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About the Institute
The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Department of Botany
LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803-1705
504/388-8485

16-II-1989

Dear John,

Nature has again been flaunting her strength in the face of mere human endeavors. I hope that Highland Heights by virtue of its namesake has escaped disaster, and that you have not floated away downstream!

Bernard

~~Department of Botany~~
~~Univ. of Massachusetts~~
~~Amherst, MA 01003~~

Dear Dr. Lowy:

Thank you for your review of Wild Edible Mushrooms in Kenya.

I am sure the author(s) will appreciate your suggestions.

John W. Thieret
~~Oswald Tippo~~
Editor, *Economic Botany*

To reviewers: Please provide the data requested below. Thank you.

REVIEWED BY: B. Lowy DATE: 15-IV-1988

ADDRESS: Botany Department, LSU
Baton Rouge, LA 70803-1705 PHONE: (504) 388 - 2123

The names of reviewers are not revealed to authors.

Economic Botany publishes, in the fourth number of each volume, a list of names of reviewers for that year.

8. Is there consistency in reference citation? _____

9. What is your rating of this paper?

Outstanding_____ Very Good_____ Good_____ Fair_____ Reject X_____

10. If you recommend publication, what improvements do you suggest?

_____

_____

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Additional remarks: attached _____

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*Economic Botany accepts and publishes summary-type articles. Thus a negative answer to this question does not constitute cause for rejection of a manuscript.

Comments on "Wild Edible Mushrooms ...."

by R. Gatumbi et al.

Table 1 is misleading and incomplete. For example, on p. 8, beside the Yoruba tribe, 5 native names are given plus "etc." All of these are indicated as referring to both "general," and "specific" names for mushrooms. Reference to Oso's paper, however, (1975) shows that he clearly differentiates these terms. "Olu" is the only general term for mushrooms, whereas the remaining ones each refer to a particular species. Example: ewe = Termitomyces microcarpus (Berk. & Broom) Heim. Additional local names are also given, including "wowo," "oluoran," and "etiologbo," each identified with a species, but these and others are omitted from the Yoruba list. Yet these names are far from being superfluous. In fact, this is precisely the kind of information that would make this paper valuable. Consequently, since this paper is largely a compilation of tribal names for fungi from many regions of Africa, it would be far more illuminating to list each tribal name together with its Latin eqivalent where this is known.

Table 2 leaves the reader with the unanswered question: which fungi?

The information in table 3 can be further consolidated. For example: the Kalenjin use "bobek" as their general term for mushrooms, also for 3 of the 5 species identified. Similarly for other tribes listed.

p.3,l.6 - "Mushrooms or bracket fungi were eaten ....(table 2)." Neither "mushrooms" nor "bracket fungi" are found in table 2.

P.3,par.2 - "...Kenyans who collected ...." Are these men, women, or children? A significant cultural point is missed here.

P.4, par.3 - "...Kenyan mushroom collectors visited an anthill..." Is this not a termite mound rather than an ant hill? Some fungi are cultivated by ants (leaf cutters), but both are subterranean.

B. Lowy

REVIEWER'S APPRAISAL FORM FOR ECONOMIC BOTANY

The author(s) would, of course, be grateful for an early decision; therefore we hope that you will be able to review this paper and return it by 1 May 1988. Thank you.

Please answer the following questions whenever they are pertinent. (Notes may also be made on a separate sheet or the manuscript itself.)

TITLE OF PAPER: Wild Edible Mushrooms in Kenya

AUTHOR: R. Gatumbi, W. Karia, & S. Aaronson

1. Is this a new and original contribution?* largely not
2. Is the paper of interest to a broad cross-section of economic botanists and related scientists? not in its present form
3. Are the conclusions and interpretations valid? incomplete
4. Is the paper clear _____ and well organized? no
5. Are the illustrations legible _____ and pertinent? _____
6. Can the text yes or illustrations be condensed? _____
7. Are the references adequate _____ and accurate? seem OK
8. Is there consistency in reference citation? _____
9. What is your rating of this paper?

   Outstanding_____ Very Good_____ Good_____ Fair_____ Reject X
10. If you recommend publication, what improvements do you suggest?

_____

_____

_____

_____

Additional remarks: attached

_____

_____

*Economic Botany accepts and publishes summary-type articles. Thus a negative answer to this question does not constitute cause for rejection of a manuscript.

Department of Botany
LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803-1705
504/388-8485

17-III-1988

John,

In my correspondence with Warson, dolmens were never mentioned. Since he spent some time in India, this seems unusual. He may have dismissed them as having no ethnompological significance.

I believe that not all dolmens are mushroom-shaped. Others are constructed of flat or rounded stones atop two or more upright, supporting stone columns. All (?) are burial sites, so separating the mushroomic ones as uniquely significant may be a case of special pleading. I admit my ignorance, which reminds me of Ogden Nash —

I know two things about a horse
And one of them is rather coarse.

There are hardly two things I know about dolmens, so thanks for the xerox. But just a word about

one of Manilal's references. Anyone who would cite Christensen as an authority on ethnompological matters must have access only to the most primitive library, and show very poor judgement, to boot. As for the shape in plate 20 which "closely resembles that of some mushrooms like Psilocybe, Amanita, etc.", the figure could represent literally dozens of genera, but the least likely among them are the two indicated.

Do you know anything about Thomas J. Riedlinger? He is organizing a Festschrift for Wasson, and asked me to contribute something, which I did, but have not heard from him since.

as ever,

Bernard

NKU Northern Kentucky University
Highland Heights, Kentucky 41076

Dept. BIOLOGICAL SCIENCES

Dr. Bernard Lowy

Department of Botany

Life Science Building

Louisiana State University

BATON ROUGE, LA 70803

Address Correction Requested

____ unsealed printed matter
____ books, educational matter
____ letter enclosed
____ insured contents
____ sealed, 1st class
____ _____

(CS:N0090)11/82

Bernard,

I presume that you are aware of the enclosed -- but just in case.

In Wasson's Soma I can find no mention of Dolmens.

John Rieret

received: 16-III-1988

S.K. Jain, ed. 1981. Glimpses of Indian Ethnobotany. New Delhi.

28. An Ethnobotanic Connection between Mushrooms and Dolmens

K.S. Manilal

ABSTRACT

A unique type of dolmens in the shape of mushrooms are found in several localities in Kerala. These structures, called umbrella-stones, are megalithic burial monuments made out of hard lateritic stone by the ancient people in 1000-500 B. C. The main feature of interest about these dolmens is considered here as their characteristic shape itself, which closely resembles that of some mushrooms like Psilocybe, Amanita, etc., several species of which contain hallucinogenic chemical compounds. Some of the tribals who eat such mushrooms are found to worship them, hold them as possessing mysterious powers and properties and consider them as a means to communicate with their Deity and with the spirits of the dead. It is suggested that it is their respect and fear towards these types of mushrooms which prompted the ancient people to construct the stone monuments in a similar shape for their departed leaders so that the tribes may expect to continue to receive their able leadership and guidance from beyond.

Some characteristic megalithic lateritic monuments in the form of large mushrooms are found in several localities in Kerala, such as Porculam, Kunnamkulam, Eyyal, Morayoor, Devikulam, Mayanaad, Tirur, etc. These structures are known as *Kudakkallu* or umbrella-stones (Krishnaswami, 1949: Rao, 1972). These are the burial structures constructed by ancient

men in 1000-500 B. C. and belong to the type called dolmens. The dolmens, in general, are found along a long belt on earth, including such regions as southern and western Europe, northern Africa, central Asia and extending up to Malaysia. In India, dolmens are found mainly in Kerala. No conclusive evidence has yet been found to prove why the ancient people of such diverse cultures and far-apart regions of the earth were constructing identical types of monuments to bury their dead.

There are mainly three types of dolmens: (1) with a square chamber, covered on all four sides with flat stone pieces and with another flat stone piece for a roof, (2) with a square chamber as in the first type but with one side open, and (3) with a tapering conical pillar-like structure made of four stone pieces so as to make a circular outer side and another, circular stone with a flat bottom and a convex upper side as a roof piece. In the central chamber inside the dolmens, the ashes, bones and other mortal remains of the person are buried. Some of his belongings may also be kept. The last type of dolmen which looks exactly like a giant mushroom or an umbrella and is called the umbrella-stone is found in Kerala alone (Plate 20).

The shape of the umbrella-stone megaliths is of particular interest. It is not known why this shape was preferred for the monuments, when countless numbers of designs for such a construction could be imagined. It could of course, be said that the geology of the region had a part to play in this, as it is sometimes found easier to cut circular pieces, rather than flat slabs, from laterite formations. In Kerala which may geologically be divided into three main regions, viz., the coastal sandy region, the midland lateritic region and the highland granite region, the umbrella-stones are mainly found in the midlands. However, many of them are found to be located in the coastal regions as well as in the highlands. Similarly, it is also evident that protecting the ashes and other remains of the dead from the vagaries of the climate has not been the main aim because this could have been achieved more easily and with greater perfection using other types of simple designs. Strength of the structure could also not have been the primary concern of their builders, because evidently the roof piece in the umbrella-stone, placed at the pointed tip of the four-stone basal structure, is not planned for its stability. Therefore, it may be

concluded that the most important feature in this type of dolmens has been the shape itself. This leads one to wonder whether there was any significance or speciality for this particular shape to capture the imagination of the ancient men.

