SOLAR ENERGY: A SELECT BIBLIOGRAPHY...

NA-12

Bibliography Series 1 - 1977

S O L A R E N E R G Y:

A SELECT BIBLIOGRAPHY OF LITERATURE

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National Science Council of Sri Lanka
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C O N T E N T S

INTRODUCTION

The high cost of conventional non-renewable sources of energy has led to increasing attention being paid to alternative sources of energy. Amongst these, solar energy has generated considerable interest due to its inherent advantages. Sri Lanka has an abundance of solar energy, yet, its uses are limited to agriculture and salt production. The high price of fuels and the interest shown in the utilisation of solar energy by other countries has had its desired effects in Sri Lanka too for it has led to a number of research workers undertaking studies in this field. In such circumstances, the compilation of a Bibliography of literature on Solar Energy, available in Sri Lanka is relevant and useful.

Research is being carried out at the CISIR on a solar still and a dryer; at the Engineering Faculty, Peradeniya and at the Mechanical Engineering Department, Katubedde Campus on various other applications, ranging from a solar pond to a solar refrigerator. The selection of a village in the Hambantota District-Pattiyapola -as Asia's First Rural Energy Centre has not only spotlighted Sri Lanka in relation to the application of solar energy, but also engendered greater interest in this subject locally. This project is sponsored by the United Nations Environment Programme and aims to promote the use of renewable energy sources in the villages of developing countries.

SCOPE: The intention of this bibliography is to provide a ready guide to the literature available on solar energy research. The entries are limited mainly to the publications of the following libraries - CISIR; IDB; NSC. It is regretted that comprehensive coverage including the information sources of other libraries, such as the Engineering Faculty Library, Peradeniya, has not been possible.

Entries are for books, periodical articles, reports, pamphlets, and unpublished material.

ARRANGEMENT : A special scheme had to be devised as it was not possible to fit the material into any of the classification schemes already in existence. The arrangement consists mainly of three divisions:

i. General
ii. Science of Solar Energy
iii. Methods of Utilization

The arrangement within the third group ranges from simple application of solar energy to more sophisticated technology.

Entries are serially numbered and listed only once. Within the sections and sub-sections, the entries are arranged alphabetically by author. Attempt has been made as far as possible to give complete bibliographic details, but in the case of many reprints, it was not possible to trace the original source. An annotation is given at the end of most entries. An author index with names arranged alphabetically is included at the end of the Bibliography. Location/s of the bibliographical source/s is/are indicated at the end of each entry. Entries for which details were taken solely from library catalogues are indicated with an asterisk (*).

Abbreviations used :

Ceylon Institute for Scientific and Industrial Research - CISIR
Industrial Development Board - IDB
National Science Council - NSC

In the case of publications belonging to individuals, the addresses have been included in the acknowledgements.

Since the completion of the work on the Bibliography, a Seminar Report on "Sun-drying Methodology" has been published by the NSC.

The 9 Commonwealth Science Council Conference held in Colombo in Nov/Dec 1976 devoted one Seminar Session to "Alternative Energy Resources and their Potential in Rural Development". The seminar papers and country reports relating to this session are also available at the NSC Library.

This Bibliography is the First of the "SLSTIC Bibliography Series". We hope that its shortcomings will not inhibit it from its primary purpose - the dissemination of information.

S. Jayasuriya

ACKNOWLEDGEMENTS:

I should like to acknowledge the ready assistance and cooperation extended to me by

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- Mr N Anbalagar, Scientific Officer, National Science Council;
- Dr SAK Abayawardena of the Pilot Plant and Designs Section, CISIR, (presently attached to Lever Brothers)
- Mrs I Unamboowe, Acting Librarian, National Science Council

and

- Mr KDS Siriwardena for secretarial assistance.

I GENERAL

1. ABAYAWARDANA, S.A.K.
Utilisation of solar energy. 8p.
A paper presented at the Mini-Session on "Energy" held by Section E of the Sri Lanka Association for the Advancement of Science, 4 September 1976. Provides background information on the nature of solar energy and problems of utilisation and considers the various applications that can be made.
NSC

2. ** ARCHER, M.
Solar energy from chemistry. Electrical Engineer 51(11), 1974. p.20-22.
Discusses the conversion of the sun's radiant energy into forms useful to man.
CISIR

3. AUSTRALIA. CSIRO. Engineering Section. Annual Report, 1960-
A section is devoted to discussing research conducted on solar stills, solar absorbers, solar distillation, solar heating, etc.
CISIR

4. BEGISHEV, V.
Harnessing the sun in the service of man. Invention Intelligence July/Aug 1974. p.269-270.
IDB

5. BEHRAM, D.
Something new under the sun. Invention Intelligence July/Aug 1974. p.248-249.
IDB

6. BEHRMAN, D.
Solar energy claims a new place in the sun. Unesco Courier January, 1974. p.24-26, 40.
Describes how on every continent, domestic heating and lighting units, water pumps, desalting stills, refrigerators, are running on solar energy.
NSC

7. BEHRMAN, D.
The solar revolution. 4p. reprint.
Discusses how changes in society as revolutionary as those wrought by the advent of steam or electricity could well be in store if the sun becomes a major source of energy.
Research papers presented at the International Congress on "The sun in the service of mankind" are discussed. (held in Paris, 2-6 July, 1973).
CISIR

8. BHATTACHARYYA, P.
Solar energy: a soft look. Chemical Age of India 26(5), 1975. p.353-355.
Indicates that although solar energy is characterised by its low power density, the total power available from this energy source is substantial. Adds that it has very wide application not only in the field of daily domestic usage but also in industry and agriculture.
CISIR

9. BHIDE, V.G.
Pathways to solar energy utilization. Invention Intelligence July/Aug 1974. p.255-268.
IDB

10. BRANLEY, F.M.
Solar energy. Lodnon: Edmund Ward, /1957/ 107p. illus.

CISIR

11. BRINKWORTH, B.J.
Solar energy. p.431-448.
(In Aspects of energy conversion, ed. by I.M. Blair and others. Oxford: Pergamon Press, 1976. xvii, 847p.)
Takes a look at the nature and characteristics of this source of energy and of known means of exploiting it and discusses its merits in comparison with other sources of energy.
Solar energy and its uses are also discussed briefly in various parts of the book.

NSC

12. COMMONWEALTH ECONOMIC COMMITTEE.
Sources of energy: a review. London: HMSO, 1966. viii, 185p.
Solar power is discussed on p.184-185. A review of consumption, resources, production, trade, stocks and prices, relating to coal and lignite, petroleum, natural gas and hydro-electricity, and to nuclear power and other new sources of energy.

CISIR

13. CRANSTON, A.
A bright future for solar energy. National Parks & Conservation 48(10) 1974. p.10-13.
Points out that all life depends for its existence on the light of the sun and therefore we must look to this great benefactor as a source of plentiful and clean energy. Discusses the various ways in which solar energy could be applied.

Mr. IM de Silva

14. DANIELS, F.
Direct use of the sun's energy. New York: Ballantine, 1964. xvi, 271p.
The different ways in which solar energy could be utilized are discussed.

Mr. DBJ Ranatunge (NERD)

15. DANIELS, F.
** Direct use of the sun's energy. American Scientist 55(1), 1967. p.15-47.
Deals with the many aspects of utilization of solar energy.

CISIR

16. DE SILVA, I.M.
Solar energy. Loris 13(4), 1974. p.193-197.
Discusses the traditional methods of utilization.

NSC

17. DOTTO, L.
The sun also rises over Canada: why can't it heat our homes. Science Forum 8(4), 1975, p.16-17.
Reports the discussions of the 1st meeting of the Solar Energy Society of Canada; it covered wind and biomass energy as well.

NSC

18. GLASER, P.E.
Power from the sun. Unesco Courier January, 1974, p.16-21.
Indicates the potential for the future.

NSC

19. HALACY, D.S.
Fabulous fireball: the story of solar energy. New York: Macmillan, 1957. 154p.;illus.

CISIR

20. HOTTEL, H.C.
Solar energy. Chemical Engineering Progress 71(7), 1975. p.53-65.
The energy derived from wood, coal, etc. is ultimately derived from sunlight. The author goes on to discuss the problem of how to make efficient use of the sun's energy directly without having to wait until it is processed into the conventional forms.

