

OUR PRECIOUS NATURAL ENVIRONMENT

preserve it or perish



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Dedication

This booklet is Dedicated to The Youth of the Country whose future is at stake.

Acknowledgment

Madras Natural Society is grateful to the Dept. of Environment, Forest wildlife for the financial assistance in bringing out this booklet for use in Higher Secondary Schools to create an environment awareness among them.

Madras
25-11-89

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Hony. Secretary,
Madras Natural Society.

Front Cover photograph, Nelapattu Bird Sanctuary

Pic. **V. J. RAJAN**

Back Cover photograph
Top

Himalaya Panorama –
M. Raghuraman

Back Cover Bottom

Gangotri

V. J. Rajan

Our Precious Natural Environment

We are told that the EARTH is the only planet in the universe where life exists. This is because we have an atmosphere, vast quantities of water, and land where we can grow our food. These gifts of nature are the basic requirements of life. The quality of life depends on our keeping these three basic necessities in an unpolluted and clean state. Unfortunately, the growing population, the desire for short term gains at the expense of irrevocable, irreversible ecological damage by many of our industrialists & politicians, the lethargy of our own people, all contribute to our polluting and destroying our Environment, thus slowly but surely making the earth uninhabitable. Our exploitation of our natural resources beyond its capacity to regenerate, or recuperate, will spell the doom for mankind.

Let us examine some of these aspects. Nature in its infinite wisdom had provided a natural balance, and a delicate inter-relationship between living things and their natural environment. India fortunately was naturally endowed with the lofty snowclad Himalayas perennial rivers, thick rainforests and a varied fauna, one of the richest in the world. India, in ancient times, had thick forests covering most of its land and even the present Rajasthan desert was a swamp. Our civilisation and culture were evolved by our Saints and Rishis in the quietitude of forests on the banks of lakes and rivers. By imparting divinity to the trees and animals our wise ancestors protected many forests and wildlife,

Our wise rulers like Chandragupta Maurya, Ashoka took personal interest in forests and wildlife & formulated rules to preserve them. Many 'Sacred Groves' were created near temples of villages and looked after by the local people. Unfortunately with the advent of the British, forests were treated as revenue producing assets. The forests were cut down to provide wood for ship building, railway sleepers, furniture and house building etc. They planted teak, tea, coffee and other commercial crops after clear felling the ancient forests. With the advent of Independence the people, especially the local political leaders felt they were free to help themselves to whatever they liked and from wherever they chose, from the national Forests. Thus the denudation of forests took a serious turn, until in 1952 a National forests Policy was evolved when commercial exploitation of forests gave way to conservation, An Indian Board for Wildlife was constituted, and the Wildlife (Protection) Act, 1972 was passed. A Department for Environmental protection was formed by the centre. The PROJECT TIGER was started in April 1973. Thus the process of denudation of our forests, destruction of our wild life has been checked and it is for you, the younger generation, to protect this heritage for future generations.

Though our resources appear to be inexhaustible, they are finite and unless proper care taken to preserve them they may be exhausted one day. Even though four-fifths of the earth's surface is covered by water, 97% is in the oceans and seas and is salty. Another 2% is locked up in the frozen ice-caps of mountains, glaciers and the Arctic and Antarctic regions. The balance 1% is

all the waters of all our rivers in the world, all our sweet water lakes in the world and all the under ground water in the world ! So now you see how we have to preserve this one percent which is being recycled as rainwater.