The only common things in nature with a similar shape are the mushrooms. Although there are many types of mushrooms, from the striking similarity in their external appearance it may be seen that the toadstools belonging to the genera such as *Psilocybe*, *Amanita*, etc., were the ones which were taken as the models for these dolmens. If this is so, these mushrooms would have had some special relations with those people who constructed the monuments. We have, at present, very limited knowledge about the philosophies on which the ancient men based their burial customs but, some strange beliefs and customs which are still existing among some tribals of Kerala (and, surprisingly, among some natives of southern Mexico) throw some light in this direction.

Modern chemistry has identified many chemical substances which, when consumed, are fatal to humans or affect the nervous system of men creating hallucination, unreasonable sense of happiness, etc. Most of the latter types of chemical compounds contain indole or are closely related to it. Important among such chemicals are Psilocybin, found to be present in *Psilocybe*, and L.S.D. (lysergic acid diethylamide) which is contained in another fungus called *Claviceps*. Several tribals in Kerala like Malapandarams, Paniyas, Kanikkars, etc., who eat such types of mushrooms are found to have a reverence towards them and a reluctance to talk about them. Malapandarams are known to make small dolmen-like structures for their worship on certain occasions. It has been recorded that the species of *Psilocybe* have for thousands of years been eaten by the native tribes of southern Mexico also as a community ritual and by their medicinemen to communicate with the deity (Christensen, 1966). The tribals who eat these mushrooms fear and adore them and regard them as the key to be in touch with infinity. Intake of these mushrooms in the ritualistic manner is believed to enable them to predict the future and to communicate with their dead leaders as well as relatives. Handling these mushrooms is considered a sacred matter and they can be talked of only in whispers among trusted friends, in the dead of night. It

is also believed that the eaters of these mushrooms attain superhuman strength and an eternal life. Closer investigations about the role of these mushrooms in the rituals of the Kerala tribes may yield more interesting information.

Mushroom flora of Kerala, especially the species containing poisonous and hallucinogenic compounds, have not been subjected to any detailed study so far (cf: Purkayastha and Chandra, 1976). *Psilocybe tristis*, *Psilocybe caespitica*, *Amanita caesarea*, *Amanita vagenata*, etc., are already reported from other regions of India, as the edible forms. Evidently, some poisonous species of *Amanita* and *Psilocybe* are present in this region. Although the tribals who eat such mushrooms have a worshipful attitude towards them which are considered by the tribals as having mysterious powers and properties, no clear evidence for the existence of any religious rituals or ceremonies connected with the partaking of these mushrooms by these tribals could be obtained. However, it is strongly suspected that they have a superstitious reluctance to talk about this subject, which is similar with the beliefs of the South Mexican tribals.

It may, therefore, be stated that it was the respect and fear towards these types of mushrooms as a means for establishing a communion with their deity and for attaining an eternal life, which prompted the ancient people to construct the stone monuments for their heroic chieftains and rulers in this particular architectural design. By keeping the mortal remains of their brave leaders and warriors inside these mushroom-shaped monuments, the ancient people might have expected to continue to receive the leadership and guidance from their powerful ancestral spirits to win their own battles and solve their earthly problems.

Acknowledgement

I am very thankful to Prof. A. Aiyappan and to Mr. K. J. John for useful discussions on this topic.

References

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Purkayastha, R. P. and A. Chandra (1976), *Indian Edible Mushrooms*, Firma Klm Pvt. Ltd., Calcutta.

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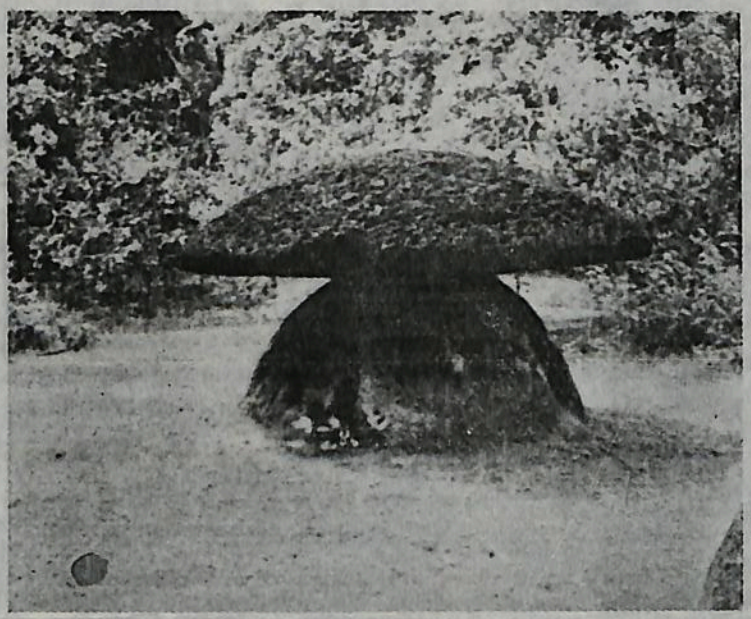

Plate 20. An umbrella-stone at Porculam, Kudakkalparambu, central Kerala.

Plate 21. An Onge man in the forest.

3-II-1987

REVIEWER'S APPRAISAL FORM FOR ECONOMIC BOTANY

The author(s) would, of course, be grateful for an early decision; therefore we hope that you will be able to review this paper and return it by 13 FEB 1987. Thank you.

Please answer the following questions whenever they are pertinent. (Notes may also be made on a separate sheet or the manuscript itself.)

TITLE OF PAPER: Mushrooms and Culture

AUTHOR: Brian Morris

1. Is this a new and original contribution?* No
2. Is the paper of interest to a broad cross-section of economic botanists and related scientists? Yes
3. Are the conclusions and interpretations valid? Not entirely
4. Is the paper clear _____ and well organized? OK
5. Are the illustrations legible _____ and pertinent? _____
6. Can the text _____ or illustrations be condensed? _____
7. Are the references adequate incomplete and accurate? _____
8. Is there consistency in reference citation? Yes
9. What is your rating of this paper?

   Outstanding_____ Very good_____ Good_____ Fair_____ Reject X

10. If you recommend publication, what improvements do you suggest?

_____

_____

_____

_____

Additional remarks: See attached comments

_____

_____

*Economic Botany accepts and publishes summa
negative answer to this question does not constitute cause for rejection of a manuscript.

Morris, Brian, 1982. Forest Traders LSE, Monogr. 55. Athlone Press - London -

——. 1983. The Mycophagi of Malawi. Unpub. ms. Univ. Malawi.

——. 1984. Mycophagi of Malawi: Some Ethnobotanical Notes

Comments on "Mushrooms and Culture"

by Brian Morris

The author attempts to summarize, explicate, and evaluate some of the principal facets of ethnomycological studies. The bulk of the paper's contents has appeared in extenso in numerous previous publications. Morris generally succeeds in being succinct, but unfortunately, his information is at times either misleading, incomplete or inaccurate. I cite the following examples.

On p. 19, l.3, reference is made to mushrooms stones which "date back to around 300-500 B.C." Borhegyi, who first made a detailed study of these artifacts following their discovery by Sapper, and whose work is generally considered to be the most authoritative in its field, determined their approximate dates as spanning the interval from about 1500 B.C.(Pre-Classic) to about 900 A.D. (Post-Classic). This is the sole reference to mushroom stones.

On p. 28, par. 2, Morris mentions the Plaincourault fresco, a 13th century work representing Adam and Eve beside a "tree of life which is clearly depicted as Amanita muscaria." Morris cites this as one of two points favoring Allegro's thesis in his book "The Sacred Mushroom and the Cross," that Christianity and other Near East religions "were based on fertility rites focused around the Amanita mushroom." However, Morris fails to mention that Wasson himself rejects the interpretation of the fresco, based upon the expert opinion of art historian Erwin Panofsky, who states that "the plant in the fresco has nothing whatever to do with mushrooms." (in Wasson's "Soma," p. 179). This opinion should not be withheld from Morris's readers.

On p. 24, l.10, in Brough's paper (1971), which refutes Wasson's thesis that soma was in all liklihood Amanita muscaria, Morris concludes, following Brough, that "the exact identification of the herb soma therefore still remains open to doubt." This is at best a gross oversimplification. Why did not Morris cite Wasson's "Rejoinder to Prof. Brough" (in Botanical Museum of Harvard University, Cambridge. 1972), wherein Wasson clarifies and strongly defends his position? Morris may be enamored of brevity, but his relatively lengthy defense of Brough's argument, without mentioning supporters of Wasson's heavily documented work (including LaBarre, Schultes and others) seems unjustifiable.

In its present form, I believe this paper is not suitable for publication in Economic Botany.

