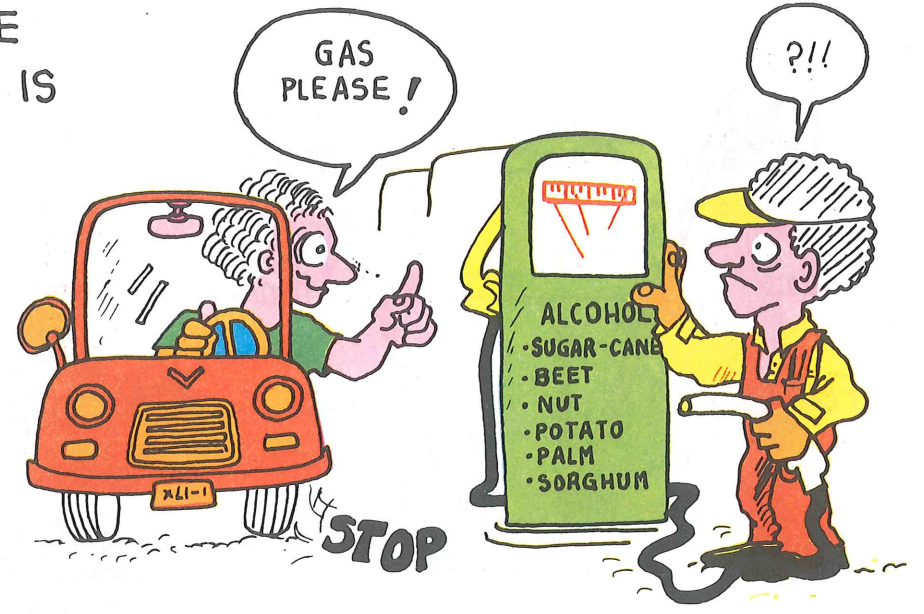


AND DON'T FORGET THAT THE SUN NEVER WEARS OUT, HEH-HEH!



ANOTHER RENEWABLE SOURCE OF ENERGY IS BIOMASS

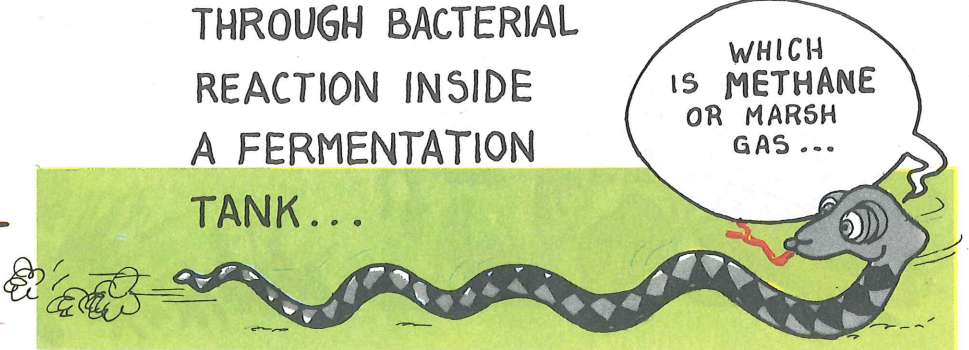
★ IN BRAZIL, FOR EXAMPLE, THERE ARE CARS POWERED BY SUGAR-CANE ALCOHOL...

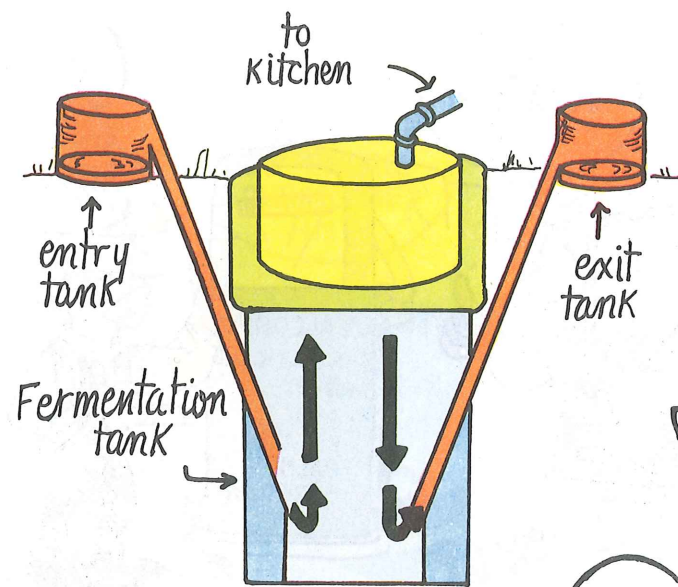


★ A CAR-FUEL CAN ALSO BE MADE FROM WOOD, CROP AND FODDER REMAINS...

