PROCEEDINGS OF THE SECOND SEDE BOQER SYMPOSIUM ON SOLAR ELECTRICITY PRODUCTION

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Editor

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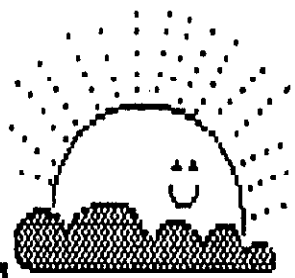

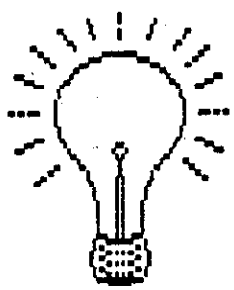

INTRODUCTION

By a happy circumstance, this second Sede Boqer workshop on solar electricity production coincided with the opening of the "Ben Gurion Sede Boqer Test Center for Solar Electricity Generating Technologies". The foundation stone setting for this facility, which was the chief stimulus behind the initiation of this annual series of workshops last year, took place November 19th 1985. Its dedication, however, honors the hundredth anniversary of Israel's first Prime Minister, a man who wrote [*]:

".....The mightiest source of energy in our world, the source from which all animal and vegetable life is nourished, and only an infinitesimal part of which is as yet utilized by the human race, is the sun."

".....but this energy can be transformed into an active, dynamic and electrifying force. Even after all the uranium and thorium deposits disappear from the earth, solar energy will continue to reach us in almost unlimited quantities, and our scientists and technologists must discover the most effective means for putting even a very small part of this tremendous energy to work for the growing and manifold needs of our variegated economy."

Indeed David Ben Gurion's more than passive interest in solar energy research was most poignantly recalled, for the benefit of those who attended this year's workshop, by Dr. Harry Tabor. "One day, years ago", according to this pioneer of solar research, "my work was disturbed by the unannounced arrival at my laboratory of Mr. Ben-Gurion and his entire Cabinet!" Dr. Tabor went on to recall how this event occurred at precisely the time (back in the 1950s) when oil had just been supposedly discovered in Israel! Well, the oil did not materialize and, alas, no other political leaders had the foresight to help develop solar technology to an extent that it might have alleviated a significant part of the oil crisis which came 20 years later.

But now, two decades later, with the painfull lessons of fluctuating oil prices and supply uncertainties vividly in our recent memories, we may take comfort in the fact that the Israel Ministry of Energy and Infrastructure has established the Ben Gurion test facility. Its opening comes at a time when, unencumbered by an on-going oil crisis, and armed with the experience of ten years of international effort to develop solar technology, it is now possible to perform side-by-side evaluations of the best that technology has thus far produced.

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[*] From Israel: Years of Challenge by David Ben-Gurion (Anthony Blond, London, 1964)

Naturally, mere system evaluation is not sufficient. Ideally there should be input from the scientific community on as broad a front as possible. It is towards this goal that the Applied Solar Calculations Unit established this series of annual workshops last year, and it is a source of considerable pride to us that scientific input has come this year from the international arena. Participation from abroad included two of our keynote speakers: Prof. Ari Rabl from Princeton University's Center for Energy and Environmental Studies, and Prof. Manual Collares Pereira from Portugal's Department for Renewable Energies at LNETI, Lisbon. In honor of our guests from abroad the language of this year's symposium was English.

As to the content of this year's symposium, we were honored to have the opening address delivered by Mr. Moshe Shachal, Minister for Energy and Infrastructure, who reviewed Israel's current energy policy. Mr. Shachal's presentation was followed by one from Dr. Nathan Arad, the Director General of the Ministry, who addressed us on the subject of Israel's involvement in energy R&D. Dr. Pinhas Glueckstern, the Ministry's Chief Scientist then presented an overview of the new test facility and its aims.

Three power-producing systems - the first that will be evaluated - were on display at the test site; photovoltaic systems belonging to the Israel Electric Corporation and to the Paz Oil Company, and a solar-thermal system belonging to the Luz Corporation. Each of these systems was reviewed in a series of presentations by the companies concerned, and in the same session the site's data aquisition system was described by its designer, Dr. Moshe Hirsch.

The more technical part of the symposium took the form of three invited 45-minute keynote lectures by prominent authorities in the field. Each such lecture was immediately followed by a 45-minute discussion session. The three areas reviewed were: High Temperature Solar Thermal by Prof. Rabl, Low Temperature Solar Thermal by Prof. Collares Pereira and Photovoltaics by Tel Aviv University's Prof. Joseph Appelbaum. In addition there was a poster session where presentations from academia and industry alike were on display, and their authors were on hand to take questions.

This volume of proceedings contains the texts of the various keynote presentations, either in the written form kindly supplied by the authors or, where this was not possible, in a form reconstituted from the transparencies they showed. In addition, an edited text is appended containing the chief points that emmerged from the various (tape recorded) discussions. Lastly, extended abstracts are included to describe the contents of the various posters that were on display.

Finally, it is our pleasant duty to thank a number of organizations and persons, without whose help the symposium would not have been able to succeed.

Financial support is gratefully acknowledged from The Ministry of Energy and Infrastructure and The Blaustein International Center for Desert Studies.

Our use of the Ben Gurion Research Center's auditorium was due to the kind cooperation of its director, Prof. Ilan Troen. The beautiful flowers that decorated the hall were supplied by the Blaustein Institute's Controlled Environment Agriculture Unit thanks to the kindness of its Acting Head, Dr. Moshe Zeroni. The lectures and discussions were recorded due to the much appreciated efforts of Mr. Luuk Folkerts.

A fine evening of Israeli Folklore entertainment was provided by; the folk dance group of the High School for Environmental Education, Sede Boqer (thanks to the school's Principal, Mr. Benzi Bar-Lavi, to the dance group and their trainer Mr. Hezi Za'arur), a song recital by young Shlomit and her mother Lorri (guitar) Za'arur (thanks to mother, daughter and Mrs. Aviva Cohen, Principal of the "Zin" Elementary School, Sede Boqer) and by June Hare with her delightful readings of extracts from the writings of David and Paula Ben Gurion.

Thanks are due to the various service departments of Midreshet Sede Boqer under its director Mr. Yossi Elihu, for providing dining facilities (Mr. Motti Abarjil) and sleeping accommodation (Mr. David Palmach - Head of the Sede Boqer Field School) for attendees at the symposium.

And during the entire two-day event, Ofra Faiman, Yochevet Gordon, Bosmat Ibbetson, Ruth van der Ley, Lilian Na'aman, Shula Zarmi and Judith Zemel were the most gracious of hostesses.

The Applied Solar Calculations Unit,
Sede Boqer,
May 1987.

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