B. Lowy

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Mapes G et; 1981 Ethnomicologia Purepecha, Inst. Biol. Univ. Mexico

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1984 The Pragmatics of Folk Classifications, *J. Ethnobio.* 4:45-60

Munn H 1973 The Mushrooms of Language in M J Harner (ed) *Hallucinogens and Shamanism*, Oxford Univ. Press p 86-122

Oso BA 1977 Mushrooms in Yaruba Mythology and Medicinal Practices, *Econ. Botany* 31:367-71

The Society for ECONOMIC BOTANY, INC.

DEVOTED TO THE PAST, PRESENT, AND FUTURE USES OF PLANTS BY MAN

Department of Biology
Lebanon Valley College
Annville, PA 17003
Spring, 1986

Dear Colleagues:

In this the 40th anniversary year of publication of ECONOMIC BOTANY it is my pleasure to be writing to you, the members of this Society. The Society for Economic Botany has been closely connected with the journal since 1959. We can be proud of this connection. Certainly much interesting and useful information has been disseminated in those 40 years.

This 40th year watershed marks once again a change in editors. Professor Oswald Tippo will be stepping down as editor of ECONOMIC BOTANY in June, 1986. We owe him a great deal of gratitude for the fine and timely work he has done to maintain a quality journal.

The Society is fortunate to have found a new editor in Dr. John Thieret. For many years Professor Thieret served as book review editor for ECONOMIC BOTANY. We welcome him now as Editor. His term officially begins in June, 1986. As always, Society members are asked to support the journal by submitting worthy manuscripts and, if called upon, prompt reviews of papers.

The annual meeting this June 13 - 16 will be at the New York Botanical Garden. There will be contributed papers, a symposium on palms, the banquet, and the address by the Distinguished Economic Botanist for 1986, Professor Efraím Hernández-Xolocotzi. Dormitory space is available at Fordham University across the street and Eastern Airlines, as designated airline for this meeting, is offering 5% discounts on fares (flyer enclosed). Each person intending to use them should first check with the 800 telephone number provided.

In 1987 the meeting is planned for Chicago where the College of Pharmacy, University of Illinois at Chicago, along with The Chicago Botanic Garden and the Field Museum, will be our hosts. Tentative dates are June 22-25. The likely topic for the symposium will be "Traditional Medicine". There again dorm space and the convenience of travel to a major city will make it easy to attend. Please make plans to be at both of the meetings. It is the cross fertilization of ideas that occurs and the camaraderie that exists that make the meetings more than just (interesting) paper sessions. Those things will happen better if you are there.

As you are often requested, I end with a final plea -- support your Society. Recruit a new member, write a paper, volunteer to serve on a committee, renew your membership promptly. And I look forward to seeing you at the New York Botanical Garden in June.

Sincerely,

Susan Verhoek

Susan Verhoek
President

SV/sr

SOME INFORMATION ABOUT THE 27TH ANNUAL MEETING OF THE SOCIETY FOR ECONOMIC BOTANY, JUNE 13-16, 1986, NEW YORK BOTANICAL GARDEN, BRONX, NY

It is planned to hold this year's symposium on Friday and Saturday, June 13 and 14, with contributed papers on Sunday, June 15, and one or more field trips on Monday, June 16. There will a Career's Workshop on Saturday, June 14, during lunchtime.

The scheduled speakers for the symposium "Palms: Biology, Utilization, and Conservation" are Drs. A. Anderson, M. Balick, D. Bates, M. Benge, B. Boom, C. Clement, L. Coradin, T. Davis, J. Dransfield, A. Henderson, D. Johnson, F. Kahn, E. Lleras, J. Lopez-Parodi, K. Mejia, C. Padoch, R. Read, T. St. John, S. Sekhar, J. Strudwick, N. Uhl, and R. Voeks.

Anyone interested in presenting a poster at the meeting should contact Jeremy Strudwick at the Institute of Economic Botany, New York Botanical Garden, Bronx, NY 10458 (212-220-8561) before May 10. Jeremy has prepared a circular on the presentation of posters that will be supplied on request.

Pending sufficient interest, possible venues for field trips at this meeting are Hunts Point Market (early a.m.!), Glie Farms, Wave Hill, G.F. Research Center, and Mohawk Mountain Home (C. Gracie). Contact Mike Balick (212-220-8763) for details.

To Reach The New York Botanical Garden

By Car

from Westchester County: Cross County Parkway east or west to Bronx River Parkway south. Take parkway exit marked "Botanical Garden" to Southern (Kazimiroff) Boulevard and continue to NYBG Main Gate entrance.

from Connecticut: New England Thruway (I-95) to Pelham Parkway west. Continue for three miles. Across from Zoo entrance, bear right onto Southern (Kazimiroff) Boulevard to NYBG Main Gate entrance. Or take Merritt Parkway and Hutchinson River Parkway south to Cross County Parkway west. Continue to Bronx River Parkway south. Take parkway exit marked "Botanical Garden" to Southern (Kazimiroff) Boulevard and continue to NYBG Main Gate entrance.

from New Jersey: George Washington Bridge and Henry Hudson Parkway north to Mosholu Parkway exit. Continue on Mosholu Parkway to Southern (Kazimiroff) Boulevard, turn right, and continue to NYBG Main Gate entrance.

from Manhattan (east side): Triborough Bridge and Bruckner Expressway east to Bronx River Parkway north. Take parkway exit marked "Botanical Garden" to Southern (Kazimiroff) Boulevard and continue to NYBG Main Gate entrance.

from Manhattan (west side): West Side Highway and Henry Hudson Parkway to Mosholu Parkway exit. Continue on Mosholu Parkway to Southern (Kazimiroff) Boulevard, turn right, and continue to NYBG Main Gate entrance.

from Brooklyn and Queens: Bronx-Whitestone Bridge and Hutchinson River Parkway north to Cross Bronx Expressway. Drive west to Bronx River Parkway north. Take parkway exit marked "Botanical Garden" to Southern (Kazimiroff) Boulevard and continue to NYBG Main Gate entrance.

from Long Island: Throgs Neck Bridge and Cross Bronx Expressway west to Bronx River Parkway north. Take parkway exit marked "Botanical Garden" to Southern (Kazimiroff) Boulevard and continue to NYBG Main Gate entrance.

By Railroad

Metro-North line local direct from Grand Central Station in Manhattan to Botanical Garden Station, also connects with Westchester County stops. Walk across Southern (Kazimiroff) Boulevard and through the Mosholu Gate pedestrian entrance. For the train schedule call (212) 532-4900.

By Subway

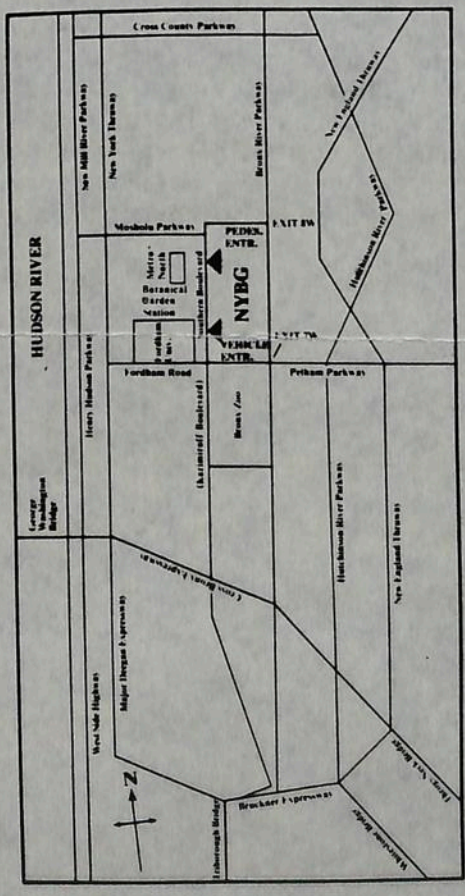
Take IND "CC or "D" trains or IRT "4" train to Bedford Park stop. Then take Bus #26 eastbound or walk eight blocks east to Mosholu Gate pedestrian entrance on Southern (Kazimiroff) Boulevard.

By Bus

Serviced by lines originating in Manhattan, Westchester, and the Bronx. For detailed instructions, call Garden Information (212) 220-8700.

The New York Botanical Garden Is Easy to Reach

Located on 250 acres in the north central Bronx, the Botanical Garden is easily reached by public and private transportation. Across Southern (Kazimiroff) Boulevard is the Botanical Garden Metro-North Station. Subway and bus stops are a short walk, and the Bronx River Parkway passes the eastern boundary. The vehicle entrance is located on Southern (Kazimiroff) Boulevard, across from the entrance to Fordham University and near the Bronx Zoo.



REVIEWER'S APPRAISAL FORM FOR ECONOMIC BOTANY

The author(s) would, of course, be grateful for an early decision; therefore we hope that you will be able to review this paper and return it by 15 April 1986. Thank you.

Please answer the following questions whenever they are pertinent.

(Notes may also be made on a separate sheet or the manuscript itself.)

TITLE OF PAPER: Intoxicating Paricá Seeds Of The Brazilian Maué Indians

AUTHORS : Peter A.G.M. de Smet & Laurent Rivier

REVIEWED BY: B. Lowy DATE: 2-IV-1986

Address:
Botany Department
LSU
Baton Rouge, LA 70803

1. Is this a new and original contribution?* No
2. Is the paper of interest to a broad cross-section of economic botanists and related scientists? _____
3. Are the conclusions and interpretations valid? _____
4. Is the paper clear _____ and well organized? _____
5. Are the illustrations legible _____ and pertinent? _____
6. Can the text _____ or illustrations be condensed? _____
7. Are the references adequate _____ and accurate? _____
8. Is there consistency in reference citation? _____
9. What is your rating of this paper?

