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ABSTRACT

Man's use and misuse of energy have created problems in all sectors of society. Many are asking what can be done to help solve these problems so that future energy needs will be met and the quality of life in Canada can be assured. This guide of directions and information focuses on information known to be readily available locally. Introductory sections precede annotated bibliographies organized into sections on (1) energy perspectives, (2) energy conservation, (3) alternative sources of energy, (4) learning more about energy, and (5) doing something about the energy situation. (Author/MLF)

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The ENERGY GUIDEBOOK

Introduction

Energy plays a dominant role in our society. Man's use and misuse of energy have created urgent problems in all sectors. Many are asking what can be done to help solve these problems so that future energy needs will be met and the quality of life in Canada can be assured.

The Energy Guidebook has been produced in response to this growing concern. It is a book of directions and information - a guide to learning more and doing something about the energy situation. Hopefully it will encourage more effective individual and governmental decision-making and action to help solve our energy problems.

Since there is a considerable amount of published material on energy, this booklet focuses on information known to be readily available locally. (Availability is indicated as follows: EC - Environmental Center, CC - Camosun College, UVic - University of Victoria). While the Environmental Center is cited as the main source of this information, it will often be available in other libraries in Victoria and throughout North America.

Contents

Acknowledgements

This booklet was compiled and written by Betsy Sweeney; secretarial assistance and production - Karen Selk, Barbara Corry; graphics - John Bryant.

A special thank-you to advisors Dr. Geroge Beer, Dr. J.B. Foster, and Mr. Frank Leversedge and all those who have contributed energy information to the Environmental Center.

Energy Perspectives....

Energy is simply defined as the capacity for doing work. There are two familiar forms of energy. Objects in motion are said to have kinetic energy. Objects and substances may also possess stored or potential energy. These may be converted to do useful work e.g. the kinetic energy of flowing water is used to turn a turbine which drives an electric generator or stored chemical energy in gasoline can be used to move an automobile along the highway.

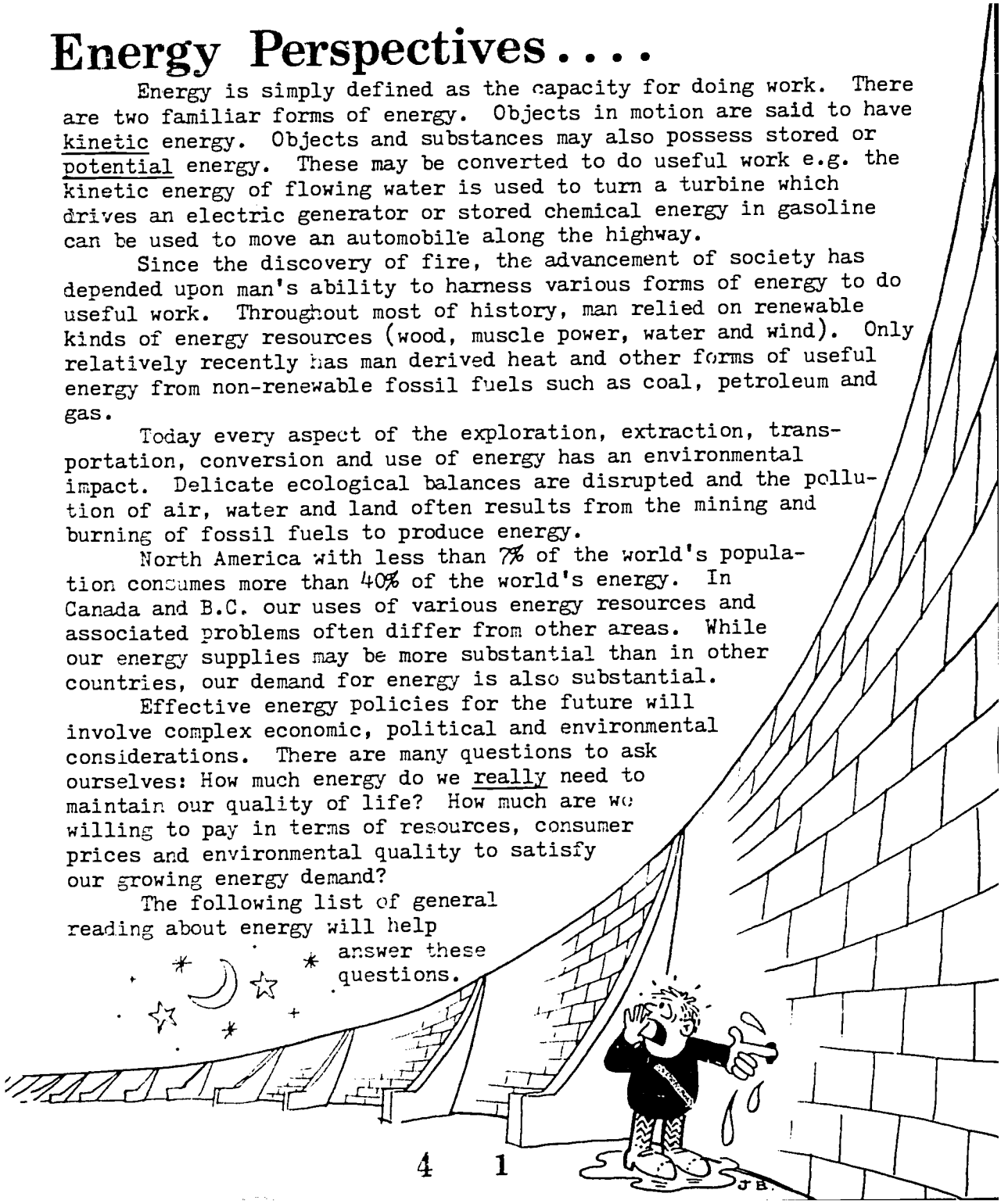
Since the discovery of fire, the advancement of society has depended upon man's ability to harness various forms of energy to do useful work. Throughout most of history, man relied on renewable kinds of energy resources (wood, muscle power, water and wind). Only relatively recently has man derived heat and other forms of useful energy from non-renewable fossil fuels such as coal, petroleum and gas.

Today every aspect of the exploration, extraction, transportation, conversion and use of energy has an environmental impact. Delicate ecological balances are disrupted and the pollution of air, water and land often results from the mining and burning of fossil fuels to produce energy.

North America with less than 7% of the world's population consumes more than 40% of the world's energy. In Canada and B.C. our uses of various energy resources and associated problems often differ from other areas. While our energy supplies may be more substantial than in other countries, our demand for energy is also substantial.

Effective energy policies for the future will involve complex economic, political and environmental considerations. There are many questions to ask ourselves: How much energy do we <u>really</u> need to maintain our quality of life? How much are we willing to pay in terms of resources, consumer prices and environmental quality to satisfy our growing energy demand?

The following list of general reading about energy will help answer these questions.



Arctic Gas, Canadian Arctic Gas Ltd., Calgary, 1974. (EC)

A collection of pamphlets, news releases, briefs, maps, etc. on northern resources development. Pamphlets dealing with the effects a pipeline would have on wildlife, permafrost and other aspect of the arctic environment are included.

Biswas, Asit K., Energy and the Environment, Environment Canada Planning and Finance Service Report No.1, Ottawa, 1974, 42 pp. (EC)

A comprehensive report on the environmental consequences of energy development aimed primarily at the scientific and university communities.

Dawson, J.C., Energy and the Economy - What Are the Options?, April 1972, (speech) 21 pp. (EC)

A discussion of the interdependency of energy, life styles and survival, emphasizing attitudes and values. How future energy needs may be met in B.C. and how demand is affected by personal, corporate or governmental growth aims are main points of discussion.