IDB

21. HUBBERT, M.K.
The energy resources of the earth. Scientific American 224(3), 1971.p.61-70.
Mr. IM de Silva.

22. Is solar energy ready to sear? Chemical Engineering 80(22), 1973.p.24.
CISIR

23. Is solar power an answer? New Scientist 70(1003), 1976. p.532.
Discusses research undertaken by the Mechanical Test Laboratory of the Portuguese Industry Ministry. eg: solar collector made totally of local materials, solar drying of fruits.
NSC

24. KETTANI, M.A.
Heliotechnique and development. Ambio 5(4), 1976. p.190-192.
It discusses the possibilities of an overall solar solution to the energy needs.
NSC

25. KHAN, B.
Sunshine is the fuel of the future. Invention Intelligence July/Aug, 1974. p.239-244.
IDB

26. KOREA. Ministry of Science and Technology and USA. National Academy of Sciences. Joint Committee for Scientific cooperation.
Staff summary report on Seminar on "Industrial Energy Conservation" and Seminar on "Solar Space Heating and Cooling", Seoul, 13-15 Nov., 1974. Washington: National Academy of Sciences, 1975. 24p.
CISIR

27. LANGEREUX, P.
Power from the sun. Nature 260, (5551), 1976. p.477.
NSC

28. LARSEN, E.
A history of invention. London: Phoenix House, 1961. 382p.
Chapter 5 deals with "Direct energy from the sun"- discusses the various methods in which solar energy could be utilized.
Mr. IM de Silva

29. LEACH, G.
Energy futures - wide open to change and choice. Ambio 5(3), 1976.p.108-116.
Sharply reduced energy growth rates in developed countries; greatly increased rates in the poor countries; a major switch from fossil fuel dependence to renewable energy resources (especially forms of solar energy): these are possibilities that could become realities, informs, the author.
NSC

30. LUSTIG, H.
Our dwindling energy resources. Unesco Courier January, 1974. p. 4-13.
Presents a global energy "balance sheet" from which it becomes clear that our present problems and future requirements call for the speediest possible development of power sources such as solar energy.
NSC

31. MORSE, R.N.
Solar energy as a major primary energy source. Proc. Symp. Realistic Prospects for Solar Power in Australia, Melbourne, 22 Nov. 1972.
8p. reprint
Organised by the Australian and New Zealand Section of the International Solar Energy Society - it discusses how solar energy is capable of supplying 25% of Australia's primary energy by the year 2000. Points out that solar energy can make an immediate and increasingly important contribution to industrial and household heating requirements.
CISIR

32. OORT, A.H.
The energy cycle of the earth. Scientific American 223(3), 1970. p.54-63.
The solar energy absorbed by the earth is eventually reradiated into space as heat, Meanwhile it is distributed over the surface of the earth by the circulation of the atmosphere and the oceans.
Mr. IM de Silva

33. ORLOV, V.
Hunting the sun in the steppes of Central Asia. Unesco Courier January, 1974.p.33-36.
Describes some of the solar devices which are being built in the USSR.
NSC

34. Planning a municipal energy future. Mosaic 6(4), 1975. p.24-29.
With the development of natural gas shortages in Colorado springs, the community saw its problems as an opportunity to use results of solar energy research to some practical tests.
NSC

35. ** Plenty of energy out there in the sunshine. Environmental Science & Technology 8(12), 1974.p.976.
CISIR

36. POLLARD, W.G.
The long-range prospects for solar energy. American Scientist 64(4), 1976.p.424-429.
The first section of the article discusses solar radiation used directly; the second section analyzes indirect uses. Indicates that solar electricity could make only a limited contribution to the nation's large-scale energy needs.
NSC

37. PUTNAM, P.C.
Energy in the future. London: Macmillan, 1954. x, 556p.
Chapter 7 deals with the minimum plausible contributions made by non-nuclear sources of income energy, principally solar energy in various forms. Discusses solar heat collectors for space heating, water heating, cooking, air

38. ** The rationale of solar energy research. Search 5(6), 1974. p.255.
CISIR

39. ROBERTS, R.
Energy sources and conversion techniques. American Scientist 61(1), 1973.p.66-75.
Discusses man's capability to meet the energy needs of the future within the limitations of known energy resources and energy conversion technology.
NSC

40. SHAKHOV, A.
Irradiated seedlings for better crops. Unesco Courier January, 1974. p.38-39.
Describes the new science of "photo-energetics" which uses the concentrated light impulses to alter the genetic characteristics of plants. The author hopes that this will be instrumental in improving the productivity of agriculture.
NSC

41. Solar energy. 2p. reprint.
Discusses research being carried out on the exploitation of solar energy. Indicates that the chief incentive in using solar energy is that it is a non-polluting source of power and does not incur any expenditure.
CISIR

42. Solar energy: answer to a growing need. Invention Intelligence July/Aug, 1974. p.251-253.
IDB

43. Solar energy-how soon? Chemtech May 1974. p.264.
CISIR

44. Solar energy; proposal for a major research program. Science 179(4078) 1973.p.1116.
NSC

45. ** Solar power in the Australian energy scence. Nature 246(5430), 1973. p.271.

CISIR

46. Solar power in the Middle-East. Science Vol. 188, 1975.p.1261. reprint.

Promotion of solar research in ME would provide them with an alternative energy source, thus enabling them to stretch their oil supply over a longer period.

NSC

47. SUMMERS, C.M.

The conversion of energy. Scientific American 224(3), 1971. p.149-160.

Ways of harnessing solar energy are discussed.

Mr. IM de Silva

48. The sun in the service of mankind. Chemical Age of India 24(7), 1973. p.415-418.

Discusses the International Congress held in Paris, to consider the uses of solar energy. Includes abstracts of two representatives papers - (1) GOMKALE, SD & DATTA, RL. Some aspects of investigations on solar stills. (2) GHOSH, MK- Design of a sun cooker.

CISIR

49. SYMONDS, J.L.

Perspectives in energy requirements of mankind. Atomic Energy in Australia 19(1), 1976.p.8-20.

The growth of energy demand from the nineteenth century to the present and its likely future developments are described, in the context of the changing pattern of resource use.

NSC

50. THIRRING, H.

Power production: the practical application of world energy. London: Harrap, 1956, 399p.

Discusses solar energy in p.261-288

CISIR

51. THOMAS, W.L., ed.

Man's role in changing the face of the earth. Chicago University Press, 1956. xxxviii, 1193p.

Solar energy and its related aspects are discussed on p.572, 574, 1015-1020.

NSC

52. TROMBE, F.

Heating homes by sunlight. 3p. reprint.

The author discusses the use of solar energy for homes.

CISIR

53. UN CONFERENCE ON NEW SOURCES OF ENERGY: Solar energy; wind power and geothermal power, Rome, March 21-31, 1961.

Proceedings. New York: UN, 1963. (E. CONF. 35/2)

Vol. 1 part 1: New Sources of energy and energy development. part 2: Combined use of various energy sources and energy storage problems. ix, 218p.

CISIR

54. UN. Dept. of Economic & Social Affairs

Solar distillation as a means of meeting small-scale water demands. New York: UN, 1976. viii, 86p.

Defines the conditions under which solar distillation may provide an economic solution to the problem of freshwater shortage in small communities.

CISIR

55. U.S.A. International Cooperation Administration

Energy from the sun. Washington: ICA, 1960. 49p. (Technical Digest Supplement No. 1)

Discusses the major methods of utilizing solar energy.

CISIR

56. U.S.A. NATIONAL ACADEMY OF SCIENCES & NATIONAL RESEARCH COUNCIL
Resources and man: a study and recommendations by the Committee on Resources and Man. San Francisco: WH Freeman, 1969. xi, 259p.
Evaluates national and world resources in the light of current and expected stresses and identifies problems in need of study as well as opportunities for progress. Solar energy is discussed on p.206-207.
NSC

57. U.S.A. Portola Institute
Energy primer. California: Portola, 1974. 200p.
Solar radiation and its uses on earth are discussed on p.4-51.
IDB

58. VAN DRESSER, P.
The coming solar age. p.312-316. (In SHEPARD, P., ed. The subversive science: essays toward on ecology of man. Boston: Houghton Mifflin, 1969. x,453p.)
NSC

59. What ducks have taught us about "biological clocks" Unesco Courier January, 1974. p.36-37.
Indicates the fact that the sun, which is essential to all forms of life, can have injurious as well as benefical effects on man.
NSC

60. WILHELM, J.L.
Solar energy, the ultimate powerhouse. National Geographic 149(3), 1976. p.380-397.
With the aid of photographs, the author discusses ways and means in which the sun's energy is being utilized in homes and buildings around the world.
USIS

61. WILLIAMS, J.R.
Solar energy technology and application. Ann Arbor: Ann Arbor Publishers, 1975.
IDB

62. WILSON, R.
Energy, ecology and the environment. New York: Academic Press, 1974. xiv, 353p.
Solar power is discussed in ch. 2.
NSC

63. WOODWELL, G.M.
The energy cycle of the biosphere. Scientific American 223(3), 1970. p.64-74.
Life is maintained by the finite amount of solar energy that is fixed by green plants. An increasing fraction of that energy is being diverted to the direct support of one living species: man.
Mr. IM de Silva

64. WURTMAN, R.J.
The effects of light on the human body. Scientific American 233(1), 1975.p.69-77.
Sunlight tans skin, stimulates the formation of vitamin D and sets biological rhythms. Light is also used in the treatment of disease. The author discusses how such effects now raise questions about the role of artificial light.
NSC

65. YELLOTT, J.I.
Solar energy: where it will shine in the seventies. Chemical Engineering (77)(14),1970.p.85-89.
Author discusses how advancing standards of living will create new markets in many countries for solar technology, in, domestic water heating, air conditioning, desalting and closed environment agriculture.
CISIR

66. ZAREM, A.M.
Introduction to the utilization of solar energy. New York: McGraw-Hill, 1963. xi, 398.
A series of lectures by authorities in various areas of solar energy utilization.