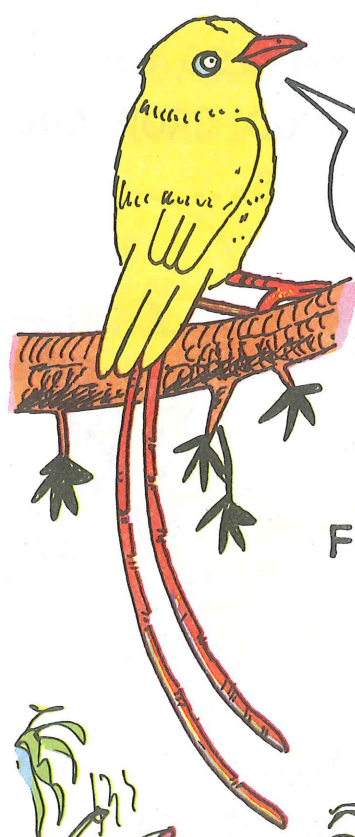


★ HUMAN AND ANIMAL WASTES CAN ALSO BE CONVERTED INTO GAS THROUGH BACTERIAL REACTION INSIDE A FERMENTATION TANK...

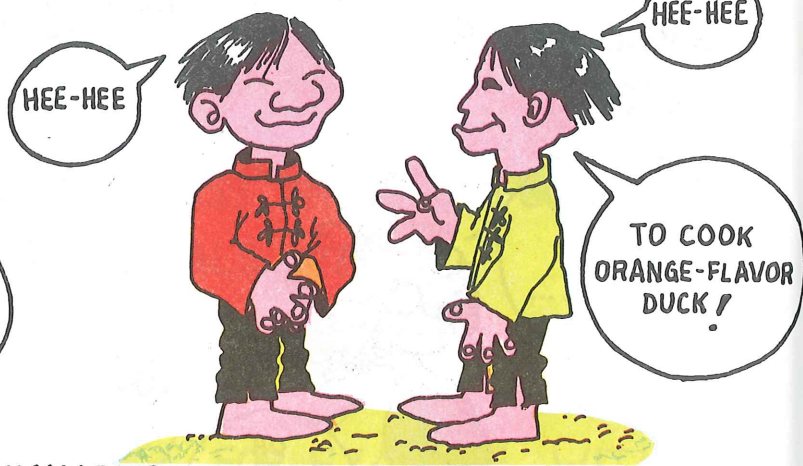




... CHINA AND INDIA ARE THE BIGGEST PRODUCERS OF METHANE IN THE WORLD. METHANE IS USED FOR LIGHTING, TO GENERATE ELECTRICITY, FOR COOKING ...



AND OIL?



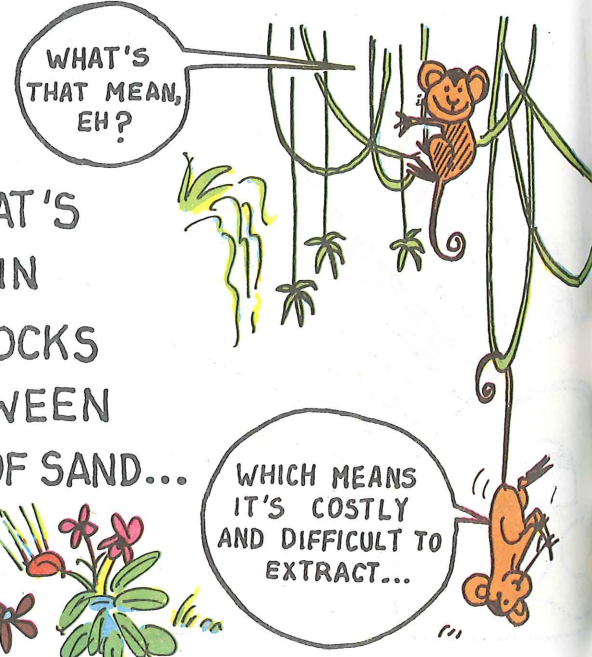
HEE-HEE

HEE-HEE

TO COOK ORANGE-FLAVOR DUCK!