Effdord, Ian E. and Barbara M. Smith (eds.), Energy and the Environment, Institute of Resource Ecology, UBC, Vancouver, 1972, 219 pp. (EC)

A collection of lectures which presents various aspects of the power-environment conflict.

Electric Power Council on Environmental Quality, Energy and the Environment, U.S. Government Printing Office, Washington, D.C., August 1973, 58 pp. (EC)

A background publication on energy. Includes discussion of conservation and alternatives, environmental analysis and a proposal for control of existing systems.

"Energy and Power", Scientific American, Vol. 224, No. 3, Sept. 1971 pp. 36-200. (CC)

A series of articles by noted U.S. energy specialists. Covering a broad spectrum, it discusses the flow of energy in different types of societies, its role in human development, alternative energy resources and the conversion of energy as well as decision-making in the production of power.

Holden, John and Phillip Herrera, Energy, A Crisis in Power, Sierra Club, Ballantine Books, San Francisco, 1971, 252 pp. (EC)

A general and comprehensive discussion of the "energy crisis".

Laidler, K.J. (ed.), Energy Resources, The Royal Society of Canada, Ottawa, 1973, 501 pp. (EC)

Proceedings of a symposium at which papers were presented on energy resources and markets, their dependence on price, prospects of technological change, applications of economics to questions involving energy as well as environmental, humanistic and social considerations. A collection of current facts, opinions and analyses mainly related to Canada.

Laxer, James, Canada's Energy Crisis, James Lewis and Samuel Publishers, Toronto, 1974, 135 pp. (UVic)

A book advancing the viewpoint that the energy crisis is political and economic in nature and that for Canada, the energy crisis is a crisis of industrial policy. Interesting reading to promote thoughtful decisions for future energy policies in Canada.

Ministry of Energy, Mines and Resources, An Energy Policy for Canada - Phase 1, Information Canada, Ottawa, 1973. Vol. I (Analysis) 353 pp.; (Summary of Analysis) 28 pp.; Vol. II (Appendices) 353 pp. (EC)

An in-depth report on various aspects of the Canadian energy situation and discussion of where various future choices may lead. It effectively presents the complexities and interrelationships involving such facets as the balance of payments, capital markets, employment, the environment, regional impact, resource development, economic growth and the quality of life.

Perry, Thomas L. Jr., "Nuclear Energy in Canada: Potential and Problems", Nature Canada, April/June 1974, pp. 3-13. (EC)

A clear discussion of the economic and environmental considerations of meeting our energy demand and a description and analysis of Canada's nuclear programme.

Quirin, G.D., The U.S. Energy Crisis - Lessons for Canada?, University of Toronto, Feb. 1973, 9 pp. (EC)

A brief paper discussing the U.S. energy crisis and energy policies and lessons for Canada in the U.S. experience.

Rohmer, Richard, The Arctic Imperative: An Overview of the Energy Crisis, McClelland and Stewart, Toronto, 1973, 224 pp. (EC)

A presentation of the history and development of Canadian oil and gas resources including transportation, political aspects and relations with U.S. The emphasis is on the need for a natural resource policy in Canada.

Schurr, Sam H., Energy, Economic Growth and the Environment, Johns Hopkins University Press, Baltimore, Md., 1971, 223 pp. (EC)

A collection of papers discussing economic growth, its impact on the environment and the problems of public policy concerning energy.

Seale, Robert L. and Raymond A. Sierka (eds.), Energy Needs and The Environment, Univ. of Arizona Press, Tucson, 1973, 349 pp. (UVic)

A collection of articles by representatives of government, industry and academia concerning energy resources, pollution caused by its development and possible controls.

Wilson, Mitchell, Energy, Time-Life Books, New York, 1963, 200 pp. (CC)

A general discussion of energy, the history of its development, etc. Could be especially useful in the classroom for Jr. and Sr. high students.

Energy Conservation....

One obvious way to satisfy our energy needs in the future is to use our energy resources more efficiently today. In the fall of 1973, senior levels of government asked Canadians to voluntarily reduce the amount of energy they consume. Conservation of energy will become a necessity as fuel sources become more scarce and as associated environmental problems become more critical.

Energy conservation is <u>everyone's</u> responsibility. There is much to be done at all levels: developing more efficient technologies, instigating policies which reduce rather than promote energy use, fostering the "energy ethic" in each individual.

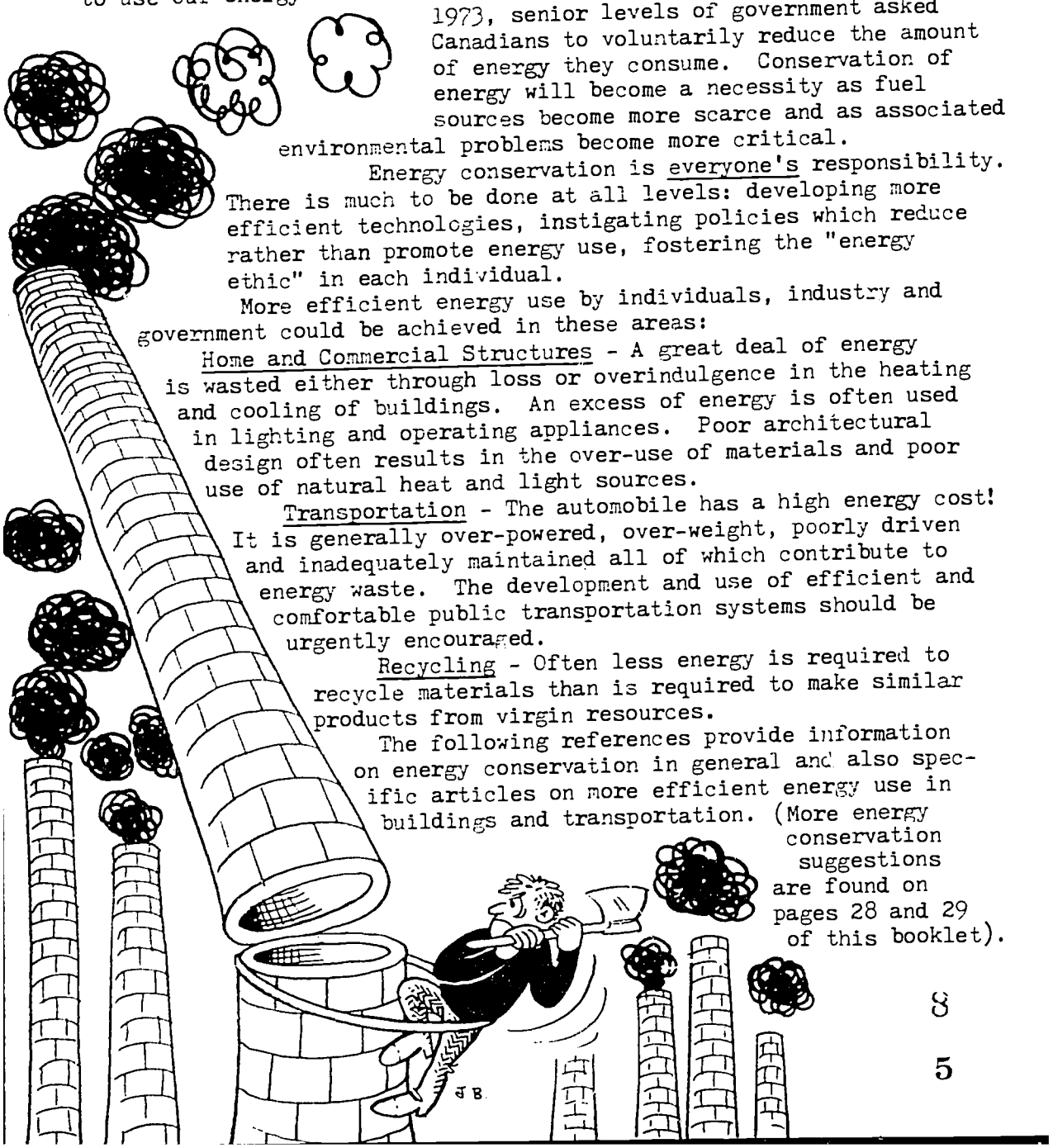
More efficient energy use by individuals, industry and government could be achieved in these areas:

<u>Home and Commercial Structures</u> - A great deal of energy is wasted either through loss or overindulgence in the heating and cooling of buildings. An excess of energy is often used in lighting and operating appliances. Poor architectural design often results in the over-use of materials and poor use of natural heat and light sources.