Outstanding_____ Very good__X__ Good_____ Fair_____ Reject_____

10. If you recommend publication, what improvements do you suggest?

Not original (except for the source of seeds), but transforms conjecture to verification concerning the versatility of some native American populations in their imaginative use of entheogenic agents. (See attached notes)

Additional remarks: The manuscript is succinct, authoritative, and fully documented.

*Economic Botany accepts and publishes summary-type articles. Thus a negative answer to this question does not constitute cause for rejection of a manuscript.

Additional notes: The formula (plate 4) could easily be incorporated into the text, perhaps saving space. For the benefit of non-chemists, enter in parentheses following the formula: (5-OH-dimethyltryptamine)

p.4, 5 lines from bottom: "....collected in 1854..."
According to Schultes & Hofmann in The Botany and Chemistry of Hallucinogens, ed. 2, 1980, p.144, fig.56: "....collected by Richard Spruce on the Orinoco in 1855." Which is correct?

Reminder: I expect to be in Amazonas (sensu lato), actually somewhere along Rio Uraricoeira, Roraima, Brazil, from May – July. During this period, sending manuscripts for review will be non-productive. The only acceptable item to be forwarded will be Cutter's Maximum Strength Insect Repellent.

It's cold, Bernard

OK 18-III-'86

Department of Botany
Univ. of Massachusetts
Amherst, MA 01003

Dear Bernard: Thanks for your letter. It was welcome.

Would you be willing to review a paper of 9 pages submitted by
Peter A.G.M. de Smet & Laurent Rivier
entitled Intoxicating paricá seeds of the Brazilian Maué Indians

Copies of reviewers' reports are sent authors but names of reviewers are not revealed.

Please return the attached card noting your consent, or inability to review.
With thanks for your help,

(Gas chromatographic analysis of ca. 150-year-old seeds; they are probably Anadenanthera.)

John W. Thieret
Editor, *Economic Botany*

Department of Botany
Univ. of Massachusetts
Amherst, MA 01003

Dear Bernard:

Thank you for your review of
Intoxicating parica seeds of the Brazilian Maue Indians.

I am sure the author(s) will appreciate your suggestions.

John W. Thieret
~~Oswald Tippo~~
Editor, *Economic Botany*

Economic Botany

2-IV-1986

Manuscript Requirements

To save time and money, *all authors who plan to submit manuscripts to* ***Economic Botany*** *are urged to read the following statement on manuscript requirements* ***before*** *they prepare copy for the journal. Well-prepared papers in conformity with these requirements are published months earlier than are defective manuscripts—which are rejected, returned for revision, or subject to delays and added expense.*

As the official journal of the Society for Economic Botany, *ECONOMIC BOTANY* specializes in scientific articles dealing with past, present, and future uses of plants by people—with the impact of plants on humans and civilization and vice versa. Emphasis is on "uses" rather than growing of plant materials; purely agronomic or horticultural papers should be sent to other journals more appropriate for specialized plant production science and technology.

Papers to be considered for publication should be sent to the Editor, Professor Oswald Tippo, Botany Department, University of Massachusetts, Amherst, MA 01003. Manuscripts should be submitted in *triplicate* (include originals of illustrations plus 2 copies of each) in order to facilitate the reviewing process which involves at least 2 readers. The ms should be typed on one side of the paper and *double spaced* throughout—tables, figure captions, literature cited, footnotes, summary—*everything*—on paper of good stock (20 lb. 25% rag bond), 8½″ × 11″, with wide margins (at least 1¼″) at the sides as well as at the top and bottom of page. Figure captions should be typed on a separate sheet of paper unattached to the figures. A brief summary of the paper should be placed at the beginning of the paper. Publications should be cited in the text by author(s) and date (Example: Jones, 1970), not by number. In Literature Cited, periodicals (serials) should be abbreviated in accordance with the standards set by *Botanico - Periodicum - Huntianum* (1968). Style and format of Literature Cited, as well as the ms in general, should conform to the best practices illustrated by current issues of the journal. In Literature Cited, do not underline anything except Latin binomials or genus names. *Double check* the spelling of names and titles and verify the dates, volume numbers, and inclusive pagination. When there are 2 or more illustrations (photos, graphs, maps, etc.), mount in groups with no space between the individual items, bearing in mind that the journal page is 5″ × 8″. Cover illustrations with a protective cover of paper.

Research based on plants other than the most widely recognized species should be documented by reference to herbarium vouchers, following standard practice with collector's name(s), collection number, and the code designation of the herbarium where specimens are deposited (Example: *Smith 15467,* TEX) (see *Index Herbariorum,* 1981).

In general, manuscripts should not exceed 20 typed pages (approximately 5,000 words). Extensive tables must be in a format (page proportion, clarity, sharpness, etc.) suitable for direct duplication. Footnotes in the text must be kept to an absolute minimum. The amount of tabular and/or bibliographic material must be in proper proportion to the length of the text. Excessive changes in proof are charged to the author.

Authors working for institutions or under research grants providing funds for payment of page charges will be asked to do so. Such payment, however, will not be a condition of acceptance of papers for publication.

Department of Botany
LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803-1705
504/388-8485

21-II-1986

Dear John,

As I read your reflections in Economic Botany I thought of our association of some 20 years. Being averse to obnubilation, I appreciated your generally encouraging, occasionally exuberant, always succinct comments on my efforts. After you gave up the editorship I was never consulted again. Apparently, some old reviewers of books do not just fade away, they are struck by lightning.

Officially, I am retired (since 1980) but still occupy my niche here, and remain fairly active in research! In May I expect to return to the Brazilian Amazon for another field project sponsored by the NY Bot. Gard.

With all best wishes

Bernard Lowy

John Thieret
Northern Kentucky Univ.
Highland Heights, Ky

PATRICIA M. DERIAN
COORDINATOR FOR HUMAN RIGHTS
& HUMANITARIAN AFFAIRS.
DEPT. OF STATE.

Luis Guzmán F.

Lcda. Edda Guerra de Guzmán

WIGNER, EUGENE PAUL, b Budapest, Hungary, Nov 17, 02; nat US; m 36, 41; c 2. MATHEMATICAL PHYSICS. Educ: Tech Hochsch, Berlin, Drlng, 25. Hon Degrees: Nineteen from US & foreign cols & univs, 49-73. Prof Exp: Asst, Tech Hochsch, Berlin, 26-27, privatdocent, 28-30; N B Ausserord prof theoret physics, 30-33; asst, Univ Gottingen, 27-28; lectr math physics, Princeton Univ, 30, prof, 30-36; prof physics, Univ Wis, 37-38, Thomas D Jones prof math physics, Palmer Phys Lab, 38-71, EMER THOMAS D JONES PROF MATH PHYSICS, PRINCETON UNIV, 71-; Concurrent Pos: Sci guest, Kaiser Wilhelm Inst Berlin, 31 & Metall Lab, Chicago, 42-45; dir res & develop, Clinton Labs, Tenn, 46-47; Lorentz lectr, Inst Lorentz, Leiden, 57; dir harbor proj civil defense, Nat Acad Sci, 63; dir course 29, Int Sch Physics Enrico Fermi, 63; dir, Civil Defense Res Proj, Oak Ridge, Tenn, 64-65; Kramers prof, State Univ Utrecht, 75. Consult, Off Sci Res & Develop, 41-42, Oak Ridge Nat Lab & Exxon Nuclear Co; mem vis comt, Nat Bur Stand, 47-51; gen adv comt, AEC, 52-57, 59-64. Honors & Awards: Nobel Prize in Physics, 63; Medal for Merit, 46; Franklin Medal, Franklin Inst, 50; Fermi Award, 58; Atoms for Peace Award, 60; Max Planck Medal, Ger Phys Soc, 61; George Washington Award, Am Hungarian Studies Found, 64; Semmelweiss Medal, Am Hungarian Med Asn, 65; Nat Medal Sci, 69; Albert Einstein Award, 72. Mem: Nat Acad Sci; Am Math Soc; fel Am Phys Soc (vpres, 55, pres, 66), Am Acad Arts & Sci; Am Philos Soc. Res: Application of group theory of quantum mechanics; rate of chemical reactions; theory of metallic cohesion; nuclear structure and reactions; philosophical implications of quantum mechanics. Mailing Add: Dept of Math Physics Jadwin Hall Princeton Univ PO Box 708 Princeton NJ 08540

from: Amer. Men and Women of Sci. 1977.

Gift of small Shepibo ceramic
to Patr. Eugene Wigner 28-III-1981.
dinner (The Grembo) with Doris, cooked
by Wigners.

COMMENCEMENT

Fall

Louisiana State University
and Agricultural and Mechanical College

Wednesday, December 18, 1985
9:30 a.m.