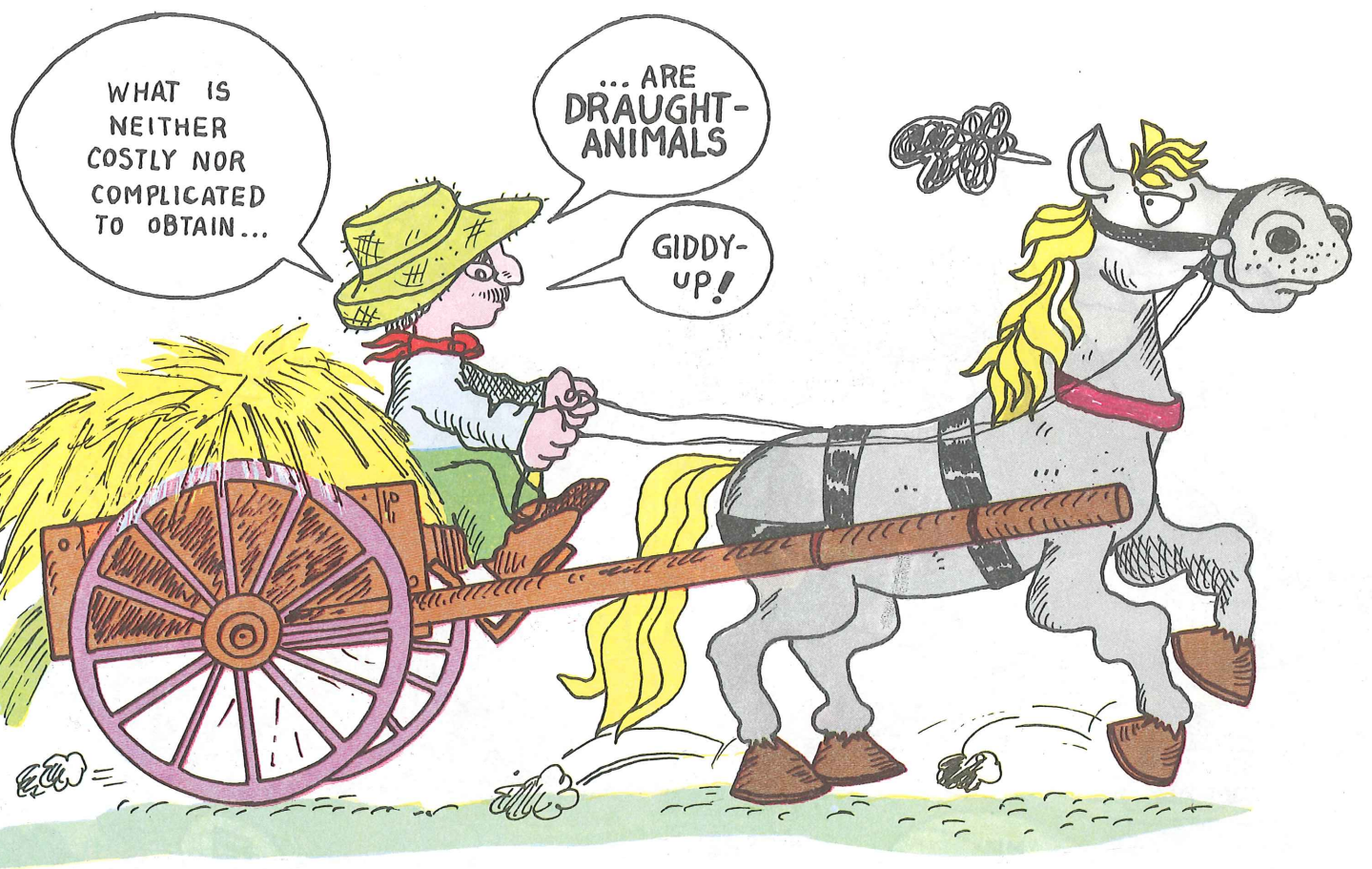
... BITUMINOUS SCHISTS AND TARRY SANDS CONSTITUTE HUGE RESERVES OF "NON-CONVENTIONAL FUEL":

... IT'S VISCOUS PETROLEUM THAT'S CONTAINED IN POROUS ROCKS AND BETWEEN GRAINS OF SAND...



WHAT'S THAT MEAN, EH?

WHICH MEANS IT'S COSTLY AND DIFFICULT TO EXTRACT...



WHAT IS NEITHER COSTLY NOR COMPLICATED TO OBTAIN...

... ARE DRAUGHT-ANIMALS

GIDDY-UP!