<u>Transportation</u> - The automobile has a high energy cost! It is generally over-powered, over-weight, poorly driven and inadequately maintained all of which contribute to energy waste. The development and use of efficient and comfortable public transportation systems should be urgently encouraged.

<u>Recycling</u> - Often less energy is required to recycle materials than is required to make similar products from virgin resources.

The following references provide information on energy conservation in general and also specific articles on more efficient energy use in buildings and transportation. (More energy conservation suggestions are found on pages 28 and 29 of this booklet).



General

B.C. Hydro, etc., Energy Conservation, assembled by the Environmental Center, 1974. (EC)

A collection of over 25 pamphlets from government and industry in both U.S. and Canada dealing with conserving energy at home, in transportation, etc.

Conservation and Efficient Use of Energy, U.S. Government Printing Office, Washington, D.C., 1973, 1,952 pp. (EC)

Four volumes covering the Joint Hearings before certain sub-committees on Government Operations and Science and Astronautics, House of Representatives. Statements, letters, data and discussions are included. This collection provides a great deal of useful information for government policy and individual action.

"Energy and Man", Dimensions (NBS), Aug. 1973. (UVic)

A special issue on the energy programs of the National Bureau of Standards (U.S.) including energy conservation in buildings, household appliance energy labels, and comparative performance of motor vehicles run on different fuels.

Executive Office of the President, OEP, The Potential for Energy Conservation, U.S. Government Printing Office, Washington D.C., Oct. 1972, 210 pp. (EC)

A discussion of short-term and long-range effects of conservation on energy demand in areas of transportation and residential and commercial use.

Hirst, Eric and J. Moyers, Potential for Energy Conservation through Increased Efficiency of Use, Oak Ridge National Laboratory, Oak Ridge, Tennessee, March 1973, 22 pp. (EC)

A discussion of efficiency of energy use in transportation and the household and the potential for the return to a more conservative resource-use ethic.

Institute for Environmental Studies, Conserving Electricity in Seattle, University of Washington, Seattle, Dec. 1973, 53 pp. (EC)

Though some data apply specifically to Seattle, the book is useful for its discussion of the potential for conservation, and the promotion of conservation awareness.

Large, David B. (ed.), Hidden Waste: Potentials for Energy Conservation, The Conservation Foundation, Washington D.C., May 1973, 137 pp. (EC)

A summary of research into methods of reducing wasted energy in transportation, buildings, industry and by using wastes. Emphasis is on reduction in demand through technological change by increasing thermal, mechanical and electrical efficiencies and changing architectural design.

MacDonald, Hon. Donald, "Energy-Statement by the Minister on Measures to Conserve Supply", Commons Debate, Nov. 26, 1973, pp. 8138-42, pp. 8165-8167. (EC)

A presentation of the Dept. of Public Works Guidelines for conservation of energy in federal buildings and suggestions as to how commercial and industrial enterprises and also the consumer can voluntarily reduce consumption of energy. Pending legislation concerned with energy is also discussed.

Mikhail, S., Motivation for Energy Management, Public Works Canada, May 1974, 16 pp. (EC)

A discussion of the efficient use of energy in new and existing buildings involving the motivation of the developer, the owner, the professional, the building manager, and the tenant. Charts and diagrams on the effects of construction on energy consumption are included.

Shell Oil Co., The National Energy Problem: Potential Energy Savings, Shell Oil Co., Houston, Texas, Oct. 1973, 28 pp. (EC)

A booklet on energy conservation in transportation and buildings by commercial, industrial and residential sectors. Projections of supply demand and possible savings (1980-1990) are included.

Buildings & Transportation

Baas, Alan M., Thermal Environments, Educational Resources Information Center, Eugene, Oregon, April 1973, 8 pp. (EC)

This paper provides information on climate control, total energy systems, trends in school air conditioning, etc.

Campbell, Wayne, "Energy Cost in Transportation" Science Dimension, Vol. 6, No. 1, 1974, pp. 4-8. (EC)

This brief article details an "energy cost" method for putting the relative expenses of a number of systems into perspective.

Carson, Susan, "We Could Conserve Our Energy if we Put Our Buildings to Work", Week End Magazine, Feb. 23, 1974, pp. 2-7. (EC)

An aritcle about how architectural design could make better use of natural sources of heat and light.

Dubin, Fred S., Energy Conservation Through Building Design and A Wiser Use of Electricity prepared for American Public Power Assn. Conference, San Francisco, June 1972, 19 pp. (EC)

A paper providing a number of practical suggestions for conserving energy in buildings.

Educational Facilities Laboratories, The Economy of Energy Conservation in Educational Facilities, New York, July 1973, 81 pp. (EC)

This analysis includes conservation strategies for schools by modernization, planning, operational and maintenance changes.

"Heating and Insulating the Home", Consumer Reports, October 1971, pp. 595-599. (EC)

A discussion of home fuels, heating systems and insulation.

Hirst, Eric, "Transportation Energy Use and Conservation Potential" Science and Public Affairs, Vol. XXIX, No. 9, Nov. 1973, pp. 36-42. (EC)

A discussion of energy conservation in transportation showing that it is technologically feasible to increase transportation energy efficiency. Life-style changes and institutional changes are involved, but they do not imply a return to "caves and candles".

Jones, Philip G., "Here are 12 pages Packed With Ways to Help Your School Cope with the Energy (read economy) Crisis", American School Board Journal, Jan. 1974, pp. 30-60. (EC)

This issue includes various articles and a reading list concerning energy conservation in schools.

Moyers, John C., The Value of Thermal Insulation in Residential Construction: Economics and Conservation of Energy, Oak Ridge National Laboratory, Oak Ridge, Tenn., December, 1971, 100 pp. (EC)

A report estimating the potential monetary and energy savings through the use of additional thermal insulation in residential construction. Differences occurring in electrically and gas heated homes are also discussed.

Royal Architectural Institute of Canada, Energy Conservation (The Science Council of Canada Study), Ottawa, Feb. 1973, 31 pp. (EC)

This report discusses energy demand as affected by present day building practices and our way of life. It includes recommendations for planning, more research, changes in building codes, etc.

Watson, Donald, "Energy Conservation in Architecture", Connecticut Architect, March/April 1974, (reprint) 6 pp. (EC)

An article discussing energy conservation in architecture; specifically, adapting design to climate and various factors e.g. sun, wind, air flow, etc.

Alternative Sources

Since generation of much of the world's power is relatively inefficient, exerts considerable environmental impact and largely relies on finite sources of supply, long range needs will have to be met through alternative methods of generation.