Water is one of the greatest blessing conferred by Nature, and India is fortunate in being one of the wettest countries in the world. An average of 170 cms. of rainfall per annum, is received by the country but only about 10% of this used and the rest goes into the sea. Most part of the country receives its rainfall through the southwest monsoon during June to September while the southern parts of the country gets its rain through the north-east monsoon in October to December also. Nature had provided the country with vast tracts of forests that can hold back the monsoon rain water. Forests provide a layer of decaying organic matter of leaf-litter and the deep roots of the lofty forest trees makes the soil structure conducive to infiltration of the rainwater, deep into the subsoil, and thus recharging the subsoil ground water table, ensuring a perennial flow of water in the springs and rivulets in the forests. From an uncut, ungrazed and unburnt, forest rarely will any water emerge as surface flow even during the heaviest rain. The undisturbed leaf litter will soak up the rain water and channel it downwards. Thus, forests prevent runoff of the rain water, increases its infiltration into the ground and reduces soil erosion,

Unfortunately we are injudiciously destroying our forests to provide for our ever growing population, little realising that, for short term gains, we are causing long lasting and possibly irreversible environmental damage.

From ancient times, India had many ponds, tanks, marshlands or wetlands, which collected rainwater, helped in re-charging ground water, for use in non-monsoon periods. Unfortunately again, the pressure of population in towns and cities have forced the civic authorities to fill up the ponds and tanks with refuse and rubbish to provide for living space for the ever increasing population and migrants to the cities and towns from the rural areas. Wetland and low lying marshland ecology is not properly understood and so they are being drained or filled up to provide for housing, food, fuel, fibre or forage for our growing human and cattle population. The absence of forests and marshlands has removed the checks that nature had provided against floods, and now, when we have rains. we have floods following it !

Another important part played by forests is in controlling soil erosion. Absence of tree cover, humus and grass helps in preventing soil loss which in India is estimated to be about 6,000 million tons approximately. Tree cover now forms less than 14% of our land area against the 33% suggested by our National Forest Policy of 1952.

India being a predominantly agricultural country, irrigation is vital for it. From ancient times, rivers, lakes, tanks, ponds and wells have been the traditional sources of water for irrigation and agricultural purposes. Now we are building huge dams across the course of rivers in mountane us terrain and create artificial lakes or reservoirs and use the stored water for irrigation and production of electricity. Theoretically, these dams

should be a boon to the country. Unfortunately, in practice, it is not so. These dams have submerged many vital forests and productive lands, and displaced thousands of tribals from their forests and livelihood. The work force employed for long periods rapidly deforest the surrounding areas and the deforestation in these vital catchment areas lead to soil erosion and land slides. The resulting huge quantity of silt, debris and topsoil raises the bed level in rivers and reservoirs created by the dams. Thousands of crores of rupees spent on the construction of these dams in the hope of getting water for irrigation and electricity for over a hundred years are belied and we will be happy if these dams prove useful atleast for half of its expected life. A Government sponsored study on the silting rate in the reservoirs in Tamil Nadu has found that the silting rate in the Kundah Reservoir to be about 2.87% per year and others slightly less.

It is estimated that in India, the fuel-wood requirement per annum is nearly 130 million tonnes and is increasing rapidly along with the increasing population. About two thirds of this is obtained illegally from the reserved forests, resulting in the loss of tree cover and loss of topsoil. Mining, drilling and road building, especially in the fragile Himalayan region and the Western and Eastern Ghats region results in removal or modification of top soil and vegetation in the area. It is estimated that it takes nature about 500 to 1,000 years to create one inch of topsoil and one rain on the disturbed area is enough to wash off several inches of precious topsoil.

Fallen leaf litters, dead plant and animal parts in the forests are acted upon by fungi and bacteria and transform them to mineral, carbon dioxide and water. The microbes deal with the chemical decomposition of these organic and inorganic matter.

Undisturbed tropical forests like the Silent Valley, serves as repositories of natural resources of germ plasm, genetic resource banks. Many of the living plants, insects, reptiles, and other organisms there, are yet to be studied and may be of immense use to science, medicine, etc. We are thoughtlessly destroying these precious treasure houses for short term profits and political expediency.