ANIMALS (DOGS, HORSES, DONKEYS, CAMELS, ELEPHANTS, ETC) ARE AN IMPORTANT SOURCE OF RENEWABLE ENERGY.

WELL, THERE HAS BEEN LIFE ON EARTH FOR 3 BILLION YEARS, AND THE TIME HAS COME TO TACKLE THE PROBLEM OF THE CONSERVATION OF MAN AND HIS HABITAT.



I THINK SO!

...SURE

BEFORE IT'S TOO LATE!

..HMM.. DOESN'T CONSERVATION IMPLY LOOKING BACK IN TIME?

NO! CONSERVATION IS LOOKING AHEAD!

... LOOKING TOWARDS THE FUTURE THE HUMAN RACE HAS TWO ALTERNATIVES



ONE



TWO

MM... DEVELOPMENT WITHOUT DESTRUCTION ...

WHICH MEANS PRESERVING AND RESPECTING NATURE AND CULTURE ...

(COUGH) (COUGH!)

AAAG! DESTRUCTIVE PROGRESS ...

THAT IS:

★ DEVELOPMENT THAT PROGRESSES AT THE EXPENSE OF THE BIOSPHERE AND THE QUALITY OF LIFE ...

★ UNLIMITED, UNCONTROLLED GROWTH, POLLUTION, EROSION, OVERPOPULATION, EXPANSION OF DESERTS, INTENSIVE URBANIZATION, EXTINCTION OF SPECIES, DUMPING OF TOXIC WASTES, EXCESSIVE WARMING UP OF THE ATMOSPHERE ...

PRESERVE THE FAUNA...

AND THE FLORA ...

... WATER

AND AIR...

... AND THE SOIL!

... WELL, I PREFER QUALITY!

NO! QUANTITY IS BETTER!

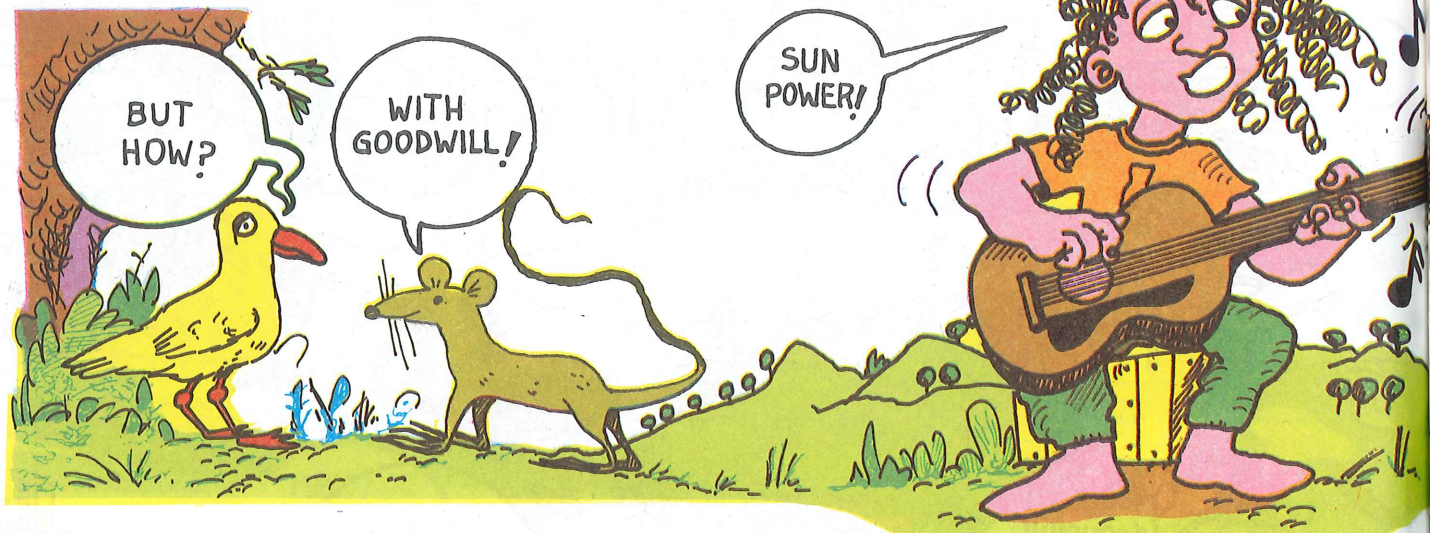
BETTER FOR ME!