ALMA MATER

Where stately oaks and broad magnolias
shade inspiring halls

There stands our dear old Alma Mater
who to us recalls

Fond memories that waken in
our hearts a tender glow,

And make us happy for the love
that we have learned to know.

All praise to thee, our Alma Mater,
moulder of mankind.

May greater glory, love unending,
be forever thine.

Our worth in life will be thy worth,
we pray to keep it true,

And may thy spirit live in us
forever, LSU.

Downey, Funchess

HONORARY DOCTOR OF SCIENCE DEGREE

To say that Eugene Paul Wigner received a Nobel Prize in Physics would, in itself, not convey the tremendous impact which his work has had, not only on physics, but also on society.

The Nobel Prize, which Professor Wigner received in 1963, was awarded ". . . for his contributions to the theory of the atomic nucleus and the elementary particles, particularly through the discovery and application of fundamental symmetry principles." His discoveries were based on the highly successful atomic research done during the first three decades of this century. However, his name will also be immortalized forever in connection with the Wigner distribution function, the Weisskoff-Wigner theory, the Wigner 3-j symbols, the Wigner-Eckart theorem, the Breit-Wigner resonance, the Wigner R-matrix, the Wigner-Seitz cell, and the Wigner lattice. The recent experimental demonstration of the Wigner lattice, an idea conceived by Professor Wigner about 50 years ago, led the editor of *Nature* to remark that ". . . the demonstration of this phenomenon is yet another proof of the astonishing fertility of Eugene Wigner's contributions, at the outset of his career, to quantum mechanics in particular and to physics in general" (*Nature*, Feb. 14, 1985, p. 57). Because of such contributions, few would disagree that Eugene Wigner's name should be on the list of the greatest physicists of all time.

Born in Budapest, Hungary, on November 17, 1902, Professor Wigner was educated in one of that country's most prestigious private secondary schools. He received the doctoral degree in chemical engineering from the Technische Hochschule in Berlin in 1925. In addition to the Nobel Prize, Professor Wigner has received more than 27 honorary degrees and 14 awards of the highest distinction.

Professor Wigner has often been referred to as "an architect of the atomic age." In cooperation with Leo Szilárd, he prepared a letter which Albert Einstein sent to President Roosevelt on August 2, 1939. This letter informed the President that uranium might be turned into a source of energy in the near future and urged the Administration to establish permanent contact with the group of physicists working on chain reactions in America. The letter further suggested that funds be provided to speed up this experimental work. Thus began the "Manhattan Project." During the war, Professor Wigner was a key member of the team which achieved the world's first self-sustaining chain reaction—the forerunner of all peaceful applications of atomic energy.

Professor Wigner's scientific home during most of his career has been Princeton University. He was appointed a lecturer there in 1930, a professor in 1931, and remained on the faculty there, except for a brief period spent at the University of Wisconsin, until his retirement in 1971. During the war years, while on leave of absence from Princeton, he served first at the Metallurgical Laboratory (a code name for part of the Manhattan Project), University of Chicago. Later he served as Director of Research and Development for Clinton Laboratories, Oak Ridge, Tennessee.

While Princeton has been Professor Wigner's first home, surely LSU's Department of Physics and Astronomy has been his second one. In 1970, he began his long association with LSU. Practically every year since then, he has spent about two months at LSU.

PROGRAM

FALL COMMENCEMENT
200th Commencement Exercises
9:30 a.m. December 18, 1985
LSU Assembly Center

Presiding, Dr. James H. Wharton, *Chancellor*

PROCESSIONAL
Dr. Herndon Spillman, *Organist*

"The Star Spangled Banner"
Mr. Mark Alexander Moore, *candidate for Master of Music degree, December 1985*

INVOCATION
Rev. Randy Nichols
Uniting Campus Ministry

REMARKS
Dr. James H. Wharton, *Chancellor*

CONFERRING OF DEGREES
Dr. Allen A. Copping, *President, Louisiana State University System*

PRESENTATION OF HONORARY DEGREE
to Eugene P. Wigner

"Alma Mater"
Mr. Moore

BENEDICTION
Rev. Nichols

RECESSIONAL
Dr. Spillman

Refreshments compliments of LSU Parents' Association

Not only has Professor Wigner given many lectures in physics and other subjects, but he has always been more than willing to speak on a variety of popular topics to high school students and to various University groups. His friendliness is legendary, and his active participation in departmental colloquia and seminars is always a highlight of such occasions. Many joint publications involving Professor Wigner have emerged from his interaction with the faculty. In a lighter vein, there is also much admiration for the speed at which he bounds down the corridors, leaving many of the younger generation trailing behind.

The presence of Professor Wigner at LSU has been a source of inspiration to many. LSU is, indeed, proud that he has chosen to make this his second academic home, and considers it a privilege to confer upon Eugene Paul Wigner the honorary degree, Doctor of Science, *honoris causa*.

Robert F. O'Connell, Professor
Department of Physics and Astronomy, LSU

1985

LSU to honor Nobel laureate

Physicist to join 1,815 degree candidates at ceremonies

LSU will award more than 1,800 diplomas in commencement ceremonies next Wednesday and will present an honorary degree to nuclear physicist Eugene Wigner, a Nobel laureate often described as "an architect of the Atomic Age."

Wigner, professor emeritus of theoretical physics at Princeton, has served as a consulting and visiting professor in the LSU Department of Physics and Astronomy since 1972.

A total of 1,815 degree candidates are scheduled to be awarded diplomas in ceremonies at 9:30 a.m. in the LSU Assembly Center. The total includes 1,358 bachelor's, 346 master's, 73 doctoral, and 38 professional degree candidates.

LSU System President Allen A. Copping will officially confer degrees upon the graduates. Chancellor James Wharton will bestow the honorary doctor of science degree upon Wigner.

The first five doctoral degree candidates to complete studies as LSU Alumni Federation Graduate Fellows will be among the graduates. They are Jeffery Lockwood of Socorro, N.M., who will receive a doctorate in entomology; Dwight Senser of Casper, Wyo., mechanical engineering; Phillip Sharp of Jasper, Texas, English; Laurence Sibley of Marquette, Mich., zoology; and John Snedden of Houston, geology.

The five were among the first to accept fellowships when the LSU Alumni Federation initiated its graduate fellow program in 1982-83 as part of an effort to improve the quality of LSU graduate programs. The five received $10,000 each year to support their studies on the basis of grade-point averages, Graduate Record Examination scores and proposed research projects.

Wigner, a legendary figure in the world of science, was a friend and colleague of Albert Einstein and a member of the team of scientists who, during World War II, conducted the first self-sustaining, controlled uranium chain reaction.

Wigner is famous for his pioneering application of the "group theory" concept to problems in theoretical physics. It was the use of this concept which won for him the Nobel Prize in physics in 1963.

Born in Budapest in 1902, Wigner took his doctorate in Germany before joining the Princeton staff in 1930. He also has taught at the Kaiser Wilhelm Institute in Berlin, the University of Wisconsin, and the Institute Lorentz in Leiden.

Wigner and Einstein became colleagues at Princeton. Wigner personally took down and translated from German the letter dictated in 1939 by Einstein that convinced President Franklin D. Roosevelt to begin the secret "Manhattan Project" in the face of Adolf Hitler's effort to develop the atom bomb.

From 1942 to 1945, Wigner was a member of the Metallurgical Laboratory at the University of Chicago, which built the first nuclear reactor. He was present on the afternoon of Dec. 2, 1942, when the "Chicago pile" worked for the first time.

Wigner holds 23 other honorary degrees and 14 awards of the highest distinction, including the Atoms for Peace Award, the Fermi Award, the Albert Einstein Award, the National Medal of Science, the Max Planck Medal of the German Physical Society, and honorary membership in the physical society of his native Budapest.

Office of the Dean
College of Basic Sciences
LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803-1802
(504) 388-4001

December 11, 1985

FROM: Ronald J. Henry, Dean
College of Basic Sciences

TO: Dr. Bernard Lowy
622 Castle Kirk Dr.
Baton Rouge, LA 70808

RE: Reception for Dr. Eugene Wigner

Professor Eugene Wigner will be receiving an honorary doctorate degree at Commencement on Wednesday, 18 December 1985. We invite you to a reception in his honor at the Faculty Club from 4:00 to 5:30 p.m. on that day.

RJH:bn

I attended the commencement and reception. Wigner looks well but he is worried about Pat, who is not. She tentatively plans to return to Budapest next year, but may not come to campus. LSU is short of funds!

Wigner
Physics Dept.
L.S.U.
Baton Rouge
La. 70803

Dr. Bernard Lowry
622 Castle Kirk Drive
Baton Rouge
La.

BATON ROUGE, LA 708 PM 20 MAR 1985

PLEASE COME TO OUR "SPRING FLING"

IT WON'T BE COMPLETE WITHOUT YOU!