During droughts, available ground water is being over exploited. Thousands of borewells are sunk, especially in urban areas and the available ground water is pumped out. As the streets are paved and the houses built close, the rainwater, is not able to sink into the ground and recharge the ground water table. The ponds, tanks in urban areas which play a vital role in recharging ground water, are closed to provide housing land for the growing urban population. Ground water exploitation must be accompanied by adequate afforestation and ground water re-charge measures.

The Northern rivers like Ganges, Indus, Brahmaputra etc., rise in the snow clad Himalayas and form a perennial source of pure clean water, or it should! Unfortunately the cities and towns on their banks let in their sewage into the rivers. The Industries situated on the banks of rivers let in their untreated toxic effluents

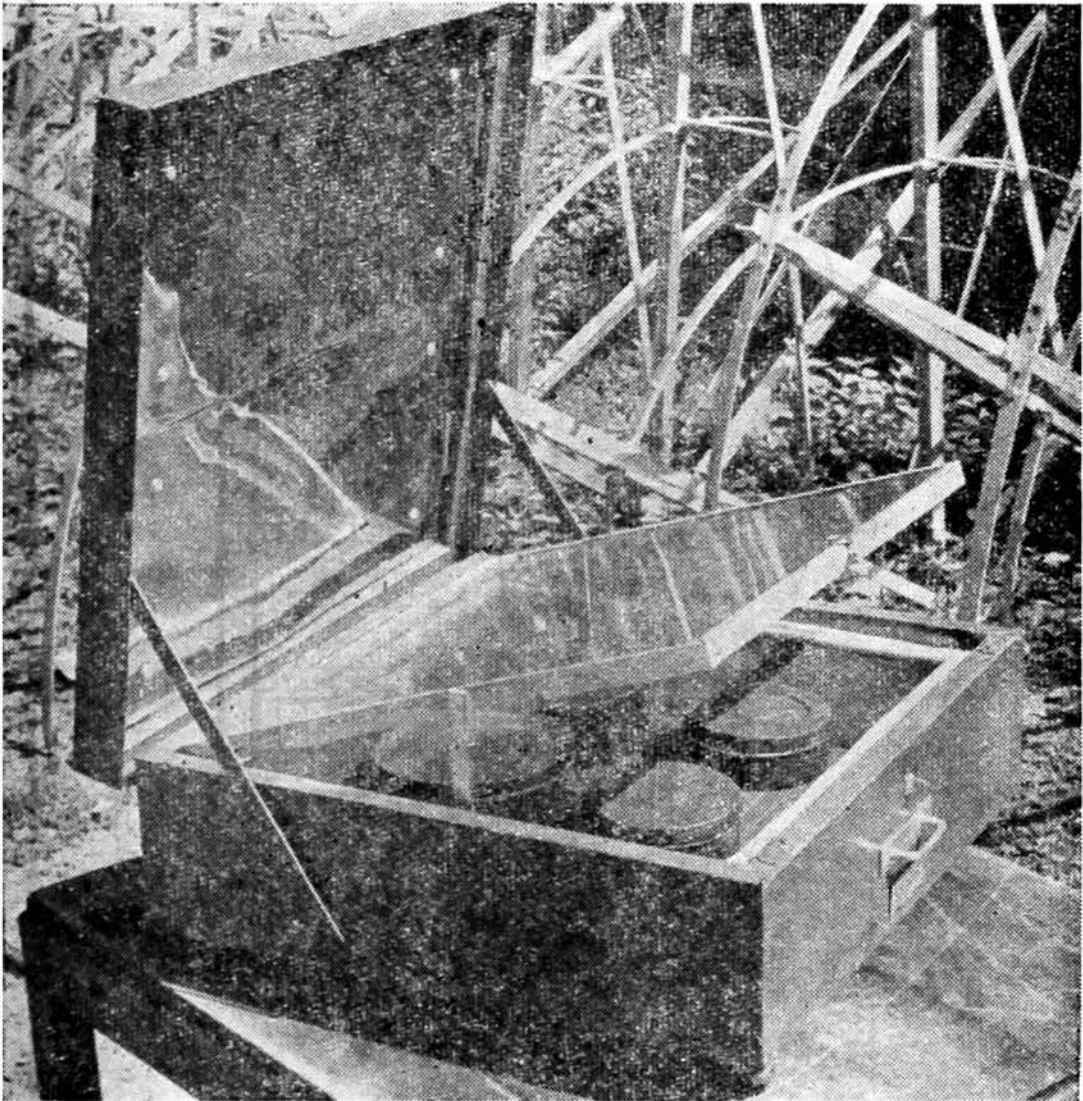
into the rivers. A study by the National Environmental Engineering and Research Institute, Nagpur shows that 70% of the available water in India is POLLUTED. Another study shows that before the Yamuna river enters Delhi 100 milli-litres of its water contain 7,500 coliform organisms. After it receives Delhi's waste waters, the coliform count skyrockets to 24,000,000 per 100 milliliters. Every river has a builtin self purification capacity provided by nature, but if too much of polluted materials and water is let into it, even the mighty Ganga cannot purify itself, and the Government is going to spend several thousand crores to purify it and make it fit for human consumption. The use of Pesticides, Herbicides, etc., injudiciously by our agriculturists further pollutes the rivers when these injurious chemicals are washed into the rivers during rains, The aquatic life in the rivers is severely affected and causes loss of a major source of protein for the people and loss of livelihood for millions of fishermen and others connected with the fishing industry. Unfortunately most of those who create pollution have very powerful lobbies and are able to spend large amounts in hiring technical experts to support their case and bomboozle Government into accepting their demands.