1.1 INTERNATIONAL & COUNTRY STUDIES

INTERNATIONAL STUDIES

67. DE WINTER, F.
Description of the solar energy R & D programs in many nations. /n.p./: Energy Research & Development Administration, 1976. iv, 294p.
Final report based in part on presentations and on a Panel Discussion held on July 28 1975 during the conference of the International Solar Energy Society at UCLA. Report includes descriptions of the solar energy R & D programs and national plans of 32 countries, of the organization of American States, and of a number of private organizations. Many of the programs include references and addresses. Solar energy research in Sri Lanka is discussed on p.173-178.
NSC

LESS DEVELOPED COUNTRIES

68. An overview of alternative energy sources for LDCS: a report to US Agency for International Development, Technical Assistance Bureau, Office of Science and Technology. /n.p./: Arthur D Little, 1974. ii, (various paging).
Presents an overview of alternative energy sources of types which could be of significant value to LDCS in adjusting to the impact of sharply higher world market prices of petroleum.
Chapter 1 includes a section on solar energy. Chapter 3 which provides profiles of selected LDCS concentrates on the economics and energy, Includes an account of Sri Lanka.
CISIR

69. ** The prospects and limitation of solar energy utilization in the developing countries. Science & Industry 5(3), 1967.p.360.
CISIR

70. SAIF-UL-REHMAN, M.
Prospects and limitations of solar energy utilization in developing countries. Proc. Solar Energy Conference, Boston, 20-23 March, 1966.
The effects of prospective uses of direct solar energy for power production, saline-water distillation, refrigeration and air-conditioning, water heating, crop drying, etc. on the prosperity of the developing countries are discussed.
CISIR

71. U.S.A. National Academy of Sciences
Solar energy in developing countries: perspectives and prospects. Washington: The Academy, 1972. 49p.
Considers the present state of development of processes for utilization and application of solar energy. Also considers the desirability of establishing an International solar energy Institute in Nort Africa.
(A report of an Ad hoc Advisory Panel of the Board on S & T for International Development)
CISIR
NSC

TROPICS

72. MORSE, R.N.
Solar energy as an aid to the development of the tropics. Proc. Sixth World Power Conference, Melbourne, 20-27 Oct. 1962.
19p.(Report no. 119 iii 7/2)
Points out some ways in which the plentiful supply of solar energy can be utilized in the development of the tropics.
CISIR

UNESCO

73. GLITSCH, R.E.
Unesco and the changing attitude toward solar energy. Unesco Courier January, 1974. p. 14-15.
Discusses proposals being studied by Unesco in the context of an eventual programme that would open up new possibilities for international cooperation in solar energy and its applications.
NSC

COUNTRY STUDIES

AUSTRALIA

74. Australia steps up solar energy research. Australian Science Newsletter 4p.(E 742/88)

CISIR

75. Australians search for methods of using solar energy for fuel fertilizers. Science Forum 9(1) 1976, p.29.

Discusses methods which would utilize its large tracts of unproductive land and sunshine to produce an exportable fuel.

NSC

76. Energy submission. Australian Science Newsletter 3(8), 1976. p.8.

Australian Government's Senate Committee presents its submissions on making the country selfsufficient in energy by utilizing solar power.

NSC

77. MILNE, J.

Solar energy: its study and use in Australia. Australian Science Newsletter 5p.(E797/679)

CISIR

78 MORSE, R.N.

Solar energy research and development and industrial applications in Australia. Proc. International Solar Energy Society Conference, Melbourne, 2-6 March, 1970. 9p. reprint.

Discusses the significant increase in research and development in Australia in the utilization of solar energy. Solar water heating industry has been established and solar stills are supplying water in several different areas.

CISIR

79. Prospects for solar energy in
** Northern Australia. Journal of the Institute of Engineers. 43(9), 197.. p.11.

CISIR

80. Solar energy research and development, Australia, 1974. Science & Technology 12(4), 1975. p.6.

CISIR

CANADA

81. JACKSON, J.

Solar energy: bright future or Canada's shot in the dark. Selected Press Clippings March, 1976.p.21.

Discusses the nine pilot projects coordinated by the National Research Council. They are in various parts of Canada and are exploring and publicizing the feasibility of solar energy.

NSC

82. JUTRAS, C.

Future bright for solar energy enthusiasts, Selected Press Clippings June, 1975. p.16-17.

A resume of Canada's first Solar Energy Conference. Lists some of the projects presented at the solar-heating cooling of buildings session.

NSC

83. SCIENCE COUNCIL OF CANADA

Canada's energy opportunities. Ottawa: Information Canada, 1975. 135p.

Sets out to identify the energy options open to Canada, to argue the case for energy R & D to keep those options open, and to discuss its organization. Deals with problems of both energy supply and energy demand. Solar energy is discussed on p.68-70.

NSC

INDIA

84. GUPTA, C.L.

Solar energy devices: Indian achievements. Invention Intelligence. July/Aug 1974.p.283-287.

IDB

85. INDIA. Council of Scientific & Industrial Research
Status report on solar energy. New Delhi: CSIR, 1972. 44p.
Concludes that solar energy is a resource that has the capability to meet energy requirements, substantially beyond the applications now being made, and indicates that this potential can be realised only with further R & D.
CISIR

86. Solar energy: its relevance to India. Invention Intelligence July/Aug 1974.p.275-282.
IDB

SAHELIAN & SUDANESE ZONES

87. MOUMOUNI, A.
Energy needs and problems in the Sahelian and Sudanese Zones: Prospects of solar power. Ambio 2(6), 1973. p.203-213.
Discusses the potentialities of solar power in Sahelian and Sudanese zones & African Countries.
NSC

UNITED KINGDOM

88. BRINKWORTH, B.
UK Solar policy, the way forward: Energy Policy 4(2), 1976.p.180-181.
Indicates that ground has been prepared for the formulation of a British policy for solar energy this year.
NSC

89. Solar energy: a UK assessment. New Scientist 70(1000), 1976. p.364.
Refers to a report submitted by the UK section of the International Solar energy society: based on a survey.
NSC

90. UK. Institute of Fuel
Energy for the future. London: The Institute, 1972. viii, 28p.
Report of the committee set up to look into energy resources and policy with particular reference to the United Kingdom. Solar power is discussed on p.20. But indicates this form would be possible only in favourable solar climate.
CISIR

UNITED STATES OF AMERICA

91. Sun could brighten long-term energy picture for US economy. Commerce Today 4(12), 1974.p.4-7. reprint.
CISIR

92. USA. Oak Ridge National Laboratory
An inventory of energy research. Washington: Govt. Printing Office, 1972. (Serial R)
p.535-575 are devoted to project descriptions on solar.
CISIR

1.2 DIRECTORIES

93. JENSEN, J.S.
Applied solar energy research; a directory of world activities and bibliography of significant literature. 2d ed. Arizona: Ass. for Applied Solar Energy, 1959. xxi, 275p.
It is a key to the current research into utilization of solar energy.

2 SCIENCE OF SOLAR ENERGY

2.1 GENERAL-THEORETICAL

94. INTERNATIONAL CONFERENCE ON THE USE OF SOLAR ENERGY: the Scientific basis, Arizona, Oct 31-Nov 1, 1955.
Transactions of the Conference. 5 V. Arizona: University Press, 1958.
Vol. 1 : The available energy measurement of the radiation.
Vol.11 : Thermal Process, part I.
Section A : Flat plate collectors.
Section B : High temperature solar furnaces
solar power
Vol.111: Thermal processes, part 11.
solar home heating,
solar water heating,
solar stoves,
solar distillation.
Vol.IV : Photochemical precesses.
Vol. V : Electrical processes.

CISIR

95. SOLAR ENERGY: the journal of solar energy science and technology.
Oxford : Pergman Press.
Vol. 1, 1957 -
Official journal of the International Solar Energy Society. Includes technical and scientific contributions dealing with the varied aspects of solar energy and its application.

CISIR

96. READ, W.R.
Realistic prospects for the utilization of solar energy in Australia. Proc. Federal Conference of the Australian Inst. of Refrigeration, Air Conditioning, Heating, Brisbane, 29 April -3d May, 1974.
13p.reprint.
Solar water heating for domestic and industrial use is discussed in detail, and reference is made to the possible use of solar energy for processes, such as drying, space heating and steam generation. Use of solar cells for special applications is also discussed. Emphasis is also given to the use of solar energy in plant growth and its products.

CISIR

97. Solar energy utilization. 10p. reprint.
Discusses solar and thermal radiation properties of materials; solar distillation; solar air heaters; utilization of waste heat in solar stills; solar measurements programme.