THURSDAY, MARCH 28, 1985 ✓
RECEPTION AT 6:30 P.M.
DINNER AT 7:15 P.M.
"PLANTATION ROOM" LSU UNION

PAT AND EUGENE WIGNER

R.S.V.P. JOYCE BARRON BY 10:30 A.M. MARCH 27, 1985. PHONE: 388-2261

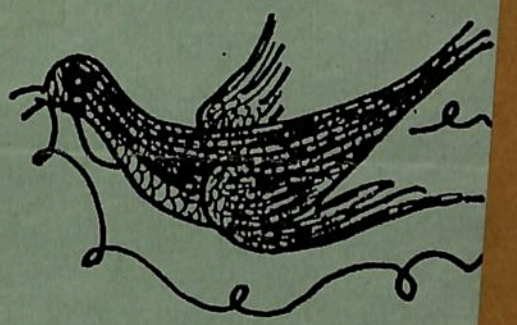
Strauss · 73 people

LOUISIANA STATE UNIVERSITY

CAMPUS MAIL

FR

Mr.
Bernard
Lowy



You are invited to the Wigner
Spring Dinner
Tuesday, April 5, 1983
Reception at 6:30 p.m.
Dinner at 7:30 p.m.
Plantation Room, LSU Union

Eugene Wigner

R.S.V.P. to Joyce Barron, 2261
by 10:30 a.m., March 31

Department of Botany
LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803
504/388-8485

16-II-1982

Dear Pat and Eugene,

I have just been told of Pat's "mild coronary"; the mildness being emphasized, and I profoundly hope this report is justified, so that your recovery may be complete and rapid. Sunday, the expected day of your arrival here was uncharacteristically cold, rainy, and generally gloomy, but expectations are high that more congenial weather, of a kind more suitable to welcoming you both back, will follow shortly. I expect to be among the many of your friends and well-wishers who will joyfully greet you, whenever you decide to come!

With all best wishes, Bernard Lowy

Department of Botany
LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803
504/388-8485

15-III-1980

Dear Pat and Eugene,

The other night at the Hamiltons, I was trying to think of the name of the Canadian translator of Petöfi's poems. It is Watson Kirkconnell. I have not had a chance to find out anything about his background, but it is my guess that somewhere in his lineage there must be lurking a Hungarian ghost, although his name gives no hint of this.

My attempt at a translation of Petöfi's poem "Egy gondolat bánt engemet" is enclosed. Since the original is in rhyming couplets, I adopted the same form, as did Morales in his Spanish version. I tried to capture some of the fiery spirit of Petöfi's lines without doing violence to their literal meaning.

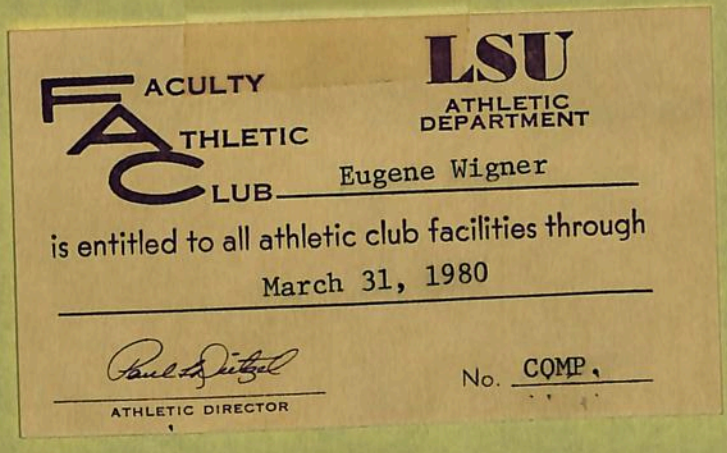
It is always a great pleasure to see you both, and Sara and I send you our kindest regards and best wishes. Yours

Bernard Lown

Dear Professor and Mrs. Lowry — Eugene and Pat Wiegner, hope to have the pleasure of your company!

For: Coctails and dinner
On: Thursday, February 28th 1980
At: 6:00 PM coctails, 6:45 PM dinner
In: L Club Room, Assembly Center, LSU

RSVP 388-2261 (Linda Gauthier)
388-6118 (Jackie Tamas)



FACULTY ATHLETIC CLUB

LSU ATHLETIC DEPARTMENT

Eugene Wigner

is entitled to all athletic club facilities through

March 31, 1980

Paul D. Dietzel

ATHLETIC DIRECTOR

No. COMP.

for Pat and Eugene Wigner

not used.

TO: Sen. Backman, Sen. Sisitsky
Reps. Frank, Holland, Alexander, G.M. Cohen, D.B. Cohen

FROM: Representative David J. Mofenson

RE: Dr. Maxim Jaroslavsky
of Argentina

DATE: July 16, 1979

MAXIMO EDUARDO

The Anti-Defamation League of B'nai B'rith has brought to my attention the grave and tragic case of Dr. ~~Maxim Edward~~ Jaroslavsky, a 41 year old Argentine national who disappeared on the evening of November 19, 1975 in Tucuman, Argentina while driving to the heart clinic he had established in that city.

Dr. Jaroslavsky's relatives, including a cousin living in Boston, have reason to believe that he was taken by the Argentine military and has been kept prisoner in one of a number of secret detention camps.

In January, 1977, the family received several reports that Dr. Jaroslavsky was alive in a prison camp. A Venezuelan refugee sent work in January, 1978 that he had seen Dr. Jaroslavsky, who was alive and being held in a military camp.

Amnesty International has submitted Dr. Jaroslavsky's name to the Inter-American Commission of Human Rights of the Organization of American States and numerous appeals have been made to Secretary of State Cyrus Vance to include Dr. Jaroslavsky on the list of missing persons sent to the Argentine government. Appeals have also been made to the Minister of the Interior and Minister of Justice of Argentina. However, his family has received no further information as to Dr. Jaroslavsky's whereabouts.

The ADL has asked us, as concerned legislators:

1. to pass a resolution in the House which I am enclosing for your signature,
2. to pass a Senate resolution which is being prepared by Senator Backman,
3. request a proclamation by Governor King urging his release, and
4. to issue a press release alerting the Boston media to the case of Dr. Jaroslavsky.

I hope you will all participate in this effort. Should you have any questions, please feel free to contact me or Skip Sesling at X-1321 or Martin Goldman of ADL at 542-4977.

Resolutions urging the Government of Argentina to free Dr. Maximo Eduardo Jaroslavsky

Whereas, Dr. Maximo Eduardo Jaroslavsky, an Argentine cardiologist, disappeared on November 19, 1975 in Argentina; and his family including a relative living in the Greater Boston Area, has not heard from him in those four years; and

Whereas, An Argentine refugee reported having seen Dr. Jaroslavsky alive and being held prisoner in a secret military detention camp, and

Whereas, Dr. Jaroslavsky's name has been submitted by Amnesty International to the Inter-American Commission of Human Rights of the Organization of American States; and

Whereas, Relatives of Massachusetts citizens have been denied their basic human rights in Argentina; now therefore be it

Resolved, that the Massachusetts House calls upon the Government of Argentina to release Dr. Jaroslavsky, as well as to inform his relatives of his whereabouts and allowing them rights for visitation; and be it further

Resolved, that the Inter-American Commission of Human Rights of the Organization of American States investigate the disappearance of Dr. Jaroslavsky and be it further

Resolved, that a copy of these resolutions be transmitted forthwith to the Ambassador of Argentina in Washington, D.C., the Argentine Ambassador to the United Nations, as well as to the Secretary of State in the United States and the President of the United States.

DAVID J. MOFENSON

GERALD M. COHEN

LAWRENCE R. ALEXANDER

BARNEY FRANK

DAVID B. COHEN

IRIS K. HOLLAND

The Massachusetts House of Representatives has passed a resolution offered by Rep. calling on the government of Argentina to release Dr. Maximo Eduardo Jaroslavsky.

Dr. Jaroslavsky, an Argentine cardiologist, disappeared four years ago in Tucuman, Argentina enroute to a heart clinic he had established in that city. His family, including a relative living in Boston, has not heard from him since that evening.

In January 1978, an Argentine refugee sent word to the family that he had seen Dr. Jaroslavsky, and reported that the physician was being held prisoner in a secret military detention camp.

Rep. noted that Amnesty International has submitted Dr. Jaroslavsky's name to the Inter-American Commission of Human Rights of the Organization of American States (OAS). In addition, numerous appeals have been made to Secretary of State Cyrus Vance to include Dr. Jaroslavsky on the list of missing persons sent to the Argentine government.

Appeals have also been made to the Minister of the Interior and the Minister of Justice of Argentina.

To date, his family has received no explanation for his disappearance.

Rep. stated, "The grave and tragic situation of Dr. Jaroslavsky is not an isolated case. There is at least one other documented case of a relative of a Massachusetts citizen having disappeared, and Amnesty International states that thousands of Argentinians have vanished without a trace.

"In face, a New York Times editorial (May 20, 1979) notes there have been between 2,500 and 3,000 arbitrary arrests and 5,000 to 15,000 disappearances since the establishment of the Videla government."

"Especially painful to relatives of persons like Dr. Jaroslavsky," Rep. continued, "is the fact that the government will not acknowledge either their disappearance or their existence. It is a situation chillingly reminiscent of Orwell's 1984."

Rep. noted the Dr. Jaroslavsky case was brought to the attention of the Legislature by the Anti-Defamation League of B'nai B'rith who was asked by Dr. Jaroslavsky's Boston relative to assist getting even some official word that he was still alive.