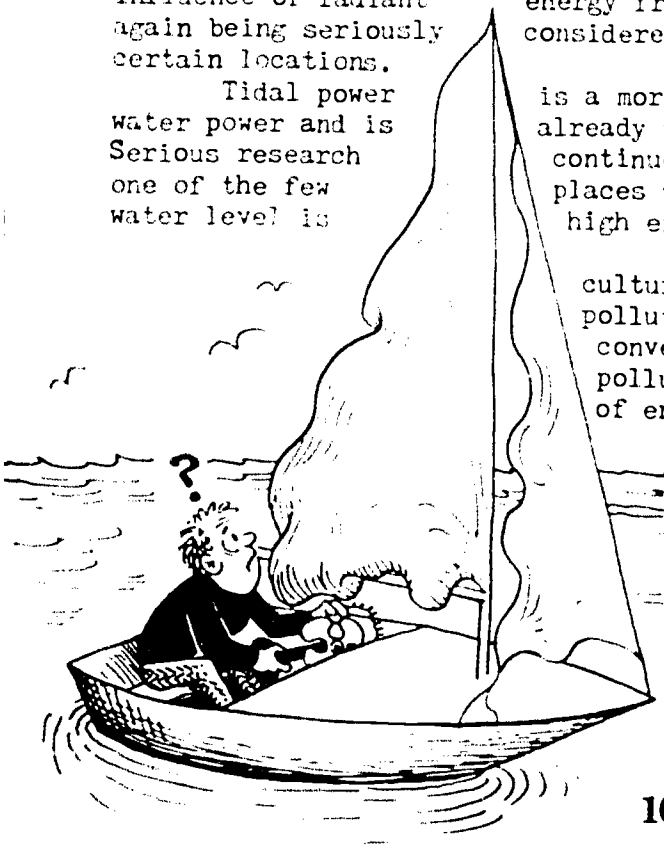
Alternative sources of energy which are clean, economic and renewable should be seriously considered for development and use in the future. Possible alternatives range from the very simple to the technically advanced, from do-it-yourself projects to elaborate space programmes.

The main alternatives for which new energy technologies are being explored, designed and developed are:

Solar, Wind and Tidal Power - Solar energy is the most abundant and cleanest of all forms of energy. Perhaps economic solar power could be made available to a large number of people through the use of satellite collectors orbiting the earth or large scale solar-cell energy farms.

Wind is continuously regenerated in the atmosphere under the influence of radiant energy from the sun. Wind power is once again being seriously considered and has a promising future in certain locations.

Tidal power is a more limited but promising source of water power and is already used in France and the U.S.S.R. Serious research continues at the Bay of Fundy in Canada, one of the few places where the available difference in water level is high enough to generate energy.



Power from Waste - Urban and agricultural wastes commonly considered pollution and health hazards can be converted to methane (a relatively pollution-free and convenient source of energy) or directly to heat energy.

Geothermal Power - The earth's heat is a potentially valuable source of energy in the form of steam, hot water and hot rock. Although it's use is well established in some areas of the world, recent research offers much wider potential.

Of Energy....

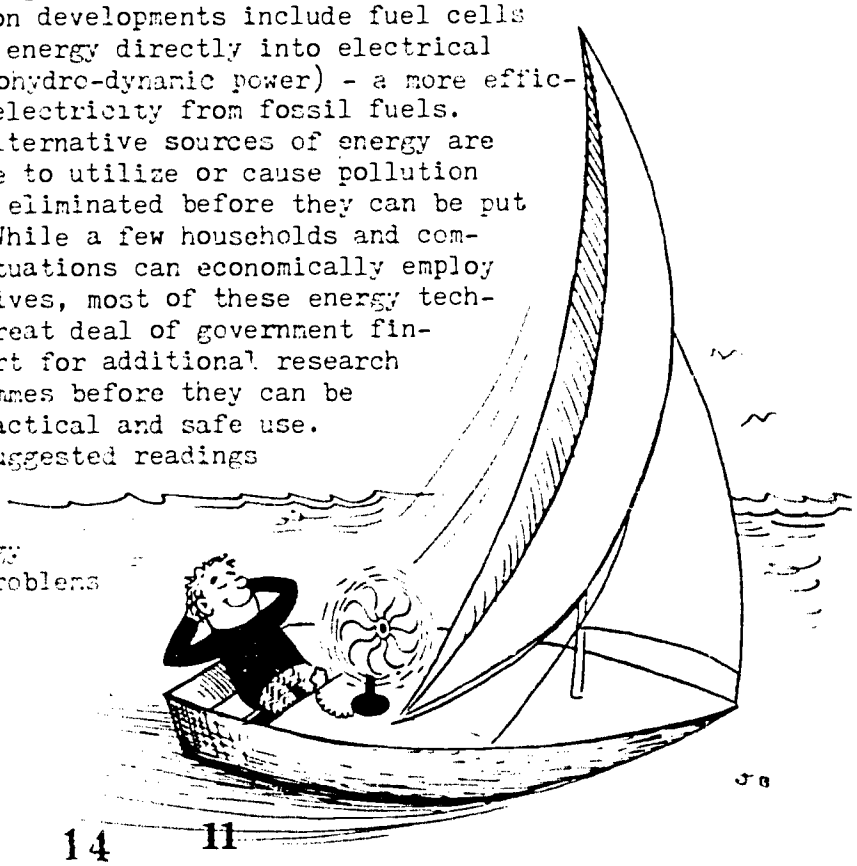
Nuclear power - Present-day nuclear reactors in wide spread use in some areas, operate on the basic principle of fission, the splitting of heavy atoms to liberate part of their internal nuclear energy. The Canadian nuclear programme is based on a unique design principle which results in efficient use of natural uranium. In B.C., nuclear energy is not yet considered a viable source of energy. Research on safer and more efficient nuclear power production includes the development of safe nuclear breeder reactors (to stretch uranium supplies) and the use of nuclear fusion, which would generate only an insignificant amount of radioactive waste.

New and Improved Conversion Processes - These processes would use conventional energy sources in a more efficient, less polluting way. Among those being seriously considered are the large-scale gasification and liquification of coal and the removal of polluting sulfur. Oil shale is a limestone-like rock that can be processed to produce oil. With both of these resources there are still problems to be faced with surface mining, waste and water use.

Direct conversion developments include fuel cells which convert chemical energy directly into electrical energy and MHD (magnetohydro-dynamic power) - a more efficient way of producing electricity from fossil fuels.

Some of these alternative sources of energy are presently too expensive to utilize or cause pollution problems which must be eliminated before they can be put into wide-scale use. While a few households and communities in certain situations can economically employ some of these alternatives, most of these energy technologies will need a great deal of government financial and moral support for additional research and development programmes before they can be put economically to practical and safe use.

The following suggested readings provide more information on alternative sources of energy and their associated problems and possibilities.



"Alternative Energy Sources" - A collection of newspaper articles, compiled by the Environmental Center, July 1974. (EC)

A collection of up-to-date articles on solar, wind, geothermal and other power generation alternatives and utilization on an individual and community scale.

City of Seattle, Dept. of Lighting, Power Generation Alternatives, Seattle, Washington, 1973, 127 pp. (EC)

An explanation of all methods of generating electricity. The book also considers storage of energy, generation planning and pollution effects.

Clark, R.H., "Energy from Fundy Tides", Canadian Geographical Journal, November 1972, pp. 150-163. (UVic)

An article discussing tidal power as a viable alternative source of energy. Studies done at the Bay of Fundy are described.

Crowe, Bernard J., Fuel Cells - A survey, NASA, Washington, D.C., 1973, 55 pp. (EC)

A comprehensive presentation of how fuel cells work and possibilities for their increased use in the future.