MORE RUBBISH!

MORE WASTEFULNESS!

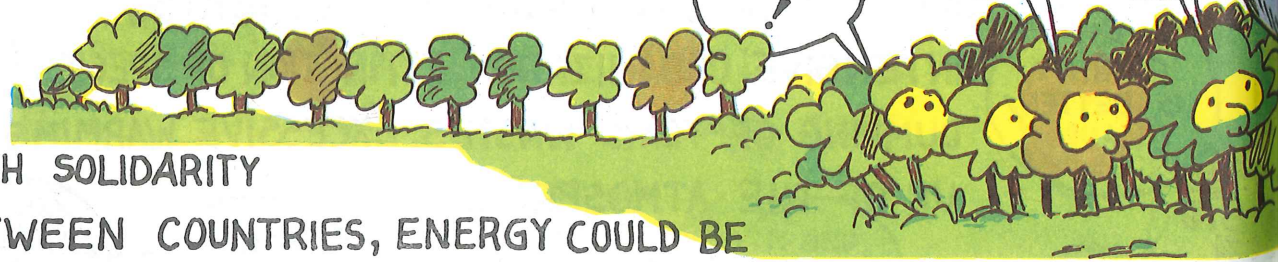
THINKING OF THE FUTURE :
...TWO ALTERNATIVES :

★ RATIONAL USE OF
NATURAL RESOURCES,
CONTROLLING AND RECYCLING
OF WASTES ...



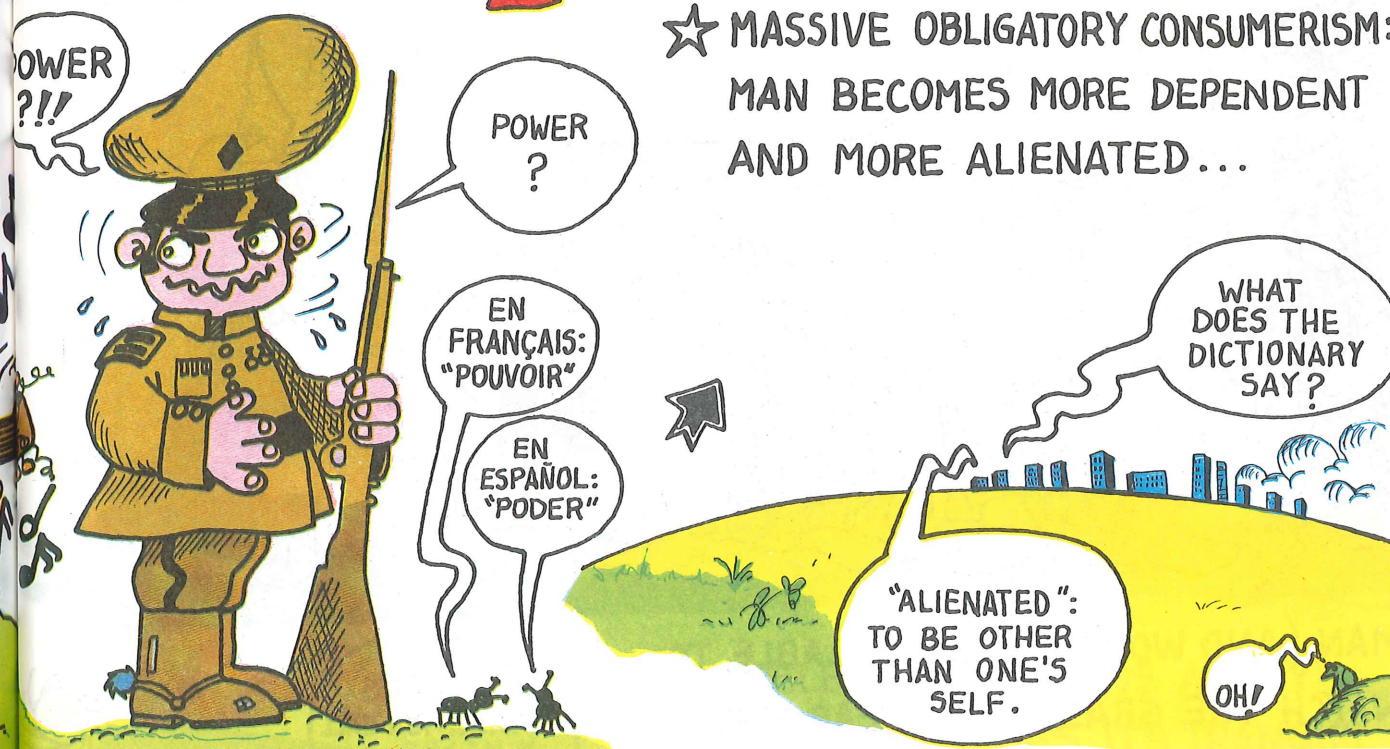
POPULAR WISDOM AND ALTERNATIVE,
ENDOGENOUS, APPROPRIATE TECHNOLOGY WOULD ALLOW
MAN TO PROGRESS IN CONJUNCTION WITH NATURE ...