CISIR

98. UN CONFERENCE ON NEW SOURCES OF ENERGY: Solar energy, wind and geothermal power, Rome, 21-31 Aug, 1961.
Proceedings. New York :UN, 1964.
Vol. 6 Contains papers and reports relating to use of solar energy for cooling purposes; use of solar energy for production of fresh water; use of solar energy for high temperature processing. (solar furnaces).

CISIR

2.2 SOLAR RADIATION

99. APPAPILLAI, V.
Solar variations in the horizontal component of the earth's magnetic field at Colombo. Proc. Sri Lanka Association for the Advancement of Science, 24-26 Nov. 1960. p.37-38.
Magnetic records obtained with an Askania H-magnetograph during the period April, 1959 to March, 1960 in the physical laboratories of the University of Ceylon, Colombo, have been analysed harmonically for solar variations. A comparison is made of these results with the results of other magnetic observatories situated near the equator.

NSC

100. BAHCALL, J.N.
Solar neutrinos : a scientific puzzle. Science 191(4224), 1976. p.264-267.
Discusses how during the past 15 years scientists have tried to understand and test the theory of how the sun produces its radiant energy.
NSC

101. DUNKLE, R.V.
Flow distribution in solar absorber banks.
6p. reprint.
A theoretical analysis of the flow distribution is presented in this paper and recommendations proposed for large installations. Some temperature measurements on an experimental system are also presented.
CISIR

102. Is it the sun, and not spray cans, that is reducing the Ozone. Science Forum 8(4), 1975. p.26-27.
A 2% decrease in Ozone between 1970-74 in the atmosphere over the USA and Gt. Britain has been reported. It is suggested that the reduction may be due to solar activity and not from the introduction of manmade fluorocarbons and nitrogen oxides.
NSC

103. KOBERG, G.E.
Methods to compute long-wave radiation from the atmosphere and reflected solar radiation from a water surface. Washington: Dept. of the Interior, 1964. 136p. (Geological Survey Professional paper 272-F)
The received and reflected radiation measurements have been used in this study of the relation of long-wave radiation to certain atmospheric characteristics such as temperature, vapour pressure, and cloud cover.
CISIR

104. KOTA, J.
Solar influence on galactic cosmic ray anisotropy measurements. Nature 260(5551), 1976.p.507-508.
NSC

105. RAO, K.R.
Some investigations on the sol-air temperature concept. Melbourne: CSIRO, 1970.
25p. (Division of Building Research Technical Paper No.27)
CISIR

106. Solar radiation changes and the weather. Nature 245(5426), 1973. p. 443.
CISIR

107. SPENCER, J.W.
Estimation of solar radiation in Australasian localities on clear days. Melbourne: CSIRO, 1965.
19p.(Division of Building Research Technical Paper no. 15)
Details methods which have been used to derive empirical expressions for direct and diffuse solar radiation on clear days from results of measurements made in Melbourne, and by comparing with standerd methods of estimating radiation, suggests ways of estimating approxi-mately the radiation received in other localities where suitable measurements may not be available.
CISIR

108. SPENCER, J.W.
Solar position and radiation tables for Canberra. (Latitude $35^{\circ}5$). Melbourne: CSIRO, 1965.
79p. (Division of Building Research Technical Paper no. 16)
Tables of solar position and radiation received from a clear sky are presented, giving computed values of these variables at Canberra as functions of clock time and attitude of a surface. Tables are also given of sunrise and sunset times, and of sun arrival and departure times for vertical surfaces. These tables have been prepared for the assistance of those concerned with building design & of others requiring already means of determining the sun's position with respect to the roof and walls of a building estimating the solar radiation incident on them.
CISIR

2.3 COLLECTORS & CONVERTERS

109. BAUM, V.A., ed.
Semiconductor solar energy converters. New York: Consultants Bureau, 1969. 222p.
Tr. from the Russian. The Sixth collection of papers from the GM Krzhizhanovskii Power Institute; a series mainly devoted to terrestrial applications of solar energy.
This publication describes investigations of solar energy converters.
CISIR

110. BRANSDON, T.
Australia advances towards commercial solar energy harvest. Australian Science Newsletter 3p.(E757/512)
Discusses a new patented heat technique through which is extracted from collection mirrors using a heat absorbing chemical reaction-the decomposition of Ammonia into Nitrogen and Hydrogen.
CISIR

111. Ceramic solar cells costing one-tenth as much as comparable silicon cells developed by a Japanese firm. Chemical Engineering 74, Oct. 9, 1967. p.110.
CISIR

112. CHRISTIE, E.A.
Spectrally selective blacks for solar energy collection. Proc. International Solar Energy Society Conference, Melbourne, 2-6 March, 1970.
7p. reprint.
The mechanism of spectral selectivity is briefly considered and methods for preparing selective blacks on steel and copper by chemical oxidation processes are described. Spectral reflectance curves for these surfaces are presented, and the method for determining the solar absorptance and thermal emittance values from the spectral data is described.
CISIR

113. CHUA, K.H.
A new high performance tubular evacuated solar collector proves more efficient than a flat solar collector. Optical Spectra 9(7) 1975. p.18.
IDB

114. Down on the solar farm. Unesco Courier January, 1974. p.21.
Describes the solar power farm with land covered by sunshine collectors instead of crops.
NSC

115. FREE, J.R.
Solar cells. Popular Science December, 1974. p.52-55, 120-121.
Describes how new technology can bring solar cells down to earth for big-scale power systems.
IDB

116. GRETZ, J.
The conversion of solar energy without concentration. Energia Nucleare 21 (8/9), 1974. p.504-510.
Various possible ways and techniques of solar energy conversion (thermal, photochemical, biochemical) except those based on concentration are described and discussed. Economic calculations relevant to some applications are given.
CISIR

117. JAIN, V.K.
A new thin solar cell with totally reflecting back mirror. Phys Stat Sol 30, 1975. p.69-72.
Discusses how by using a totally reflecting back mirror the power weight ratio can be improved significantly, the conversion efficiency, the radiation ressistance and the overall performance of the cell both for space and terrestrial applications.
CISIR

118. MORSE, R.N.
Flat plate solar absorbers: the effect on incident radiation of inclination and orientation. Melbourne: CSIRO Engineering Section, 1958. 11p.;16 graphs. (Report E.D.6).
The influence of inclination and orientation of the receiving surface on the amount of incident solar radiation is examined. Information for designers of absorber installations is given in the form of curves showing insolation through-out the year for a series of surfaces at different angles of inclination and varying in orientation.
CISIR

119. New charge for re-chargeable solar battery. New Scientist 70(1004), 1976.p.579.
Reports on the use of electro-chemical cells for directly converting sunlight to electricity, a result of work done by research workers at MIT.
NSC

120. CHUBB, T.A.
Design and cost study for a steam-methane solchen power plant for tropical areas. Washington: Naval Research Laboratory, 1975. 49p.(Feb. 1975 Working Draft).
This study provides an outline design for a solchen solar energy power plant suitable for use in low latitude areas.
CISIR - Dr Abeywardene.

121. New energy system. Australian Science Newsletter 3(5), 1976. p.5.
Describes a new solar energy system for domestic and industrial heating and cooling, proposed by Australian researchers.
NSC

122. OLSEN, H.L.
Preliminary considerations for the selection of a working medium for the solar sea power plant. Proc. Solar Sea Power Plant Conference, 1973.p.185-204.
Discusses some of the effects of choice of working medium on the estimated size and cost of a 100 Mw solar sea power plant.
CISIR

123. ORIANI, R.A.
Metallurgical aspects of substrates for thin-film systems in solar energy conversion. Proc. Symp. Mater Sci Aspects Thin film Syst Sol Energy Conversion, 1974. p.250-266.
Considers the characteristics of the material to be used as the substrates for thin films for solar energy conversion that will affect the useful life and performance of the assembly.
CISIR

124. SEETHARAMAN, V.
Materials for the direct conversion of solar energy. Trans Indian Institute of Metals 28(2), 1975. p.102-115.
The development of direct conversion of solar energy into electricity requires materials with reproducible properties at reasonable prices. The authors discuss the different aspects of the materials requirements and the possible routes for the production of some of these materials. Includes a brief outline of the scope of research in developing new type of materials.
CISIR

125. SLESSER, M.
Solar energy breeders. Nature 262(5566), 1976.p.244-245.
Offers an opinion on a largely ignored aspect of solar energy, i.e., the potential for solar energy devices to breed energy.
NSC

126. ** A solar battery charger. Wireless World Vol. 72, July, 1966.p.343.
CISIR

127. ** Solar battery energy. Science & Technology in Japan 1(3), 1966. p.60.
CISIR

128. The solar pond: a new concept in solar energy collectors.
10p. reprint.
CISIR

129. TABOR, H.Z.
Solar ponds. Science Journal 2(6), 1966.p.66-71.
Ponds in which convection currents are prevented by "densit, zoning"can be used to trap the sun's heat. The author believes this to be the best means of supplying solar energy on a large scale.

Mr. IM de Silva

130. TELKES, M.
Solar energy storage. Ashrae Journal 16(9), 1974. p.38-44.
Describes various types of containers including metallic heat exchangers (tubes or "tin cans") and plastic structures, (tubes, thermoformed, or blowmolded containers).