DeLittle, R.J., The Windmill Yesterday & Today, J. Baker, London, 1972, 98 pp. (UVic)

A history of design, development and use of the windmill, includes glossary and selected bibliography.

Environmental Action Committee, Energy (Environmental Action Papers No. 1), University of Colorado, Denver, 1972, 24 pp. (EC)

An easily understood, non-technical illustrated booklet on energy. It discusses different sources of energy and the need for research and development with an emphasis on philosophical aspects.

Environmental Education Group, Energy Options, Environmental Alert Group, Los Angeles, 1973, 74 pp. (EC)

A booklet designed to help citizens assess the potentials of new sources of energy. Each alternative is described and analyzed with respect to economic feasibility and environmental impact. Presently used energy sources and energy conservation are also discussed.

Farber, Eric A., "Solar Energy Conversion Research and Development, Florida", 1974. (EC)

A set of articles on the work being done at the University of Florida Solar Energy Laboratory including solar electric transportation, solar water heating and a list of Dr. Farber's Solar Energy Publications.

Federal Power Commission (U.S.), "Staff Report on Wind Power", Sept. 1973, 10 pp. (EC)

A booklet dealing with the history and development of wind as a source of electric power.

Federal Power Commission (U.S.), "Views on Geothermal Energy Research" A statement by John N. Nassikas, Feb. 1974, 33 pp. (EC)

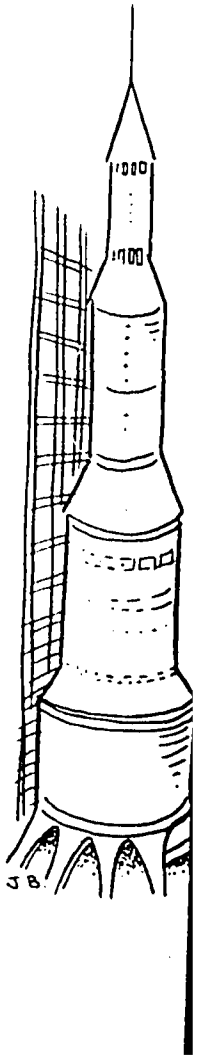
This paper is a report on potential sources of geothermal energy encouraging its development in selective areas.

Halacy, D.S., The Coming Age of Solar Energy, Harper & Row, New York, 1973 (revised) 219 pp. (UVic)

An over-view of the history and future of solar energy and the technological aspects of its use.

Hammond, Allan, William D. Metz and Thomas H. Maugh, Energy and the Future, American Association for the Advancement of Science, Washington D.C., 1973, 184 pp. (UVic)

A book seeking to discover and to assess the research developments that will be the basis of future energy technologies. It provides a description of possible alternatives and includes illustrations and a glossary.



Hottell, H.C. and J.B. Howard, New Energy Technology - Some Facts and Assessments, MIT Press, Cambridge, Mass., 1971, 364 pp. (UVic)

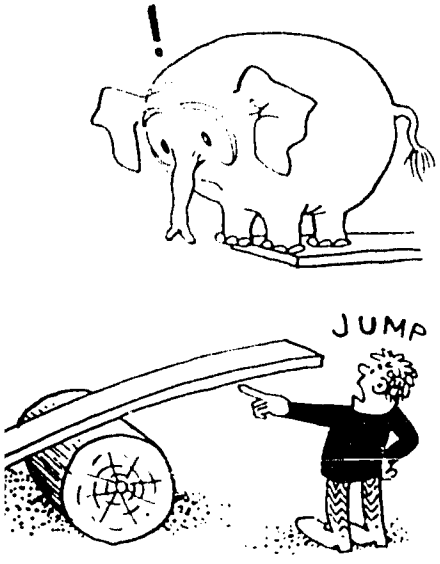
An analysis of various fuel conversion processes including details of fuel transportation and the pollution resulting from a variety of these processes. Some topics discussed: oil from coal, nuclear power, fuel cells for central station power and utilization-related energy problems. A good source of information on fossil fuel technology.

Nashville Thermal Transfer Corp., Thermal, 1973, 20 pp. (EC)

A booklet describing the world's first large scale plant which produces both steam and chilled water from solid waste. This unique municipal scheme devised for energy conservation and economic reasons is described in detail. Photographs and diagrams are included.

"Technical Aspects of Wind and Solar Power Generation", compiled by the Environmental Center, June 1974. (EC)

A collection of articles, data sheets and plans from various companies involved in the manufacture and testing of wind and solar power generating devices.



U.S. Environmental Protection Agency, Energy Recovery From Waste, U.S. Government Printing Office, Washington D.C., 1973, 24 pp. (EC)

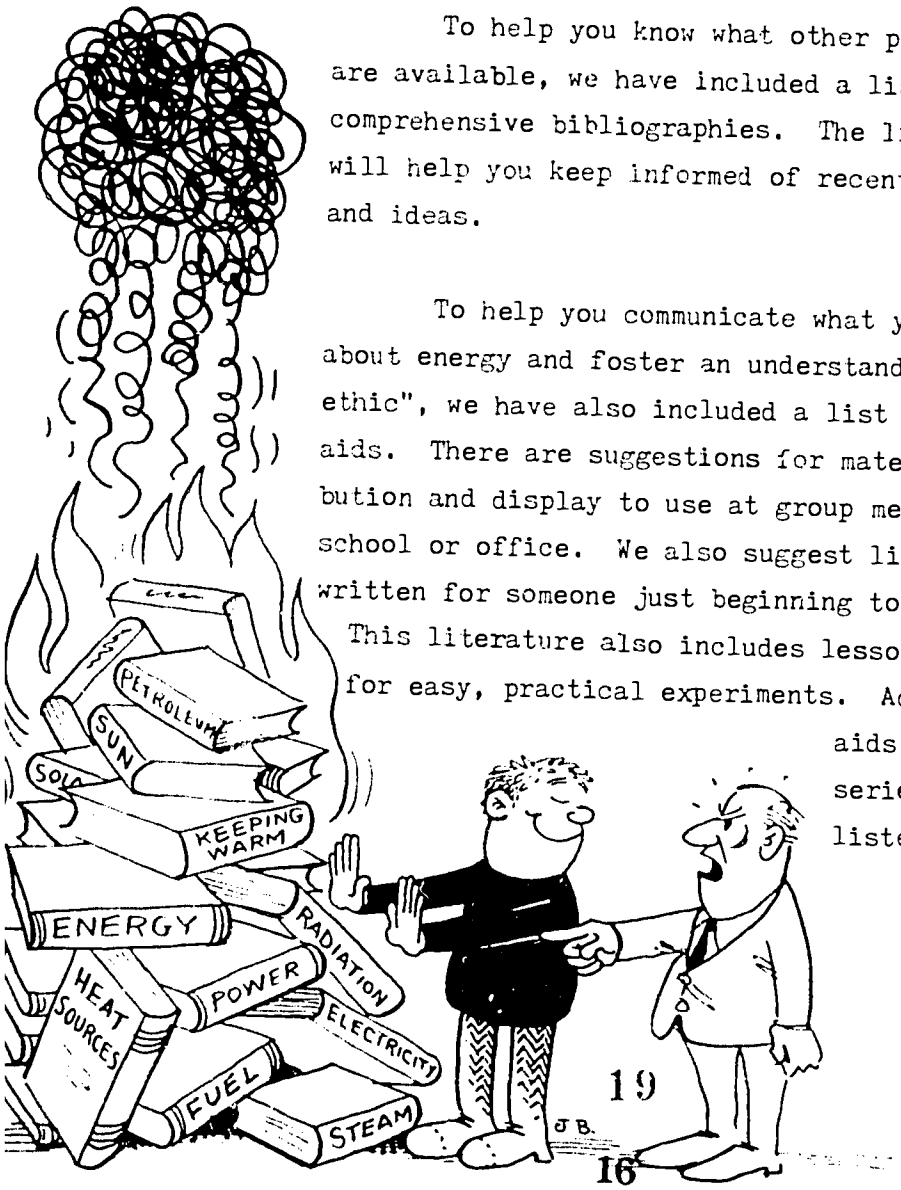
A report discussing solid waste as supplementary fuel, emphasizing the fact that the system using wastes almost always causes less use of energy. It also answers specific questions for those considering utilizing this system in their community.