DIVERSITY OF PRODUCTION, GENETIC DIVERSITY,
DIVERSITY OF CULTURES AND LIFESTYLES:
THAT IS HEALTH...

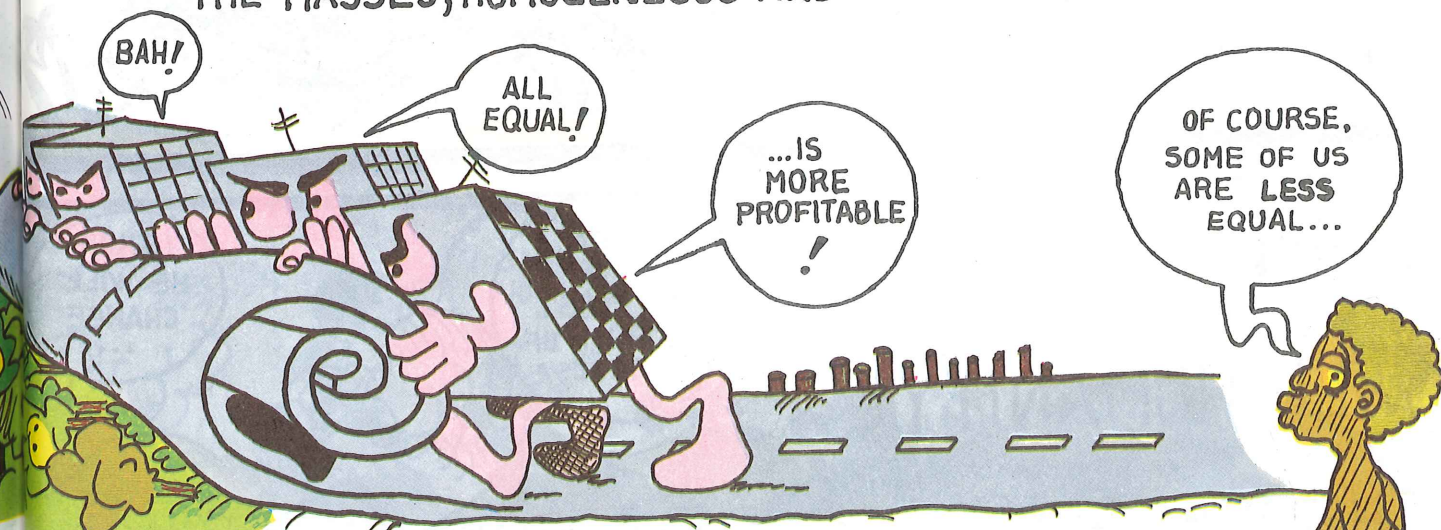


★ WITH SOLIDARITY
BETWEEN COUNTRIES, ENERGY COULD BE
CHANNELED TO OVERCOME THE GREAT PROBLEMS
OF HUMANITY: HUNGER, IGNORANCE, PREJUDICE
AND MISTRUST AMONG MEN ...

★ MASSIVE OBLIGATORY CONSUMERISM:
MAN BECOMES MORE DEPENDENT
AND MORE ALIENATED ...