Even though the amount of rainfall per year is fairly steady over the century, the incidence of floods and droughts has become very frequent. It also found that the number of " Rainy days " has considerably reduced. Consequently, though a lot of rain falls in a short period since there is no forest or tree cover, worth the name ponds and tanks get filled up and as the beds of rivers and dams are silted resulting in low carrying capacities,

floods have become an annual feature, following the rains !

The average assistance of the Central Government to State Governments for natural disaster relief has risen from 5.64 crores per year during the First Five-Year Plan period (1951-56) to rupees 1027.27 crores in 1985-86 and to about 1,200 crores in 1987 ! This is in addition to what State Governments spend on drought and flood relief from their own funds. This massive expenditure could be more usefully used in afforestation of our catchment areas, resettlement of refugees and others who are now settled in sensitive hill areas like Ootacamund, Kodaikanal etc., What could be done to stem this drift, which is likely to turn this country into a desert. Our fossil fuels like coal, lignite, crude oil cannot be expected to last long, at the rate of our present consumption. To conserve the fuelwood and fossil fuels, the feasibility of using alternate systems of energy available should be examined.

In urban areas with fairly good sunshine, the use of solar cookers should be encouraged. This is a suitcase-sized box into which shallow black coated aluminium vessels containing rice, dhal, vegetables, meat, etc., is kept with required water. This box is kept in the sun, turning the reflecting lid towards the sun. (See picture). The food gets cooked in about 2 hours during which time the housewife could attend to her other work. After the food is cooked, the regular gas or other oven is used for seasoning, frying, etc. This saves about 2/3 of the normal fuel like gas, kerosene, firewood, etc. The subsidised cost of the cooker is about Rs. 230 only.