Learning More About Energy....

There is a lot more to learn about energy ..... and a lot more information is available for all ages and interests.

To help you know what other publications on energy are available, we have included a list of recent and comprehensive bibliographies. The list of periodicals will help you keep informed of recent energy developments and ideas.

To help you communicate what you have learned about energy and foster an understanding of the "energy ethic", we have also included a list of various teaching aids. There are suggestions for materials for distribution and display to use at group meetings or at your school or office. We also suggest literature which is written for someone just beginning to learn about energy. This literature also includes lesson plans and outlines for easy, practical experiments. Additional visual aids (films and slide series) are also listed.



Bibliographies

Alternatives, Inc., Energy - Bibliography No. 7, Peterborough, Ontario, 1973, 12 pp. (EC)

A bibliography of publications in three areas:
1) fossil fuels, nuclear power in general and associated environmental problems
2) "The Great Energy Debate"
3) alternative energy sources under investigation

Bibliography on Solar Energy Applications; Dept. of Mechanical Eng., University of Maryland, 1972, 3 pp. (EC)

A listing of general and technical articles concerned with solar energy.

Bibliography - Wind Turbines, NASA, Lewis Research Center, Ohio, Jan. 1974, 6 pp. (EC)

List of publications on the utilization of wind power in many countries of the world.

Citizen's Energy Conference, Bibliography, Washington D.C., Feb. 1974, 20 pp. (EC)

A useful listing of periodicals, documents, on such topics as corporate issues, foreign policy, energy and the poor, energy and environment.

Ecology Action Center, Bibliography on Energy Issues, Halifax, N.S., 4 pp. (EC)

A list of publications and articles dealing with the Canadian energy situation.

Efford, Ian, Energy Reading List, UBC, Vancouver, 1973, 7 pp. (EC)

A general reading list covering many topics related to energy.

Energy 1974, Sidney Kramer Books, Washington, 1974. (EC)

A brochure listing standard, recent and forthcoming books on energy and related topics.

Environment Information Center, The Energy Index, New York, Dec. 1973, 522 pp. (UVic)

A valuable publication cataloguing information since 1970 on the energy issues of our time: resources, conversion technology, consumption and environmental impact. Listings include articles, government documents, statistics, research reports, conference proceedings, books, films; more than 2,000 abstracts are also presented.

Office of Energy Conservation, Federal Energy Office, Energy and Energy Conservation, Washington, D.C., 1974, 25 pp. (EC)

A series of brief bibliographies, and list of recent publications and articles on energy published by the U.S. Government (draft report).

Wilkie, Brian, "Energy in Canada: A Selective Bibliographic Review", Contact, Aug. 1973, 14 pp. (EC)

Review of current literature dealing with energy and energy use projections.

Periodicals

Alternatives (c/o Trent University, Peterborough, Ontario) - A Canadian environmental magazine. Discussion of energy developments and policies particular to Canada are often featured. Quarterly, $3 per year. (EC)

Alternative Sources of Energy (Route 2, Box 90-A, Milaca, Minn. 56353) A magazine for people concerned with the development of alternative energy technologies for a decentralized society. Emphasis on alternative, environmental technologies, agriculture, architecture, transportation and communications and the synthesis of old and new energy technologies. A collection of ideas, plans and access information. 6 issues, $5.00. (EC)

Energy International, (Chaussee de Charlerin 123 a, B-1060 Brussels, Belgium) - An industry-oriented magazine, covering all aspects of energy development, short, non-technical articles with maps, diagrams and photographs, together with up-to-date project news, new ideas etc. 12 issues/year. Free to libraries and business executives; otherwise $20 per year. (UVic Geog.)

Energy Policy (IPC Science & Technology Press Ltd., IPC House, 32 High St., Guildford, Surrey GV1 3EW, U.K.) - An international quarterly dealing with many aspects of energy policy and planning. Helpful in keeping up with current energy developments. News, book reviews and conference reports are included in each issue. 4 issues, $36.40. (UVic)

Environment (Scientists Institute for Public Information, 438 S. Skinker Blvd., St. Louis, Mo. 63130) - A general publication on environmental matters. Many issues, individual articles and editorials deal with the many aspects of the energy situation e.g. resource development, economic, environmental, and technological considerations. "News of the Month" and other regular features are also useful. 10 issues/year, $12.00. (EC)

Environment Action Bulletin (33 E. Minor St., Emmaus, Pa. 18049) - A weekly newsletter providing up-to-date information on the energy situation and other environmental issues. A useful guide to current environmental action groups, legislation and information sources. 6 months, $5.00. (CC)

Science (American Association for the Advancement of Science, 1515 Massachusetts Ave. N.W., Washington, D.C. 20005) - A number of articles on energy have appeared in Science in the past few years. Tapes, reprints and books are also available. Weekly, $30/year. (CC)

A special issue on energy was published April 19, 1974, dealing with the impact of the energy crisis, policy, economics, present and future technologies. (EC)

Technology Review (Room E-19-430, Massachusetts Institute of Technology, Cambridge, Mass. 02139) - An informative magazine including many articles on the energy situation and its technologies. Recent feature articles: energy self-sufficiency, economics of the energy crisis, challenge and promise of coal, what's new in mass transit, solar energy and many others. 8 issues/year, $10.00. (UVic)

Urban Reader (c/o City Information Works, Social Planning Department, Vancouver City Hall, 453 W. 12th, Vancouver, B.C.) - A review of urban views and opinions. A good overview of urban environmental problems. Issues include articles on energy, recycling, etc. Bi-monthly, free. (EC)

Teaching Aids

Materials for Distribution and Display

Eco-tips #5 - Energy Conservation

A handy folding pocket-size consumer guide dealing with sources and ways to conserve energy. (EC)

Available from: Concern, Inc.
2233 Wisconsin Ave. Northwest
Washington, D.C. 20007
$10.00/100 copies

Energy and Our Way of Life

A brief, simple description of present Canadian energy policy. Includes a discussion of resources and their development, how individuals can help determine policy and the role of foreign investment. (EC)

Available from: Dept. of Energy, Mines and Resources
Ottawa, Ontario

Environmental Action Reprint Service Catalogue - No. 2B

A listing of many reprints on solar, wind and nuclear power which are available in bulk quantities; buttons and bumper stickers are also available. (EC)

Available from: Environmental Action Committee
University of Colorado
1100 14th Street
Denver, Colorado

"Kill-A-Watt" - A Program for Energy Ethics

A kit including reports, posters, pamphlets and stickers to help promote energy conservation by individuals, government and industry. (EC)

Available from: Seattle City Light
1015 Third Ave.
Seattle, Washington 98104

"The Crisis in Resources: Solutions for Resource Recovery", Public Interest Report,

"Solutions to the Energy Crisis", Public Interest Report.