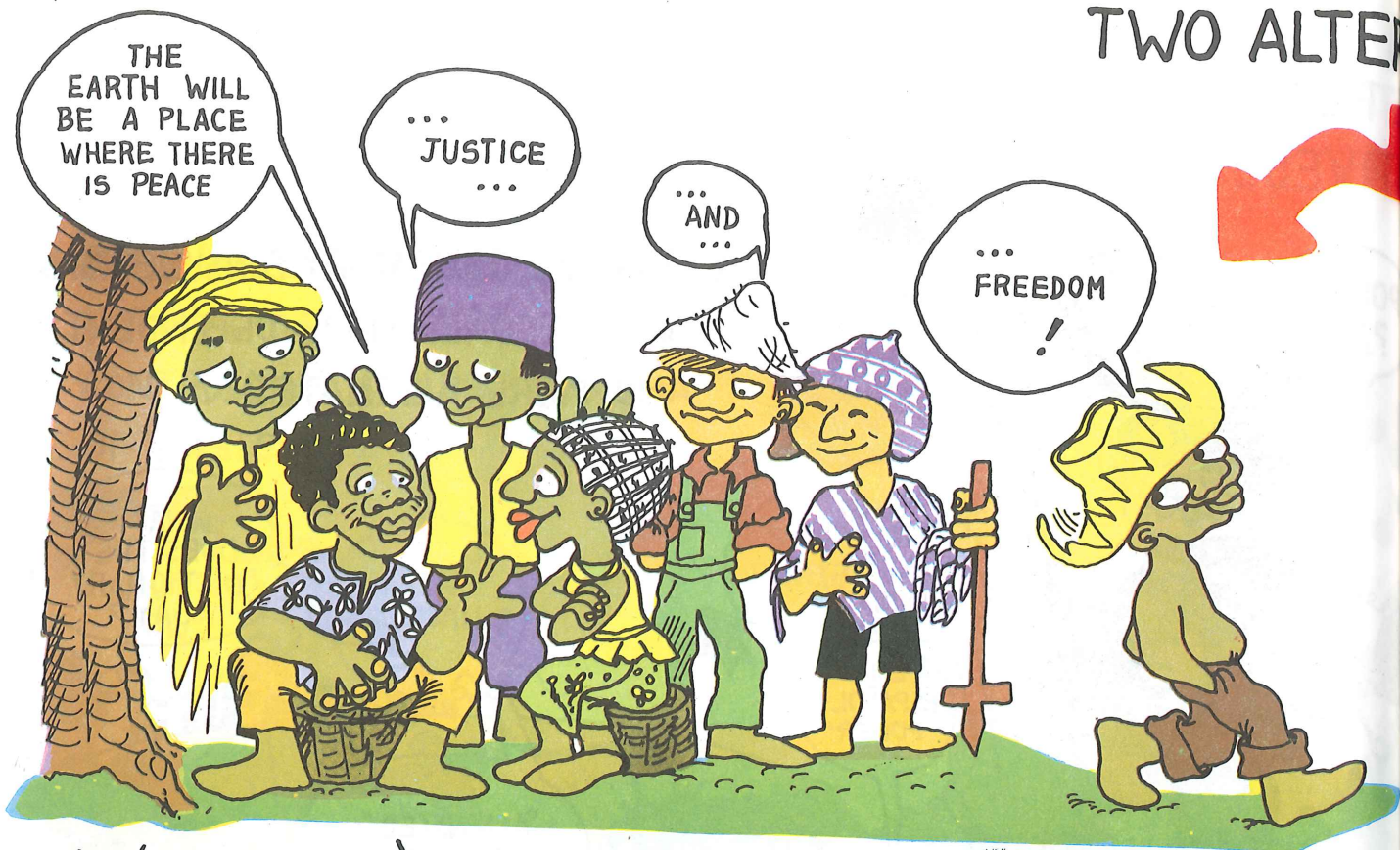


★ MODERNISM MAKES CULTURES, LIFESTYLES AND TRADITIONS
DISAPPEAR. IN THEIR PLACE IS A UNIVERSAL CULTURE OF
THE MASSES, HOMOGENEOUS AND WITHOUT PERSONALITY.