CISIR

131. Yamashita's mirrors on a hot Tokyo roof. Unesco Courier January, 1974. p.22.
Describes by means of photographs, the system devised by Yasuhchi Yamashita of Tokyo to get his sunshine back to light his home.

NSC

3 METHODS OF UTILIZATION

3.1 SOLAR EVAPORATION

132. Francia's Solar boiler. New Scientist 69(988), 1976.p.398.
Discusses the solar energy system designed and built by Prof. Giovanni Francia on which the National Research Council (CNR) France has invested 95 million lire.
NSC

133. NEELAKANTAN, N.R.
Effect of dyes on solar evaporation of salt brines. Chemical Age of India 18(8), 1967. p.555-560.
The effects of dye concentration and salt concentration on the rate of evaporation are given. An optimum concentration of naphthol green B from the point of view of evaporation has been arrived at.
CISIR

3.1.1. SOLAR STILLS.

134. Greeks start up big solar distillation plant on Patmos. Chemical & Engineering News 45(22), 1967.p.22
Describes the unit which has an average daily output of 6864 gallons as compared to the first large solar still built in 1964 in the Greek island of Symi, which has an average of about 2000 gallons per day.
CISIR

135. HALACY, D.S.
The water crisis. New York: Dutton, 1966.
192p.
Solar stills are discussed on p.131-132 and 151-157.
NSC

136. INDIA. National Research Development Corporation
Solar stills for obtaining good quality water. New Delhi: NRDC, /n.d./
3p. (NRDC Processes No. 127 1 2)
IDB

137. ** A new solar still developed. Far East Trade & Development 22 (March) 1967.p.257.
Developed by CSIRO-averages 544 gallons per day at a cost of £A 2 a 1000 gallons.
CISIR

138. PORTEOUS, A.
The theory, practice and economics of solar distillation. Chemical Engineer 255, November 1971. p.406-411.
The principles and construction of solar distillation plants are discussed. An analytical model is developed which portrays the heat and mass transfer processes within the still. The influence of various parameters on output is investigated and the results compared from several solar still installations. An economic analysis is performed which places the fresh water costs from this method of desalination in perspective with those of conventional distillation processes. It is shown that installations with capacities up to 38m^3/day (10,000 U.K. gal/day) can be viable with other more complicated distillation processes.
CISIR

139 PROCTOR, D.
Effect of adding waste heat to a solar still. Proc. International Solar Energy Society Conference, Melbourne, 2-6 March, 1970.
6p. reprint.
Discusses with an example, of how outputs from the Highett experimental waste heat still shows that adding waste heat to a solar still is a feasible proposition.
CISIR

140. ** Pure water from solar still. Research and Industry Vol. 10, 1965.p.147.
CISIR

141. READ, W.R.W.
Recent developments and future trends in solar distillation. Proc. International Solar Energy Society Conference, Melbourne, 2-6 March, 1970.
7p. reprint.
The latest version of the Australian solar still is discussed, together with factors leading up to this design. Its operation, performance and costs are given together with anticipated trends in solar still development.
CISIR

142. Solar stills for obtaining good quality water. Invention Intelligence 9(1&2) 1974.p.62.
IDB

143. Solar stills for obtaining good quality water. Sendoc Bulletin 2(3), 1974.p.16-17.
IDB

144. TRAYFORD, R.S.
A comparison of the measured and calculated performance of a solar still. Proc. International Solar Energy Society Conference, 2-6 March, 1970.
7p. reprint
A heat transfer model containing two parameters derived from experimental data has been used to compare the calculated performance with the measured output of a solar still over periods from 24 hours to 21 months.
CISIR

145. WILSON, B.W.
Solar distillation research and its application in Australia. Saline Water Conversion NAS-NRC publication 568, 1958.
p.123-130 reprint.
Indicates progress made in the two years towards the development of solar stills to meet Australian requirements.
CISIR

3.1.2 SOLAR CONCENTRATORS

146. HOLLANDS, K.G.T.
A concentrator for thin-film solar cells. Proc. International Solar Energy Society Conference, Melbourne, 2-6 March 1970.
7p. reprint.
Presents a theoretical study of a concentrating reflector suited to thin-film solar cells.
CISIR

147. JACOBI, W.I.
Use of flexible reflective surfaces for solar energy concentration. J. Vac Sci Technol 12(1), 1975. p.169-173.
Devices for measuring the bi-directional reflectance-distribution function is described and data presented. A discussion of membrane-reflector development and data from life tests are presented.
CISIR

148. KHANNA, M.L.
Plane-glass mirror solar energy concentrators for concentrating sugarcane and palm juices. J. of Science and Industrial Research 18 A, May, 1959. p.212-217.
The design, construction and working details of a plane-glass mirror (9in. sq.) solar energy concentrator is described. The results of experiments on the evaporation of water and cane juice, using reflectors with overall dimensions of 3 x 3 ft and 6 x 3 are presented. The advantages of this type of collector over the conventional concentrators, such as low cost, simplicity of handling, etc., has been assessed.
CISIR

3.1.3 DESALINATION

149. DELYANNIS, A.A.
Solar desalting. Chemical Engineering 77, Oct. 1970. p.136-140.
Indicates that solar distillation exhibits a considerable economic advantage over other salt-water distillation processes because of its use of free energy and its insignificant operating costs.
CISIR

150. KHANNA, M.L.
Solar water distillation in North India. J. of Sci. & Ind. Res. 21 A, Sept, 1962.p.429-433, reprint.
Indicates that of the various methods suggested or experimentally tried for the demineralization of saline or sea water, those based on the use of solar energy are obviously the most economical, since no fuel is consumed. Adds that, since Northern India has bright sunshine for most part of the year, there is considerable scope for the utilization of solar energy for the demineralization of saline water. Presents a summary of the results obtained at the National Physical Laboratory. The economics of installation and operation of distillation units are also briefly discussed.
CISIR

151. SELVARATNAM, D.N.
Evaporation of sea wter in salterns by solar radiation-1. Proc. Ceylon Association for Advancement of Sciences, 27-29 Nov. 1952. pt. 1: Sectional programmes and abstracts. p.19.
A preliminary report, which discusses results that have been obtained to date.
NSC

152. Solar desalting gains acceptance in Greece. Chemical Engineering 72, December 20, 1965.p.42.
Improved Geometry of solar stills, as well as a modified polyvinyl fluoride film have resulted in better performance of desalting seawater.
CISIR

153. Solar distillation of sea water. Battelle Tech Review Vol. 14, 1965, p. 14.
CISIR

3.2 SOLAR HEATING

154. CHODA, A.
The performance of a solar air heater and rockpile thermal storage system. Proc. International Solar Energy Society Conference, Melbourne, 2-6 March, 1970.
7p. reprint
An interim report containing initial test results of experiments performed on a 300 ft air heater and 340 ft rock storage system.
CISIR

155. ** Energy, technology and solarchitecture: solar energy for space and water heating. Mechanical Engineering 95(11), 1973. p.18.
CISIR

156. UN CONFERENCE ON NEW SOURCES OF ENERGY: Solar energy, wind power and geothermal power, Rome, 21-23, Aug, 1961.
Proceedings, New York : UN: 1964. (E. CONF. 35/6)
Vol. 5 contains the papers and reports relating to use of solar energy for heating purposes.
CISIR

3.2.1 AIR

157. BUELOW, F.H.
Heating air by solar energy. Agricultural Engineering January, 1957.p.28-30 reprint.
Discusses the experiments in the use of solar energy for farm heating.
CISIR - Dr. Abeywardena.

158. FARBER, E.A.
Supercharged and water injected solar hot air engine. Proc. International Solar Energy Society Conference, Melbourne, 2-6 March, 1970.
7p. reprint.
This paper, one in the series on the development of fractional horse-power solar Hot Air Engines, describes further changes and improvements of a previously discussed engine.
CISIR

159. KHANNA, M.L.
Studies on hot-air engine run with solar energy conducted at the National Physical Laboratory, New Delhi, and a critical review of its present status. Proc. International Solar Energy Society Conference, Melbourne, 2-6 March, 1970. 7p. reprint.
A heat exchanger/or regenerator is the heart of a hot-air engine. Its performance below the expected theoretical level and the sources of the efficiency or losses of a hot air engine are critically reviewed keeping in view the work done so far by different groups on hot-air engines operated with solar energy.
CISIR

3.2.2 HOUSES

160. BRANSDON, T.
Australian university to build solar energy house. Australian Science Newsletter E 74 12/1010.
CISIR

161. Bright future forecast for sun-heat industry. Selected Press Clippings June, 1975. p.14.
Discusses how solar energy will be economically feasible for large scale use in home heating within five years.
NSC

162. Home sweet solar home. Unesco Courier January, 1974. p.26-27.
Describes experiments conducted by Harold Hay of Los Angeles on the heating and cooling of houses with the use of roof ponds.
NSC