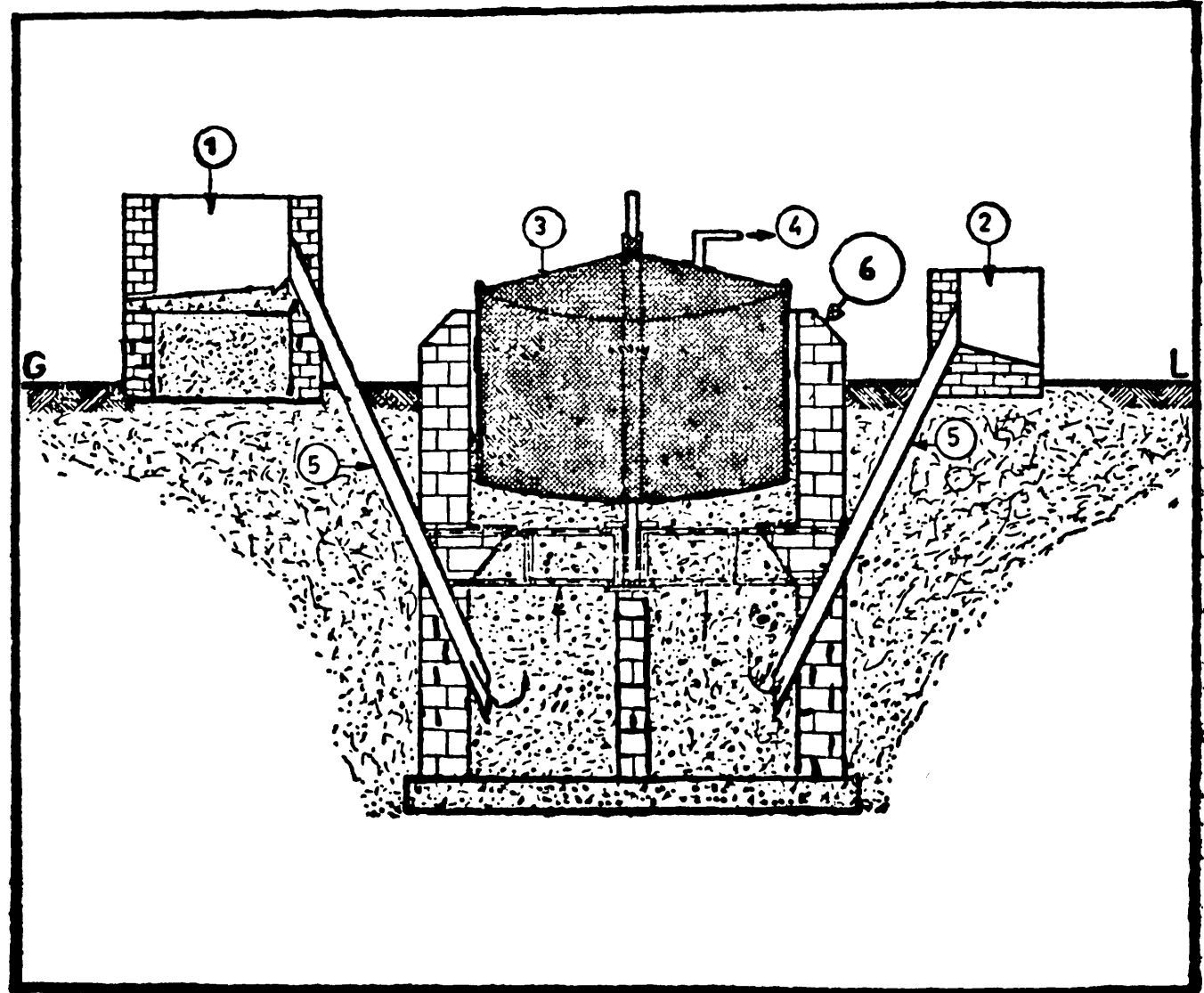


Solar Cooker

In rural areas the use of Bio-gas will be very useful and economical and should be encouraged. This consists of a shallow well-like construction with an inlet and an outlet. Dung mixed with equal quantity of water is poured into the inlet (*See picture*), chamber and it goes into the middle digesting chamber. An inverted metal bowl like cover is over the mixture and the gas produced is trapped in it (*See figure*). It is then piped away into the house for heating and lighting. The used slurry is