Two 12-page reports on energy sources and recycling including a brief explanation of the problems and possibilities of each. Available in bulk quantities. (EC) A one page list of recommended educational materials on energy is also published. (EC)

Available from: Environmental Alert
1543 N. Martel
Los Angeles, Calif. 90046

Literature

Eco-News - A Young People's Environmental Newsletter; Environmental Action Coalition, 235 E. 49th St., N.Y., N.Y.; 10017, $2/year (12 issues) (EC)

A publication for younger students. Each issue includes simple experiments, bibliography and teachers guide.

Of special interest: "How Energy Affects Your Life", Vol. 4, No. 3, (Nov. 73)
"How Should We Use Energy" Vol. 4, No. 5 (Jan. 74)

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Bendick, Jeanne, Why Things Work, Parents Magazine Press, New York, 1972. (EC)

A first book on energy. It discusses the total energy picture: what energy is, where it comes from and what it does.

Branley, Franklyn M., Solar Energy, Thos. E. Crowell Co., New York, 1957, 116 pp. (UVic)

A simple explanation of what solar energy is and how we can make it work for us. Includes drawings, diagrams and easy, practical experiments concerning solar water heaters, cookers, heat pumps and other solar energy devices.

Environmental Action Coalition, Less Power to the People (Environmental Energy Use), New York, 50 pp. (EC)

A teaching unit (tested in New York schools) on energy problems and solutions, for grades 4 through 6. It helps students understand why conservation is necessary and hopefully motivates them to save energy in their daily lives. Activities illustrate basic energy principles, energy practices and possible alternatives.

Millard, Reed, How Will We Meet the Energy Crisis?, Julian Messner, New York, 1971, 182 pp. (UVic)

A Jr. high level book discussing "the energy crisis", power without pollution and new ways to deliver power (from the sea, earth and the sun).

Mott-Smith, Morton, The Concept of Energy Simply Explained, Dover Publications, N.Y., 1964, 207 pp. (UVic)

A useful book tracing the story of man's conquest of energy, describing the scientific discoveries that made it possible and the chief ways in which energy is applied to useful purposes. A good introductory book for Sr. secondary and adults.

Reynolds, William C., Energy From Nature to Man, McGraw-Hill, U.S. 1974, 272 pp. (UVic Physics)

A textbook for university (non-engineering) students which is mainly devoted to the job of developing an understanding of energy. A basic background book for more advanced readings. Heat, mechanical, chemical and nuclear energy are discussed.

Ris, Thomas, Energy and Man's Environment, University of Washington, Seattle, March 1974, 111 pp. (EC)

An interdisciplinary activity guide for elementary through secondary grades.

Thier, Herbert, Energy Sources, Student Manual and Teacher's Guide, Berkeley, 1969, Student Manual 19 pp., Teacher's Guide 63 pp. (UVic)

Lessons and experiments illustrating the basic principles of energy theory; elementary level.

Visual

The Energy Crunch - three color programmes (50 min. each) analysing the likely effects of the speed with which man is devouring his energy resources. The series tries to answer the question, What will be the sources of lighting, heating and propulsion in the year 2000?

Programmes:

1) "The Bottom of the Barrel"
2) "The Nuclear Dilemma"
3) "The Sunbeam Solution" - presents alternatives, urges energy conservation.

Available from: The British Broadcasting Corp.
P.O. Box 500, Terminal A
Toronto, Ontario

Cost:

purchase
- $ 1,500 - series (film)
- 550 - single programme
- 1,404 - video tape series
- 468 - video tape programme

rental $ 50 each (film only)

An energy slide presentation is being prepared by Toronto's Pollution Probe. It will provide a background to help understand Canada's "Energy Crisis", and look at some economic, environmental, and sociological implications of future energy policy. It emphasized the need for energy conservation and includes a script which can be adapted to any age group.

Available from: Pollution Probe, Education Project
University of Toronto
Toronto, Ontario M5S 1A1

Cost:
- $ 30.00 - purchase
- 5.00 - rental

Doing Something about the Energy Situation....

Effective Energy Action Starts With You ..... Put Your Knowledge About Energy to Work. Help Create an Energy Awareness within Your Community and Government .....

.....FIND OUT ABOUT OTHER ENERGY ACTION EFFORTS - Some publications which provide ideas and contacts to help you promote energy action are:

Citizen's Action Guide to Energy Conservation by the Citizen's Advisory Committee on Environmental Quality, Sept. 1973, 66 pp. (EC)

Energy Handbook by Participation in Energy Policy (PEP) 1973, 19 pp. (EC)

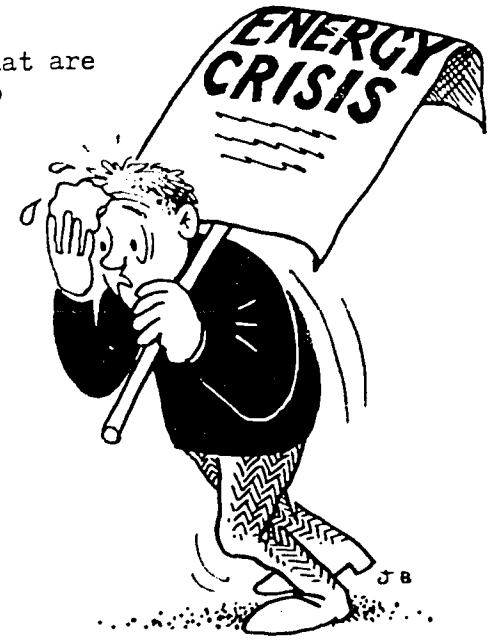
Who's Got the Power? - A Resource Guide by the Citizen's Energy Conference, May 1974, 77 pp. (EC)

How to Challenge Your Local Electric Utility: A Citizen's Guide to the Power Industry by the Enviornmental Action Foundation, (U.S.), 1973, 112 pp. (EC)

.....CONTACT OTHER GROUPS INVOLVED IN ENERGY ACTIVITIES. Several Canadian groups that are concerned and have done a great deal to promote wise energy use and effective energy policies are:

Canadian Arctic Resources Committee
53 Queen St., Room 21, Ottawa
Publications: "Northern Perspectives" (newsletter)

Pollution Probe, Energy Resources Team
Univ. of Toronto, Toronto, Ontario
Publications: briefs, press releases, reports, newsletters (Action Kits) and suggestions for individual action (Do-Its)



Project Recycle
4026 Borden Street, Victoria, B.C.
Publications: newsletter, public education information (film, etc.)

Sierra Club of Western Canada
444 Robson Street, Vancouver, B.C.
Publications: quarterly newsletter, brochures

SPEC, Energy Committee
2007 West 4th Avenue, Vancouver, B.C.
Publications: "Spectrum" (newspaper), various briefs and reports

Support these groups and read their publications. Exchange information, ideas and plans with them.

.....ARRANGE LECTURES, MEETINGS AND GROUP DISCUSSIONS ON ENERGY FOR YOUR SCHOOL, COMMUNITY GROUP OR OFFICE. Exchange ideas and make your own recommendations for positive energy conservation measures and policies.

.....LET YOURSELF BE HEARD AND BECOME AN EFFECTIVE PARTICIPANT IN THE DECISION-MAKING ARENA - Attend public hearings and write letters. Praise positive steps and make constructive suggestions to:

Local school districts
Local newspapers and radio stations
Premier Dave Barrett
Local M.P.s, MLAs and municipalities
B.C. Energy Commission (1177 West Hastings, Vancouver)
B.C. Hydro (970 Burrard, Vancouver)
Consumers Association of Canada (251 Laurier Ave. N.W. #801, Ottawa)
Department of Energy, Mines and Resources, Ottawa
Department of the Environment, Ottawa

Through law and policy formulation, the government has the power to control energy production, distribution and cost.