163. MCCALLUM, B.
Habitat 76 projects: ushering in new era of environmentally appropriate housing. Science Forum 9(1), 1976.p.9.
Discusses how the use of sun's energy to heat buildings not only helps reduce fuel consumption, but also has environmental benefits.
NSC

164. SANDSCHEPER, G.
Sun shines on family of four. New Scientist 67(962), 1975. p.382-383.
Indicates that West Germany is hoping to develop waste heat networks fed from local power stations for urban centres and solar energy plus heat pumps for rural areas. Describes an experimental solar house that has been built at Aachem to serve as a test bed for future housing projects.
NSC

165. SCOT , D.
Energy house from England, aims at selfsufficiency. Popular Science August, 1975. p. 78-80.
Describes the complete independence of the home from outside services and utilities.
IDB

166. UK. Department of the Environment. Building Research Establishment
Energy conservation: a study of energy consumption in buildings and possible means of saving energy in housing. Watford: BRE, 1975.
64p. (Building Research Establishment Current Paper No. 56/75)
Solar energy is discussed on p.20; new sources of energy, p.33-34; solar collectors, p.57; p.61.
CISIR

167. USA. University of Delaware. Institute of Energy Conversion
Solar one. 3p. (reprint)
Solar one is the first house to directly convert sunlight into both heat and electricity for domestic use. Built at the University of Delaware, SOLAR ONE has been designed as an experimental structure to accumulate data from its solar harvesting system. This will lead to the design of certain other prototype buildings that will implement these optimized systems.
CISIR

3.2.3 WATER

168. AUSTRALIA. CSIRO. Engineering Section
Installing solar water heaters. Melbourne: CSIRO Engineering Section, 1959.
8p. (CSIRO Engineering Section Circular No. 1)
Object of Circular is to set out requirements for the satisfactory installationof a solar hot water system.
CISIR

169. CANADA. McGill University, Brace Research Institute
How to build a solar water heater, Quebec: The Institute, 1965.
12p., illus. (Do it yourself leaflet no 4) reprint.
Describes how to make an inexpensive, yet efficient, solar water heater suitable for domestic or agricultural use in areas enjoying a sunny climate.
CISIR

170. CHINNAPPA, J.C.V.
A pressurised solar water heater of the combined collector and storage type. Trans Inst. of Engineers. Vol. 1, 1969.p.83-90; includes Charts, 2 fold.
CISIR

171. CZARNECKI, J.T.
Performance of experimental solar water heaters in Australia. J. of Solar Energy Science & Engineering 2 (3-4), 1958. p.2-6.(reprint)
Seven experimental solar water heaters were installed at CSIRO Laboratories throughout Australia to gain field experience and performance data for various Localities. This paper reports the results of one year's operation of these heaters.
CISIR

172. DAVEY, E.T.
Solar water heating in Australia. Proc. International Solar Energy Society Conference, Melbourne, 2-6 March, 1970.
7p. (reprint)
The paper outlines some of the faults experienced in the solar water heating installations developed during the past 20 years in Australia. Also gives some design and installation details.
CISIR

173.
Domestic Solar water heater. Sendoc Bulletin 3(1), 1975.p.11.
IDB

174. DUNKLE, R.V.
Flow distribution in solar absorber banks.
6p. (reprint)
The efficiency of large solar water heating installations is reduced if flow is not uniformly distributed among the individual absorber units. A theoretical analysis of the flow distribution is presented in this paper and recommendations proposed for large installations. Some temperature measurements on an experimental system are also presented.
CISIR

175. FARBER, E.A.
Solar water heating: present practices and installations.
8p. reprint.
CISIR

176. GANG, H.P.
Solar water heating. Invention Intelligence July/Aug, 1974. p.289-294.

IDB

177. GARG, H.P.
Present status of domestic solar water heaters in India. Proc. International Solar Energy Society, Melbourne, 2-6 March, 1970.
7p. (reprint)
Empirical expressions for determining the absorber area based on meteorological observations are discussed for a few Indian cities. Also includes, the daily conversion factors for total solar radiation on various inclined surfaces assuming uniform sky, for Indian latitudes.

CISIR

178. MATHUR, K.N.
Domestic solar water heater. J. Sc. Ind. Res. 1959: 18A(2). p. 51-58. (reprint).
Describes two new types of collectors, both made out of a cheap and readily available material, namely galvanized iron sheets.

CISIR

179. MORSE, R.N.
Solar water heaters for domestic and farm use. Melbourne: CSIRO Engineering Section, 1957.
15p.; 28 illus. (Report E.D.5)
A solar water heater having an output of 48 gal. of hot water per day, which is suitable for domestic or farm use is described. Complete details in the form of photographs, etc. are included together with an account of the problems met in actual installations. Performance and operating costs under Melbourne conditions are discussed briefly.

CISIR

180. SALUJA, N.S.
Design data on solar water heaters. Bangkok: ASRCT, 1967.
19p. (Report no. 3)
Provides design data on the construction of a solar water heater suitable for use under local conditions.

CISIR

181.
Solar shower for the revolution. New Scientist 67(963), 1976. p.439.
Discusses two solar heaters installed in a Portuguese bairro. Mentions that the group was unable to do a comparison of the two heaters as the people kept taking showers.

NSC

182.
Solar water heater. Sendoc Bulletin 3(1)1975.p.10.

IDB

3.3 SOLAR DRYING

183. AUSTRALIA. CSIRO
Grape drying in Australia: production of sultanas, raisins and currants. Melbourne: CSIRO, 1973.
20p.

NSC

184. JACKSON, B.
Solar energy is tested for grain dyring in U.S. Selected Press Clippings Feb 1976. p. 64.
Indicates that it may be a future source of economical power.

NSC

185. KHANNA, M.L.
Drying of materials with solar energy. Chemical Age of India 18(7), 1967. p.509-512.
Discusses the advantages of the indoor or indirect drying systems utilizing solar energy as against the age-old method of drying materials with solar energy by spreading on the ground for direct exposure.

CISIR

186. MCBEAN, D. McG.
Sun-drying of foods. Proc. Asea Seminar on Food Postharvest and Processing Technology, North Ryde, 7-9 April, 1975. p.28-29.
Indicates that drying possibly offers the most practical method of food processing for the Asian situation as preservation through canning and freezing are generally speaking too expensive or too complex.
NSC

187. MCBEAN, D. McG
Drying and processing tree fruits. Melbourne: CSIRO, 1976. 20p.
Deals mainly with sun-dried tree fruits.
NSC

188. MCBEAN, D. McG
The use of solar energy in the drying of foods.
(various paging)
Report of a visit to Sri Lanka, India and Nepal, May 14- June 9, 1976.
NSC

189. PHILLIPS, A.L.
A solar energy method for reducing coffee-drying costs. J. of Ag. of the Univ. of Puerto Rico 47(4). 1963. p.226-235. (reprint).
Describes how a solar heat collector could be utilized to provide heated air for drying coffee. Indicates that significant reductions could thus be achieved in processing costs.
CISIR

190. SZULMAYER, W.
From sun-drying to solar dehydration, 1: methods and equipment. Food Technology in Australia 23(9) 1971. p.440-443.
Surveys methods of solar drying having varying levels of technological sophistication and compares the thermodynamics of conventional dehydration with those of solar drying. Solar dehydration - a process combining solar drying with temperature control and regulation of air flow- is proposed as a step towards improving the quality of sun-dried products and increasing the efficiency of the drying process.
CISIR

191. SZULMAYER, W.
From sun-drying to solar dehydration, 2: solar drying in Australia. Food Technology in Australia. 23(10), 1971. p.434-501.
An extensive literature survey located only one attempt to investigate solar drying of fruits in Australia. Examines the inadequate use of solar drying technology in a technologically advanced country in the sub-tropical belt.
CISIR

192. SZULMAYER, W.
Thermodynamics of sun-drying. 10p. reprint.
Argues that sun- drying has some thermodynamic advantages when compared with artificial dehydration, because radiant heat maintains higher product temperatures and vapour pressures than does ambient air, and, thermal losses associated with heat transfer in artificial dehydration (heater-air-product) are avoided. But adds that there are less obvious drawbacks.
NSC

3.3.1 DRYERS.

193. CANADA. Macdonald College of McGill University, Brace Research Institute
Survey of solar agricultural dryers. Quebec: The Institute, 1975.
/Various paging/(Technical Report T99).
This report attempts to review some of the dryers built by experimenters and practioners in the field.
CISIR - Dr Abeywardena
NSC

194.
Simple solar kiln. Australian Science Newsletter May 1976.
Describes a simple solar fish-drying kiln designed by Dr. Peter Doe; could mean a significant saving for the sun-dried food industry throughout Asia.
CISIR

195.
A solar dryer for small farmers. Sendoc Bulletin 2(6) 1974. p.22-23.
IDB

196.
Solar-kiln for drying timber runs round the clock. Invention Intelligence May 1975. p.171.
IDB

197. WENGERT, E.M.
Improvements in solar dry kiln design. Wisconsin: Dept. of Agriculture, 1971.
10p. (FPL 0212)
Identifies the major energy losses in the solar dryer at Colarado State University and suggests various design changes based on theoretical considerations to reduce these losses to leave more energy for the primary task of drying wood.
CISIR