BIO-GAS PLANT DIAGRAM

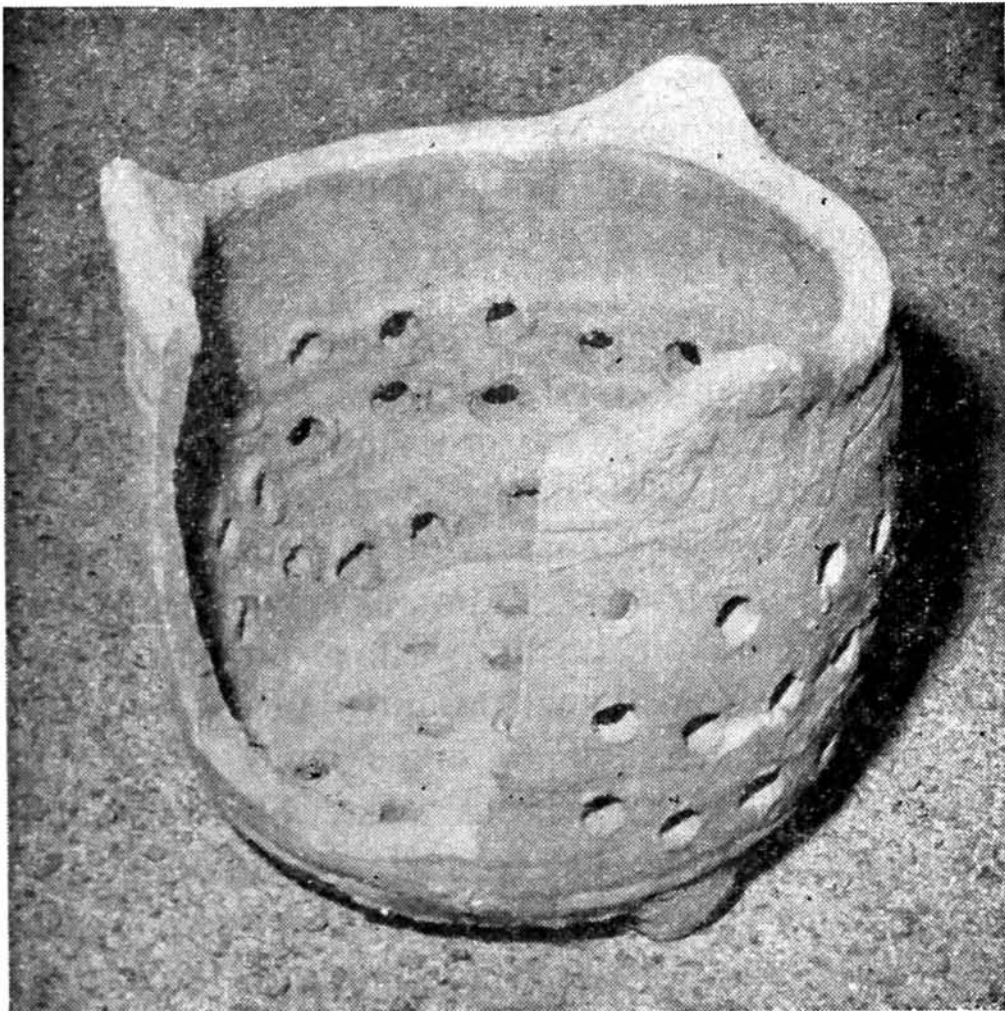
1. Inlet Chamber
2. Outlet Chamber
3. Digester
4. Gas Outlet Pipe
5. P. V. C. Pipe
6. Digester Wall



removed from the outlet chamber with a bucket and is an excellent fertilizer with a high nitrogen content. The construction cost is heavily subsidized by the Government. The Rural Development Authorities and the Coimbatore Agriculture University can supply construction plans and Technical know-how.

Of course, the solar cooker cannot be used in the rainy season or when it is cloudy. The bio-gas is also reported to be less efficient in very cold season. These can be used as supplements and will help the present fuel and fossil resources to last much longer, and the cutting of the forests for fuel can be reduced.