In December 1973, Pollution Probe and environmental groups from across Canada produced a list of things that the government can do to alleviate the energy crisis. Most of the changes recommended will result not only in reduced demand, but a cleaner environment and a better quality of life. Here are a few of their suggestions:

- Upgrade building codes to require: better insulation in homes, apartments, commercial and office buildings; storm windows or double glazing.

- Set subsidies to favour and promote urban public transit (buses, subways, streetcars, commuter trains).

- Construct bicycle pathways.

- Enact standards that would force car manufacturers to re-design engines to achieve both high mileage and low pollution emissions.

- Legislate against over-packaging in order to conserve resources and energy.

- Provide more money and technical help for municipal reclamation and recycling plants.

- Make it pay to recycle. Establish economic incentives that make recycling resources more attractive ton for ton than virgin resource extraction.

- A Consumer Product Review Board should be established to approve new products on the basis of their energy consumption and environmental impact, both in manufacture and consumer use.

- Require power consumption and energy efficiency to be shown on all electrical appliances.

- Governments should designate those priority areas where increased energy efficiency can be achieved through further research.

Use Energy Wisely! You As An Individual Are An Important Part of the Overall Energy Conservation Effort .....

Most energy conservation measures necessitate a change in our attitudes, but require little change in our basic lifestyles. Practical steps can be taken in our daily lives without great sacrifice or disruption.

Energy conservation does require us to think before we act and plan ahead so that we will spend our energy and thus our money, more wisely. If everyone becomes an energy saver, significant energy savings will be realized and Canada's future energy needs will be met more easily. All of us must start acting <u>now</u>!

MAKE THE MOST OF YOUR ENERGY.....

.....<u>In and Around the Home</u>

- Recycle waste paper, glass and cans.
- Install or increase insulation. Weatherstrip and caulk windows.
- Have furnaces and air conditioners checked once a year and change filters frequently.
- Lower your thermostat. (one degree, you use 3%-4% less fuel, five degrees and you use 15%-20% less fuel)
- Insulate your body - wear a sweater!
- Close drapes at night and keep fireplace dampers closed.
- Use lighting only in specific areas instead of the entire room.
- Use energy efficient appliances. Contact consumer groups for further information.
- Eliminate use of unnecessary appliances. Use manual rather than electric appliances whenever possible.
- Reduce energy consumption in cooking. Use pans that cover the entire element, fill kettle only with amount of water needed, etc.
- Turn off all appliances when not in use.
- Design new homes to make maximum use of natural light throughout the year. In cool climates, put windows where solar heating gain can be achieved in the winter.

.....On the Road

- Don't always rely on the automobile! Walk or ride a bicycle when you can.
- Use public transportation.
- Organize car pools - travel with others to work, school and shopping.
- If you must drive a car, save gasoline by:
  - Reducing speed on highways. Most automobiles get 10-20% more miles per gallon at 50 MPH than they do at 70 MPH.
  - Drive smoothly, avoid excess braking and don't idle your engine unnecessarily.
  - Keep your car maintained in good condition and tires properly inflated.

.....In the Marketplace

- Buy energy efficient products.
- Buy goods made of recycled materials and those which can be reused or recycled easily.
- Buy products which are designed to last.
- When buying a new car, buy one of the size and horsepower to meet your needs. Avoid optional accessories which are not needed. Ask about fuel economy.

.....Think and Act Creatively to Reduce Your Level of Energy Consumption. There Are Many More Things You Can Do. Your Efforts Do Count!

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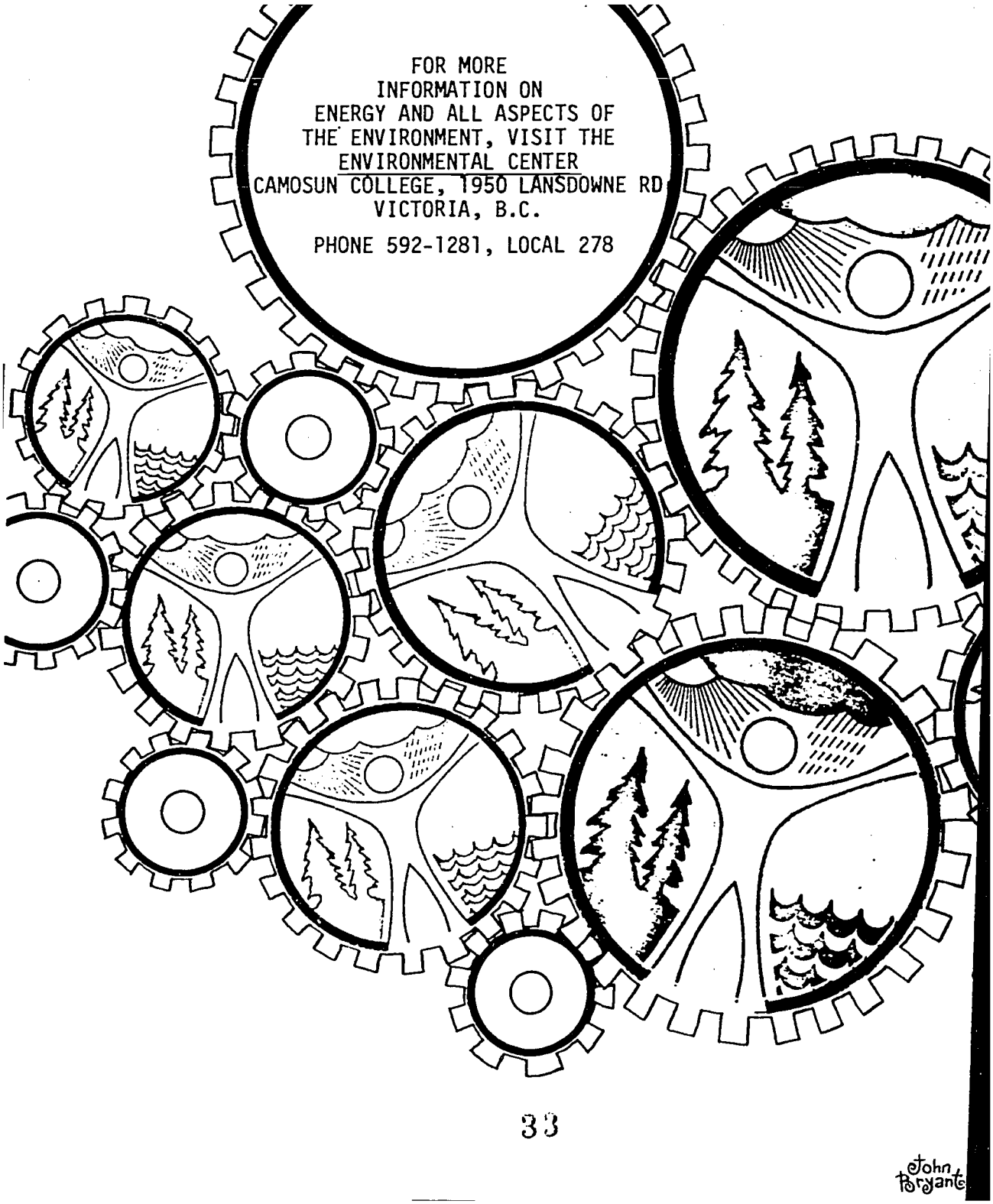
FOR MORE
INFORMATION ON
ENERGY AND ALL ASPECTS OF
THE ENVIRONMENT, VISIT THE
ENVIRONMENTAL CENTER
CAMOSUN COLLEGE, 1950 LANSDOWNE RD
VICTORIA, B.C.
PHONE 592-1281, LOCAL 278
John Bryant