In its resolution, the House called on the Argentine government to inform Dr. Jaroslavsky's family of his whereabouts and to permit visitation rights for his wife and two sons, none of whom have heard from him since the night of his disappearance.

Department of Botany
LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803
504/388-8485

April 3, 1980

Indiana University Press
Bloomington, Indiana 47401

Gentlemen:

If it is still available, kindly send me a copy of the following book: Wigner, Eugene P. 1967. Symmetries and Reflections. Please bill me for the cost.

Sincerely yours,

B. Lowy

Bernard Lowy
Professor of Botany

Lowy, this is out of print. I have checked our inventory and we do not have any copies available.

Carol
4-8-80

MD

Department of Botany
LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803
504/388-8485

28-V-1979

Dear Eugene,

In answer to your kind note concerning whom it would be best to approach regarding Dr. Jaroslavsky's disappearance, I am not at all sure. Although I received no response to my letters sent to Secretary Vance and Ambassador Young, this does not mean that a letter from you to either of them would also be ignored. Since Secretary Vance holds the highest office concerned with international problems, perhaps he would be the most appropriate person to address.

Our efforts to evoke some response from the Argentine government continue, and are reflected most recently in the involvement of the Anti-Defamation League of Bnai Brith, as indicated in the xerox copy enclosed.

Of course, each family is most concerned with its own loss, but I believe that petitions like ours also reach beyond the personal level because they deal with a question of international justice, at least as we in the U.S. see it, and make an appeal for humanitarian conduct toward all persons on the part of responsible governments.

With best wishes for a pleasant summer in Princeton,

as ever,

Bernard

UNIVERSITY OF WISCONSIN-MADISON

DEPARTMENT OF PHYSICS
1150 University Avenue
Madison, Wisconsin 53706
Department Office: 2531 Sterling Hall
Telephone: 608/262-3077

May 25, 1979

Dear Bernard:

I am also perturbed by the lack of success to find out anything about your nephew Jaroslavosky. But as soon as I get back to Princeton (June 4 or 5), I'll write again to Vance. Or, would it better to write to someone else? Please let me know.

Best wishes to you and also Mr Jaroslavosky

Sincerely
Eugene (Wigner)

10-IV-1979

Nuclear Plant Safety

Editor, Morning Advocate:

The April 4 issue of the Morning Advocate had both a letter and also an article (by Max Lerner) opposing nuclear power. Neither was written by a person with true knowledge of the subject and it is good perhaps if the opinion of one who has some familiarity with the subject is communicated.

The letter begins with three questions. Do the people of the United States really know what is going on in the nuclear plants? I will admit that most of our people know it just as little in detail as we know what is going on in our automobile engines or in our electric light bulbs. But, with the increasing complexity of our technology, such general ignorance is unavoidable. It may be good to remember, though, that the use of automobiles causes about 40,000 lethal casualties a year, whereas the first 20 or so years of nuclear energy production has caused none. This also answers the second question: yes, nuclear plants are at least as safe as the Nuclear Regulatory Commission claims them to be.

The third question of the letter is: "Are they (the nuclear power plants) also a national security risk?" Surely, no one can sincerely believe that any nuclear plant accident can threaten the whole nation — the much advertised Three Mile Island accident, the first one of its nature in 25 years, has not caused a single fatality.

As to Mr. Lerner's article, it is good to remember that our technical equipments' functioning requires the use of energy. We should not forget either how great the effect of these equipments is on our lives. The increase of life expectancy in our century, from 47 years to the present 71, owes very much to their development. The question is therefore only which energy source we should use. As to coal, we should not forget that coal mining has caused more than 100,000 cases of black lung disease in miners. And we surely do not want to be fully dependent on the cooperativeness of the oil producing countries. We need a competing energy source and it is lucky we found one.

All this does not mean that we should cease trying to increase the safety of the nuclear power plants further — this may have the additional benefit of decreasing the emotional opposition to them. This writer believes in particular that we should strive to improve both the intellectual understanding of the operators and supervisors of the nuclear plants and also increase their active interest in their work.

Many companies have active and successful programs of this sort. Perhaps we should not let the workers do the same work for years and years, leading to boredom on their part, but change the nature of their work from time to time. This is what the writer of this letter has reportedly recommended.

EUGENE P. WIGNER

Department of Physics
LSU, Baton Rouge

Editor's Note: Dr. Wigner, professor emeritus of physics at Princenton University and visiting professor in physics at LSU, received the Nobel Prize in 1963 for his work in nuclear science. President of the American Physics Society in 1956, he earlier was one of the scientists involved in the Manhattan Project which developed the nuclear chain reaction.

2nd copy to Eugene Wigner 6-IV-1979. At his office, Physics Bldg; [no response]

LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803
College of Arts and Sciences

DEPARTMENT OF BOTANY

July 26, 1978

Dear Eugene,

I returned to the university from my field trips in Guatemala and Mexico only a short time ago and have at hand your kind letter in response to my appeal of May 22. — First, it distresses me to know that you had to be hospitalized for an operation. I sincerely hope that you are now the better for it, and that you may never again need to submit to the ministrations of a surgeon.

The situation regarding Dr. Máximo Jaroslavsky remains the same. Although there have been a few hopeful developments, including notification from Amnesty International that they have "adopted" his case for special consideration, we have nevertheless still heard nothing from either Argentina or other sources that enlightens us concerning his whereabouts. We have, however, heard from Senator Russell Long of Louisiana, who tells us that he has forwarded pertinent information concerning the case to the State Department.

I have enclosed a copy of a statement made by

Dr. Jaroslavsky's mother in Buenos Aires on Jan. 12, 1978. I did not have this available when I wrote to you in May and send it to you now because it gives a good summary of the known facts in the case. The other xerox is copied from a Tucuman newspaper (La Gaceta) which appeared 7 days after Dr. Jaroslavsky's disappearance. My translation of a leading passage is attached.

So I renew my plea for your help and ask that you write to our Secretary of State, Mr. Cyrus Vance, or perhaps to the President of the National Academy of Sciences, as you may see fit, to call this case to the attention of appropriate authorities, the goal being simply to finally determine whether or not this young man is presently being held in custody by any agency of the Argentine government.

I am very much aware of the fact that this request comes at a difficult moment for you, since you may still be recuperating from your recent surgery. Consequently, I value your generous offer of help still more.

With all best wishes for your speedy and complete recovery,

Yours sincerely Bernard

Suspendieron los Médicos las Visitas Domiciliarias Nocturnas

For la desaparición de un profesional cuando cumplía esas tareas en la noche del miércoles. Resolución del gremio

El Colegio Médico de Tucumán resolvió "suspender preventivamente las visitas médicas domiciliarias nocturnas, de 21 a 8, en toda la provincia, hasta tanto se obtengan las mínimas garantías para el ejercicio profesional". La resolución se motiva en "la desaparición del doctor Máximo Eduardo Jaroslavsky, ocurrida el 19 del corriente, a las 21, aproximadamente, y mientras efectuaba visitas domiciliarias a sus pacientes".

→ THE MEDICAL SCHOOL OF TUCUMAN HAS RESOLVED "TO SUSPEND FOR PREVENTIVE REASONS, ALL MEDICAL HOME CALLS AT NIGHT BETWEEN THE HOURS OF 9PM AND 8AM THROUGHOUT THE PROVINCE, UNTIL THEY HAVE RECEIVED MINIMUM GUARANTEES CONCERNING THE CARRYING OUT OF THEIR PROFESSIONAL DUTIES. THE REASON FOR THE RESOLUTION IS THE DISAPPEARANCE OF DR. M. E. J. ON THE 19TH OF THIS MONTH AT ABOUT 9PM, WHILE HE WAS ENGAGED IN MAKING HOUSE CALLS TO HIS PATIENTS."

cia de la gravedad ... chos y preocupa la ... ficación de la visita ... gremio, advirtió que ... medidas de fuerza ... ... soluciones a ...

... dico y al pueblo de la pro-

SOLICITADA

¡VAN 7 DIAS!

Han transcurrido ya 7 días desde la desaparición del Dr. MAXIMO EDUARDO JAROSLAVSKY y no hay respuesta de las autoridades.

COLEGIO MEDICO DE TUCUMAN

LA GACETA — Página 7
Miércoles 26 de Noviembre de 1975

SOLICITADA

¡VAN 7 DIAS!

Han transcurrido ya 7 días desde la desaparición del Dr. MAXIMO EDUARDO JAROSLAVSKY y no hay respuesta de las autoridades.

COLEGIO MEDICO DE TUCUMAN

LA GACETA — Página ...
Miércoles 26 de Noviembre de 1...

SOLICITADA

¡VAN 7 DIAS!

Han transcurrido ya 7 días desde la ...

(1) 7 days have passed since

April 3, 1979

This is the repetition of some past years' invitation to cocktails, a dinner, and hopefully some dance afterwards in the L Room of the Assembly Center. All this will start at 6:00 p.m. on April 20 with dinner at 6:45. Here is to hope that you will come with your better half or husband! All the arrangements were made by Jackie Tamas and we are all greatly indebted to her. We hope you'll enjoy the evening.