Another method of saving or conserving our scarce fuel wood is to use fuel efficient ovens or choolas. The



ordinary traditional rural [CHOOOLA is reported to be less than 10% efficient. By adapting the principles of these smokeless cum fuel-efficient CHOOOLAS, more than half the fuel used presently can be saved, thus indirectly saving the forests.

Better management of our precious water resources will go a long way in alleviating the periodic flood and water shortage. Construction of small dams in the upper reaches of the river, covering the catchment areas with trees, shrubs or Grass BEFORE starting construction the dams will prevent the silting of reservoirs and will prolong their useful life. It is reported that China has over 87,000 small hydel-works and they generate over a third of its power requirements. These small dams will not submerge huge fertile lands nor have many hundreds of families to be uprooted as in the present case of huge dams.

Cautious exploitation of ground water could also help in the prevention of droughts. Recycling of used water is another possible way of saving water. The recycled water could be used for irrigation, gardening, farming, etc., thus saving and conserving the normal supply of water. Even such a simple action as leaving leaking taps unattended causes unnecessary waste of precious drinking water. Taps left open inadvertantly during non-supply hours and not attended to immediately when supply resumes, results in enormous waste of water and is especially noticeable in Hotels, Hostels, Hospitals, Schools, etc. Taps must always be kept closed. Washing of face etc., should never be done with the tap kept

running. Water should be collected in a vessel and face washed. People having garden or open spaces should not pave them with cement or mortar. Rain water should be allowed to soak into the ground. Small ponds and tanks should be allowed to collect rainwater and help in recharging the ground water. Every effort must be made by the people and Government to conserve as much of the rain water as possible and not allow all of it to run into the sea as is being done now in Madras.

Everyone must realise that purified water is a precious commodity and should be used with utmost care. Everybody having some open space should grow some trees using the waste water of their own house.

Everyone has to feel responsible for the preservation of an unpolluted environment and should not do anything that directly or indirectly causes degradation or pollution of the Environment. Our precious forests, rivers, lakes, atmosphere and land should be preserved for our children and their children or there may be no wildlife, butterflies or flowers or forests for them to enjoy.

Environmental awareness is confined to committees and groups of concerned Scientists. Prof. Madhav Gadgil of the Indian Institute of Science, Bangalore points out "the current economic situation is such that no section of the country's population—the local population, Government or industry— has any personal stake left..... Unless we conserve the available water, preserve its purity, and distribute it equitably the future of the country is bleak. Better management of our precious river water resources, cautious planned exploitation of our ground water resources and recycling of used

water will go a long way in averting a future catastrophe. Better environmental awareness, among the public, better sense of dedication among enforcing staff of Government departments concerned, a responsible and responsive media highlighting environmental degradation and exploitation, creating better public awareness of the issues involved, may help to postpone the catastrophe. The younger generation has a major stake and should take greater interest in nature, environment, ecology, and conserve our limited supply of pure, clean water and help in preserving our precious forests and wild life.

Some useful addresses :

For Solar Cookers :

1. The Tamilnad Consumers Co-operative Federation, 26, Arcot Road, Saligramam, Madras-600 093.
2. The Kamadhenu Supermarket, Annasalai, Madras.
3. The Chintamani Supermarket. Annanagar, Madras.
4. The Murugappa Polytechnic, Avadi, Madras.

For Bio-Gas Plant :

1. The Director, Rural Development Centre, Kuralagam, Nethaji Subhas Chandra Bose Road, Madras-600 108.
2. The Khadi and Village Industries Board, Radha-Krishnan Salai, Mylapore, Madras,

3. Any Local Rural Development Officer.
4. The Tamilnad Energy Development Agency (TEDA) No. 1-A, Nungambakkam High Road, Madras-34.

To report Destruction of Wild Life, Birds, Trees, etc.