3.4 SOLAR COOKING

198. GHAI, M.L.
Solar heat for cooking. J. Sci. Ind. Res. 12A: 1953. p.117-124. (reprint)
Surveys literature available on the utilization of solar heat for cooking and investigates methods offering the possibility of developing simple and inexpensive equipment for cooking with solar heat.
CISIR

3.4.1 SOLAR COOKING: EQUIPMENT

199. EDGAR, T.
Cooking by the sun. Gulf Mirror 15-30 March, 1976. p.13.
Discusses the first of the mass produced solar cookers that is to be put onto the market.
Mr I M de Silva

200. GHAI, M.L.
Performance of reflector-type direct solar cooker. J. Sci. Ind. Res. 12A 1953.p. 540-551. (reprint)
Gives details of a typical experiment to illustrate in a general way, the prodedure adopted in the experiments.
CISIR

201. GHAI, M.L.
Design of reflector-type direct solar cookers. J. of Sci. Ind. Res. 12A: 1953. P.165-175. (reprint)
A discussion of the factors which had to be considered in the design of a direct reflector-type solar cooker with special emphasis given to the development work undertaken at the National Physical Laboratory, New Delhi, India.
CISIR

202. GHAI, M.L.
Manufacture of reflector-type direct solar cooker, J. Sci. Ind. Res. 13A, 1954 p.212-216(reprint).
Discusses the problems involved in the manufacture of the solar cooker developed at the NPL, India. Indicates how these problems were overcome when setting up a factory, the first of its kind, which produced a device to utilize solar energy for cooking on an industrial scale.
CISIR

203.
Solar stove. R & D Digest 14(3), 1974. p.80-81.
The solar stove - "sun flower" cooks all kinds of food using only the heat from the sun. It is made of corrugated paper, aluminium foil, and loxan plastic. It produces a 540° F heat and after 10 minutes it is ready for boiling steaks.
CISIR

204. TEMM, P.
Australian inventor cooks with sun powered stove. Australian Science Newsletter E 737#748.

CISIR

205. USA. Volunteers for International Technical Assistance
Evaluation of solar cookers. N.Y. : VITA, /n.d./
v,103p. (VITA report No. 10, part 1)
Presents results of tests performed on various solar cookers to determine their potential usefulness.

CISIR

206. WHILLIER, A.
How to make a solar steam cooker. Barbados: Brace Experiment Station, 1965.
6p. (Do-it-yourself leaflet no.2)
Describes a relatively simple, yet effective, device for steam cooking of food, using solar energy. Includes illustrations.

CISIR

207. WIJEYSUNDERA, N.E.
Design and performance of a conodial solar cooker. Engineer 4(3), 1976. p.30-32.
Describes a conodial solar cooker and discusses how some of its disadvantages may be overcome.

NSC

3.5 SOLAR AIR CONDITIONING & REFRIGERATION.

208. DE WINTER, F.
Workshop proceedings, solar cooling for buildings, Los Angeles, Feb. 6-8, 1974. California: Institute of Technology, 1974.
viii, 231p.
Different concepts of R & D problems are discussed. Problems other than the purely technical are also discussed. The session on "implementation" is devoted to the discussion of obstacles facing solar cooling.

CISIR

209. DUFFIE, J.A.
Solar heating and cooling. Science 191(4223) 1976. p. 143-149
Indicates that solar energy for buildings is developing rapidly in the United States.

NSC

210. DUNKLE, R.V.
A method of solar air conditioning. Mechanical & Chemical Engineering Trnscs of the Inst. of Engineers, MC 1(1), 1965.p.73-78. (reprint)
Discusses a method of solar air conditioning applicable in humid, tropical or sub-tropical areas.

CISIR

211. GROUNDWATER, I.S.
Solar radiation in air conditioning. London: Lockwood, 1957. 125p.
First part of the book deals with the source of solar design data, and of building absorption coefficients. Goes on to discuss ways of reducing the flow of solar heat into roofs. Various ways are tabulated to show their advantages and disadvantages from several points of view.

CISIR

212. HALMOS, Ir. Gy G.B.
Solar protection: costs and benefits. Heating and Air Conditioning. 44(520), 1975. p.24-25.
Rising energy costs are considered in relation to the cost of solar protection. An imaginary office block is used as an example and the author has examined the reduction in energy and plant costs that would be obtained if reflecting glass with internal venetian blinds, or external solar protection. Considered the first comprehensive study of this important field.
CISIR

213.
Heating and cooling of building: sol's comfort package. Mosaic 5(2), 1974. p.16-17.
Discusses steps taken by the National Science Foundation to show that solar heating and cooling can be commercially viable.
NSC

214.
Heating and cooling of buildings: step right up and take a look. Mosaic 5(2), 1974. p.17-18.
Describes the solar houses which are operating on National Science Foundation grants.
NSC

215. MATTHAEI, A.
Capital and running costs of air conditioning and solar protection. Heating and Air Conditioning 44 (522), 1975. p.12-17.
Study shows that the methods of solar protection can lead to a considerable reduction in cooling load. Typical combinations of glazing and solar protection and the appropriate air conditioning plant and building are compared.
CISIR

216.
** A naturally air-conditioned building. Mechanical Engineer 92(1), 1970. p.19.
CISIR

3.5.1 AIR CONDITIONING EQUIPMENT

217. CHINNAPPA, J.C.V.
'The solar operation of vapour absorption cycle air conditioner at Colombo. Trnsactions Inst. of Engineers, Ceylon, 1968: Vol. 1, p.19-32.
Assesses the output of a solar operated vapour absorption unit, using relevant climatic data. Paper is concluded with a tentative attempt to work out costs of a solar operated ammonia-water unit vis-a-vis its vapour compression counterpart.
A discussion on the above paper is in Transactions. Inst. of Engineers of Ceylon 1968: Vol. 11, p.91-94.
NSC

218.
** A study of a solar air conditioner. Mechanical Engineer 85, 1963, p.31-35.
Exptal operation of a lithium bromide water absorption air conditioner with solar energy supply from a flat plate collector demonstrating the technological feasibility of solar cooling.
CISIR

3.5.1.4 BUILDINGS & BUILDING MATERIALS

219. BALLANTYNE, E.R.
Application of solar tables to shading coefficients for horizontal sunbreaks.
Victoria: Australian & New Zealnd Section of the International Solar Energy Society, 1970.
6p. (Paper No. 6/8) (reprint)
Paper presented at the International Solar Energy Society Conference, Melbourne, 2-6 March, 1970.

CISIR

220. BALLANTYNE, E.R.
The effect of orientation and latitude on the solar radiation received by test panels and fences during weathering studies.
Building Science 9(3), 1974.p.191-196.
Various aspects of the solar radiation received by surfaces of different orientation on clear days at several latitudes are examined.

CISIR

221. HARVEY, T.
Buildings that don't squander energy. Popular Science June, 1974. p.84-87.

IDB

222. RANSOM, W.H.
Solar radiation: thermal effects on building materials. London : HMSO, 1962.
vi, 18p. (Tropical Building Studies, no. 3)
A study in a series prepared at the Building Research Station, DSI R, for those concerned with building in tropical and sub-tropical countries.
Study deals with the global distribution of this energy and its thermal effects upon building materials.
Mentions that though written primarily from a tropical stand point much of the text has a wider applicatio.

223. SCANES, P.S.
Climatic design data for use in thermal calculations for buildings: estimated clear sky solar radiation versus measured solar radiation. Building Science p.219-225 (reprint).
A project was undertaken to determine sequences of climatic data of a few days which can be used as design data for determining extreme indoor temperature, or

alternatively the plant capacity necessary for heating or cooling a building to maintain a desired indoor temperature profile. A comparision is made of the results obtained with estimated clear sky solar radiation and actual measured solar radiation, and the relationship between the two are explored.

CISIR

224. SPENCER, J.W.
Calculation of solar position for building purposes. Melbourne: CSIRO, 1965.
16p. (Div. of Building Res. Tech. paper No. 14)
This paper describes the derivation and application of methods of calculating solar altitude, Azimuth, angle of incidence, shadow angles, and sunrise and sunset times from standard astronomical and geographic data and includes a description of such fundamental concepts in astronomy as are required for understanding the methods. Provides an extended explanation of solar position tables for the use of building designers & air conditioning engineers.