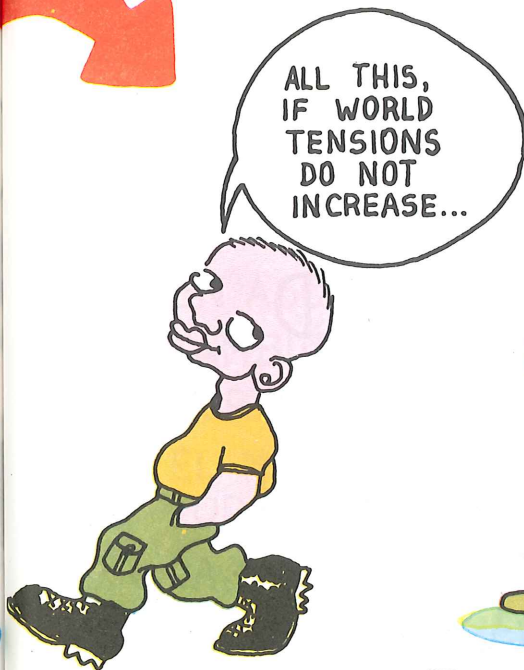
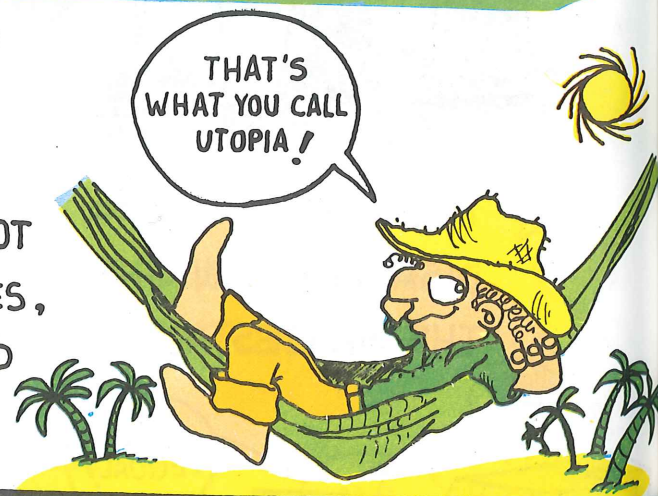


★ HUNGER, POVERTY, UNEQUAL EXCHANGE, MISTRUST
BETWEEN COUNTRIES, WEAPONS ...
ALL ARE INCREASING ...

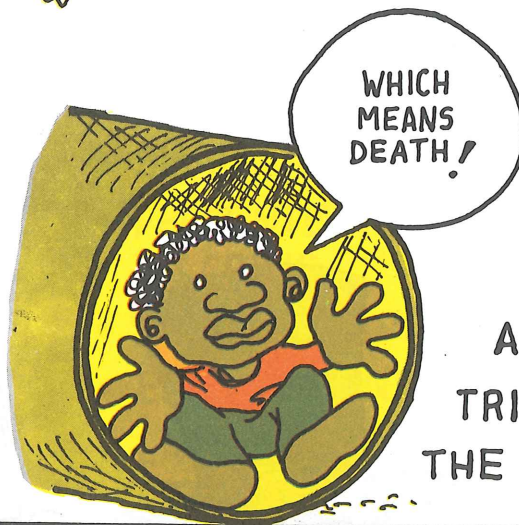
TWO ALTERNATIVES ...



MAN (AND WOMAN) WILL BE ABLE TO WATCH THE GRASS GROW, HEAR THE CRICKETS SING, BE FREE TO BUILD THEIR OWN HOMES, TO TRAVEL ON FOOT OR BY BICYCLE, TO CURE THEMSELVES, CHOOSE THEIR OWN WAY OF LIFE AND CHOOSE TO LIVE IN PEACE ...



NONETHELESS, NATURE IS ALWAYS PRESENT. IT OPPOSES ITS TRANQUIL SKIES AND ITS REASON TO MAN'S FOLLY UNTIL ONE DAY THE ATOM BURNS AND ENDS THE WHOLE STORY WITH THE TRIUMPH OF REASON AND THE AGONY OF THE SPECIES..." (ALBERT CAMUS)



WHICH PATH WILL HUMANITY CHOOSE ?!?



THIS BOOK HAS ACHIEVED
ITS GOAL IF IT HAS
MADE EVEN ONE PERSON
LESS INDIFFERENT
TO THE PROBLEMS
OF OUR WORLD ...



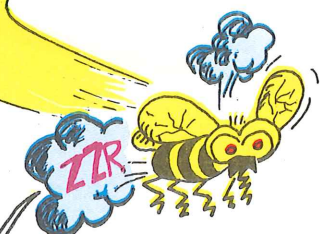
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- EL HOMBRE Y LA TIERRA (Idem)
- HABITAT (Idem)
- FORO DE DESARROLLO (United Nations University)

AND
MANY
OTHERS
...



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MAN AND HIS WORLD WAS ORIGINALLY PUBLISHED IN 1982 BY UNDP/UNESCO.



SPANISH VERSION - JULY 1982
FIRST ENGLISH VERSION - AUGUST 1989
SECOND ENGLISH VERSION - APRIL 1992

ENGLISH TRANSLATION: MICHÈLE SHALLON
TEXT AND DRAWINGS: MARGARITA JARAMILLO SALAZAR
COVER DESIGN: DAVID MUTAL
COLOR: DAVID MUTAL
PRINTED BY: INDUSTRIAL GRÁFICA S.A.

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