1. The Wild Life Warden, 49, 4th Main Road, Adyar. Madras-20.
2. The Chief Wild Life Warden, Tamil Nadu Forests, Tiruchi Road, Coimbatore.

To Report Pollution of water :

1. The Secretary, Department of Environment, Fort St. George, Madras-9.
2. Tamilnadu Pollution Control Board, Santhome High Road, Mylapore, Madras-4.

For Information—Improved CHOOLAS :

1. Madras School of Social Service, Casa Major Road, Egmore, Madras-8.
2. The Tamil Nadu Energy Development Agency, 1-A, Nungambakkam High Road, Madras-34.

Note :—Your M.P. & M.L.A.s' are your elected representatives in Parliament and Legislature are also responsible, so you should send a copy to them and ask them to take action.

SOME FACTS FOR CONTEMPLATION :

- * Every six months, more topsoil gets washed away than has been used to build all the brick houses across the country.
- * Seventy per cent of all the available water in India is polluted. About 73 million workdays are lost due to water-related diseases.
- * As of 1981, out of the hundred odd prosecutions launched after the enactment of the Central Prevention of Water Pollution Act, 1974, only a few of the actual offenders have been penalised.
- * Whenever the people have organised protests and challenged the polluters they have pushed the State to act.
- * Cherrapunjee—the wettest spot on earth and covered with lush subtropical forests—is today a barren area (even drinking water has to be fetched from far-away places).
- * Nearly one per cent of the land area of Himachal Pradesh has been stripped of its forest cover every year, over the last 25 years. 1.5 lakh trees will be cut every year just to make apple crates !
- * There are 52 plywood factories in Assam. Timber priced at Rs. 1,485 per cu.m. in the market is supplied to them for Rs. 500 per cu. m. for tea chests and Rs. 740 per cu. m. for decorative plywood.

- * Despite an investment of Rs. 7,510 crores on major and medium irrigation works, the average national yield for irrigated lands is a only 1.7 tonnes of grain per hectare as against the target of four to five tonnes per hectare.
- * Siltation rates of the reservoirs of major dams are three to four times higher than the project rates. The life-time of the Tehri dam may be just 30 or 40 years instead of the proposed 100 years.
- * Small hydro-electric projects have been ignored by Indian planners, despite the tremendous potential of such schemes. By contrast, in China, 87,000 small hydropower works generate a third of its hydroelectricity.
- * For India's 44 million tribals, destruction of forests has meant a cultural and social death.
- * Today, a significant portion of the 15,000 plant species and 75,000 animal species found in India are threatened by pressure of human activity on land and forests.
- * A little over 10 per cent of India's flora faces extinction ; many species may be lost even before their possible value is known to society.

*Courtesy First Citizens' Report, Centre for
Science and Environment, New Delhi, 1982*

- * The latest satellite data confirm that India is losing 1.3 million hectares of forests a year.
- * Small earthen dams for water harvesting are both ecologically sound and economically profitable. Three small reservoirs have transformed the ecology of a village near Chandigarh. There is no soil erosion, no deforestation, no desertification, and no one has been displaced. The lesson, water conservation, yes ; big dams, NO.
- * India uses nearly 100,000 tonnes of pesticide annually. At least 70% of this tonnage is contributed to by pesticides banned or severely restricted in Western nations.
- * Delhi today gets firewood from Assam, over a thousand kilometres away.
- * A single sample of wild rice collected from eastern Uttar Pradesh in 1963 gave Asian farmers a gene that saved 30 million hectares of paddy from the dreaded grassy stunt virus.
- * Surveys in a small part of the Silent Valley in Kerala, saved from ' Damnation ' by a people's campaign, have revealed nine species and an entire genus of plants new to science.
- * With the country's original forests and grasslands steadily destroyed, four weeds—Lantana, Parthenium, Eupatorium and Water Hyacinth—are set to take over the land.

Coutesy—The Second Citizen's Report, 1984–85
—Centre for Science and Environment,
New Delhi.