CISIR

3.5.2 REFRIGERATION : EQUIPMENT

225. CHINNAPPA, J.C.V.
Some observations on the intermittent vapour-absorption cycle for solar refrigeration. Proc. Cey. Ass. Ad. Sci. 18-20 Dec., 1958. Part I, Sectional programmes and abstracts. p. 32.
Performance of a refrigerator working on a vapour-absorption cycle is discussed and an attempt made to correlate this performance with solar heating.
NSC

226. CHINNAPPA, J.C.V.
Performance of an experimental solar refrigerator. Proc. Ceylon Asso. Ad. of Sci. 24-26 Nov. 1960. Part I, Sectional Programmes and abstracts. p.24-25.
Suggests the design of a unit with better operating characteristics, and an equation has been employed to estimate the performance of the proposed unit.
NSC

227. CHINNAPPA, J.C.V.
** Study of the intermittent absorption refrigeration cycle and its operation by solar radiation. Phd Thesis Univ. of London, March, 1961.
CISIR

3.6 SOLAR FURNACES

228. DOUGLAS, J.H.
Solar furnace: image of a thousand suns. Science News 109(15), 1976. p.235-236.
Indicates how from wine-filled lenses to an eight-story mirror, France has led in developing a unique use for solar energy.
NSC

3.7 SOLAR POWER

229.
Heat pumped solar energy. New Scientist 69(990), 1976.p.503.
Discusses Fiat's research into heating and cooling systems for their vehicles utilizing solar energy.
NSC

230. LIDORENKO, N.S.
Solar water-raising installation incorporating photoconverters at the Ovezshikh watering point in the Turkmen SSP Geliotekhnika 6(2), 1970.p.52-55 (reprint).
CISIR

231. SHAH, M.M.
Prospects of solar power plants in India. Durgapur: Central Mechanical Engineering Research Institute, 1968.
24p. (CMERI report no. M7)
Besides discussing the theoretical and practical aspects of solar power plants, an assessment is made in this article of the feasibility of building such plants in India.
CISIR

232. Solar power: reality or vision.
** Mechanical Engineer 88, March, 1966.p.42.
CISIR

233
** Solar-thermal: stoking the boilers with sunshine. Mosaic 5(2), 1974. p.14-15.
Discusses how sun's rays are used to heat boilers. Indicates that there are two avenues of development - solar generation of power or combined harvesting of electricity and heat.
NSC

3.7.1 POWER : ELECTRICAL

234. BOER, K.W.
The solar house and its portent. Chemtech July, 1973. p.394-400.
Examines the efficiency of hydroelectric power, wind, ocean, currents, vertical temperature gradients in water and air to use the sun's rays and then focuses on the newest photo-voltaic cells for solar heating & solar conversion.
CISIR

235. CHERRY, W.R.
The generation of pollution-free electrical power from solar energy. Trans of the American Society of Mechanical Engineers, Washington, Nov. 28- Dec. 2, 1971.
p. 78-82 (reprint).
The cost of producing solar arrays by today's methods prohibits their use for large scale terrestrial plants. The paper suggests how the cost may become acceptable, especially as conventional fuels become scarcer and more expensive.
CISIR

236. DOUGLAS, J.H.
Solar electricity. Science News 109(20), 1976. p.316-318.
Discusses how solar energy is being utilized to convert light directly to electric current. Adds that such devices are beginning to compete with traditional energy sources.
NSC

237. ELEDRIDGE, F.R.
Solar energy systems.
Washington: MITRE Corp, 1973.
vi, 95p; incl. 46 charts.
(M73-26)
Paper reviews alternative solar energy systems that can be used for generating electricity and producing hydrogen fuels. Particular attention is given to the possibility of employing photovoltaic cells to collect the solar energy. Different system sizes are explored, ranging from small household systems of a few kilowatts output to large systems capable of producing, transmitting, storing and distributing a major portion of the US energy requirements by the year 2000.
CISIR

238. LANGEREUX, P.
Power from the sun. Nature 260 (5551), 1976. p.477.
A report following the International Symposium on Solar Electricity held in March 1976 at Toulouse.
NSC

239. LAVI, A.
Solar sea power plants: electric power from the ocean thermal difference. Naval Engineers Journal 87(2), 1975, p.33-46.
Explains the technology of extracting solar energy from the ocean water.
CISIR

240.
New watts under the sun: a look at the technology for converting solar radiation directly to electricity. Mosaic 4(4), 1973, p.2-7.
Describes photovoltaic power.
NSC

241.
Photovoltaics. Mosaic 5(2), 1974. p.18-19.
Discusses the U.S. National Science Foundation's photovoltaic programs which are aimed at cost reduction.
NSC

242.
Solar energy package plant. Chemical & Process Engineering 43(2), 1962. p.61.
A plant for converting solar energy to power, it is aimed at servicing small villages. Depending on the number of solar collectors used, the turbine can supply 2-10 KW, leading to an estimated cost of 5d/kWh.
CISIR

243.
Solar energy storage : making H while the sunshines. Mosaic 5(2), 1974. p. 23.
Points out that solar power could and likely will revolutionize the way in which electrical power is generated, transported and used.
NSC

244.
2 Solar units will be tested by CP Rail. Selected Press Clippings January 1976. p.36.
The two units which will convert the sun's rays into electricity will operate track circuits and highway crossing warning signals on the rail line.
NSC

245. UN CONFERENCE ON NEW SOURCES OF ENERGY: solar energy, wind power and geothermal power, Rome, 21-31 Aug, 1961. Proceedings. New York, 1964. (E/Conf. 35/5)
Vol. 4: Discusses use of solar energy for mechanical power and electricity production; by means of piston engines and turbines; by direct conversion to electricity; by means of thermelectric converters; by means of photoelectric cells.
CISIR

3.7.2 POWER : MECHANICAL

246. BRABYN, H.
The well of knowledge. Unesco Courier January, 1974. p.28-29, 32.
Discusses how a school's solar pump transformed a Mauritanian oasis.
NSC

247. MASSON, Prof.
Report on the use of solar energy for water pumping in arid areas. 20p. (reprint)
CISIR

248.
Solar pumps for Sahel. French Techniques 2, 1974.p. 1-3.
Despite abundance of solar energy , Sahel suffers from a lack of energy for pumping out water. Solar energy pumps have solved this problem. Senegal, Niger, Mauritania, Mali, and Algeria are some of the other countries that are making use of these units to solve their irrigation problems.
CISIR

249.
Solar pump the size of a deck-chair. Invention Intelligence July/Aug, 1974. p.271-274.
IDB

3.8 BIOCONVERSION.

250.
Bioconversion: energy farming and recycling wastes for power, Mosaic 5(2), 1974. p.19-20.
Indicates that scientists expect to be able to predict the best combination of process variables for producing methane at the lowest cost under wide varying conditions.
NSC

251.
Biological transformation of solar energy. Advances in Applied Microbiology 2, 1960. p.223-262.
Sources of energy, processes for fixing solar energy: production of algae in waste waters; production of methane through digestion of algae; power production; estimation of cost of power.
CISIR

252. BROWN, A.H.
Bioconversion of solar energy. Chemtech 5 (7) 1975.p.434-437.
Indicates that photosynthesis is the only biological process through which solar energy is converted. Discusses how solar energy could be used in the USA through photosynthesis.
CISIR

253. CALVIN, M.
Photosynthesis as a resource for energy and materials. American Scientist 64(3), 1976. p. 270-278.
Indicates that the natural photosynthetic quantum-capturing mechanism of some plants may provide a design for a synthetic system that will serve as a renewable resource for material and fuel.
NSC

254. DEVANATHAN, M.A.V.
Solar energy conversion through plants.
4p.
A paper presented at the Mini-Session of "Energy" held by Section E of the Sri Lanka Association for the Advancement of Science, 4 September 1976. Points out that the dry matter of plants, chiefly cellulose, has the potentiality to be transformed into good substitutes for the fuels and products now obtained from fossil fuel reserves.
NSC

255. GARTSIDE, G.
The relevance of photosynthesis to the utilisation of solar energy. Proc. International Solar Energy Society Australian & New Zealand Section, Symposium on Realistic Prospects for solar power in Australia, Melbourne, 22d Nov, 1973. 9p. (reprint)
The cultivation, harvesting and processing of agricultural and forestry crops to yield fuels is discussed with attention to the amount of energy consumed. Four processing schemes are suggested.
CISIR

256. GATES, D.M.
The flow of energy in the biosphere. Scientific American 224(3), 1971.p.89-100.
A portion of the solar energy that falls on the surface is radiated back into space. The tiny fraction of it that is absorbed by photosynthetic plants maintains all living matter.
MR I M de Silva

257. HAYES, D.
Bioconversion, or, tapping energy that plants store up. 1p. reprint.
Discussed forms of bioconversion: indicates that bioconversion holds promise for the third world countries as well as the developed world.
NSC

258. OSWALD, W.
Biological transformation of solar energy. p. 223- 262. (In UMBREIT, W.W. Advances in Applied Microbiology. Vol. 2. New York: Academic Press, 1960. xii, 384p.)
Presents an evaluation of a microbiological process which converts solar energy to electrical power through algal photosynthesis, methane fermentation of algae, and thermal combustion of methane.
CISIR

259. SZEGO, G.C.
Energy forests and fuel plantations. Chemtech May 1973. p.275-284.
Explores quantitatively forests and plantations grown for their fuel values. Indicates the important technical and environmental advantages of this fuel over fossil fuels, nuclear energy and other means for harnessing solar energy.
CISIR