Eugene Wigner

RSVP Jackie Tamas 388-6118
or Eugene Wigner 388-8441

Sorry you were out when I wanted to pass this on to you Eugene

Dear Bernard:

I tried to drop in on you but I found an empty room. I'll try again! Until then, my regards only. (I had nothing definite in mind)

Best wishes

Eugene (Wigner)

30-III-1979

LOUISIANA STATE UNIVERSI

FROM OFFICE OF

E Wign

CAMPUS MAIL

Because of the glorification of Soviet Russia, which it includes, I can not bring myself to sign it (the letter). I have of late tried very hard to form a judgement of what is happening there and I have reached some rather somber conclusions.

Letter of A. Einstein, June 1932!

Lowy

1

A Nobel Laureate Remembers Einstein

As many nations prepared to commemorate the 100th birthday of the most famous scientist of this century, a quiet gentle physicist with a medium-heavy accent sat in his almost-Spartan LSU office, reminiscing about the Albert Einstein who was his colleague and his close friend.

Dr. Eugene P. Wigner, Princeton professor emeritus who for the past decade has periodically come to LSU as a visiting professor, is himself, like Dr. Einstein, a Nobel laureate. An eminent scientist even *among* eminent scientists, Dr. Wigner played a vital personal role—along with Einstein, Enrico Fermi, Neils Bohr, Robert Oppenheimer, Edward Teller, and other now-legendary figures—in changing the course of the world.

Traditional science had said it couldn't be done, and doubts plagued their own number. But they did it anyhow. With dedication and daring, sometimes punctuated with moments of high drama, they released the energy of the atom.

Dr. Wigner was a central figure in a circle of sheer scientific brilliance which gravitated toward Einstein—sometimes around him, sometimes peripheral to him. Einstein did not take the active on-site part in World War II's super-secret Manhattan Project that consumed the energies of the others. But they keenly felt his background presence as they gave substance to his equations.

Einstein's basic work, says Dr. Wigner, "was so much taken for granted that we did not think of it as his contribution, just as one doesn't think that living in Baton Rouge is due to the Louisiana Purchase."

A native of Hungary, Dr. Wigner initially encountered Einstein in the 1920s in Berlin. Dr. Wigner recalls that their meeting wasn't exactly a meeting; "I first saw him at a university physics colloquium. But of course he sat on one bench, and I sat on another. Later he invited us to his home in Berlin. He treated every physicist as his equal. He was very good at explaining."

Dr. Wigner had already spent part of several years at Princeton by 1933, when Einstein accepted a post at Princeton's newly created Institute for Advanced Study—both men eventually to become devoutly patriotic American citizens. By this time, they knew each other well from the Berlin days. They shared a love of walking, and often took long walks together, speaking in German to each other about many things, including politics. "Einstein was very worried about the political situation, *very* worried about Hitler's desire to conquer the world."

It was Dr. Wigner who—with fellow Hungarian scientist Dr. Leo Szilard—suggested to Einstein that he write a letter to President Roosevelt outlining the possibility of unleashing vast amounts of energy through a nuclear chain reaction: "He dictated a letter to me in German, which I wrote out in longhand, took back to Princeton, translated, and had typed."

From 1942 to 1945, Dr. Wigner was on leave from Princeton working in the University of Chicago's deliberately misnamed "metallurgical lab," members of which, on December 2, 1942, activated the world's first self-sustaining nuclear chain reactor.

From the success of that first makeshift reactor through August 6, 1945, when an atomic bomb was exploded over Hiroshima, Japan, Dr. Wigner and his associates moved through sometimes cloak-and-dagger scenes, assuming false names when traveling, as secret plants were built in secret cities in Tennessee, New Mexico, and Washington state. Einstein was not a central participant in the project, but rather the genius looming behind it all.

Dr. Wigner is spending March in Princeton, participating in the Einstein Centenary there, after which he is scheduled to return to LSU.

While much of the world is paying tribute to Einstein, Dr. Alvin Weinberg, Chicago physicist who was for many years director of Oak Ridge National Laboratory and is now director of the Oak Ridge Associated Universities Institute for Energy Analysis, has paused to pay a tribute of his own — to Dr. Wigner:

"How can I say enough in praise of Eugene Wigner? How can I do justice to the person from whom I have learned more than from any other?

"I shall speak of two things I have learned from him.

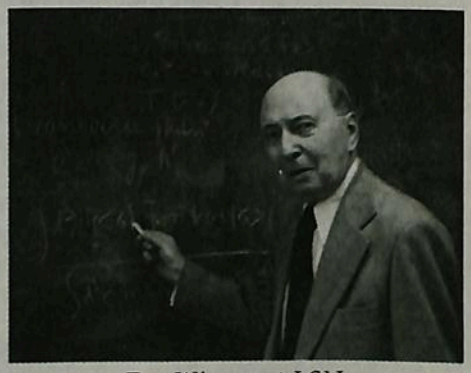
"First, he has shown me the potential of human intellect and human creativity. Anyone close to Eugene Wigner discovers how science is done by the very best: the intensity, the honesty, the generosity of science done at that level.

"And second, I have come to understand from him the values of human freedom. He has, ever since I have known him, been an ardent, even uncompromising, advocate for the cause of human freedom.

"I never met Einstein, although one Sunday morning a number of years ago in Princeton, Eugene took me to visit him; unfortunately, the great man was not in. But Eugene, from time to time, has told me about Einstein.

"Eugene himself was influenced scientifically by Einstein: How else would he have written that monumental paper on 'Unitary Representations of the Poincare Group'? But much as he valued Einstein's scientific genius, I believe Eugene valued Einstein's commitment to human freedom even more.

"In this judgment, Eugene Wigner, as usual, is correct." LSU



Dr. Wigner at LSU

LSU outlook
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College of Arts and Sciences
Department of Botany

May 22, 1978

Dear Eugene:

I do not know when this will reach you at the university, but I am addressing this letter to you in any event, because it is an urgent matter in which I would very much like to ask your help. Although we have not directly discussed the question of human rights and President Carter's world-wide support of that eminently humane doctrine, I nevertheless have no doubt that you subscribe to it in principle as well as in practice. It is because of this strong conviction that I write to you now.

On November 19, 1975, in Tucumán, Argentina, a young Argentine medical doctor disappeared from his home and has not been heard from since. He is one of thousands of individuals who have suffered a similar fate during the past several years of turmoil in Argentina, but his case is of special concern to me because he is my wife's nephew and because of my personal acquaintance with him. His plight has been called to the attention of Amnesty International in the hope that the Argentine government might be persuaded to simply state whether or not he is being held in their custody, but this vital information has not been forthcoming. His family and colleagues have also been unsuccessful in their efforts, and while their anguish grows, their hope wanes. So I am taking the liberty of pleading for your assistance in the following way. I wonder whether I might prevail upon your kindness to direct a letter to our Secretary of State, Mr. Cyrus Vance, in your capacity as a Member of the National Academy of Sciences, informing him of this case and asking that the name of this young man be fowarded through our Embassy in Buenos Aires to the proper authorities of the Argentine government, requesting their cooperation in informing the State Department whether or not he is their prisoner.

Working through diplomatic channels may be our best hope, since this has yielded positive results before, in other cases. Our aim is not an extravagant one. It is merely for information which it is within the jurisdiction of the Argentine authorities to provide to a distraught family, and which they should have a right to expect on purely humanitarian grounds. I assure you on behalf of all of us who are concerned, that we would be deeply grateful for your efforts. I append here the doctor's name and civil identification numbers.

Dr. Máximo Eduardo Jaroslavsky
Libreta de enrolamiento: 7522044
Cédula de identidad: 4604933

With many thanks and kindest regards,

Bernard

Bernard Lowy

MAGYAR HÍREK 28-I-1978

from Eugene Wright 21-II-1978

MAGYAR TANÍTÓK ALBANYBAN

Az Amerikai Egyesült Államokban egy kis falucskában, Albanyban háromszáz magyar család él. 1977 szeptemberében az iskolájukban bevezették a kétnyelvű oktatást, a magyar órákat két Magyarországról érkezett tanárnő tartja: FRITTMANNÉ, MAGDA és MOLNÁRNÉ, ZSUZSA. A két magyar tanárnő rendszeresen levélben értesíti szerkesztőségünket tapasztalataikról. Molnárné leveléből idézünk:

Frittmann Lászlóné amerikai magyar gyerekek között

„Jövendő otthonunkat — amely nyolc hónapig életünk színtere lesz — gondosan felszerelték a legszükségesebb háztartási eszközökkel. Kezük nyomán látszott, hogy örömmel vártak minket, és szeretnénk, ha mi is jól éreznénk magunkat az ő világukban.

Voltak könnyes estéink. Távol a családunktól, az otthontól, de nagyon közel a magyarokhoz. Közel azokhoz, akik édesanyjuk, nagyanyjuk ajkáról hallották először a magyar szót, s akik naponta elmesélték nekünk, hogyan jöttek a szülők Amerikába. A nagyszülők magyar szive, gondolata oltotta beléjük a magyarságtudatot, s ez vezeti őket az iskola termeihez, amelyben esténként magyar társalgást tartunk, s ez a magyarságtudat vezeti gyermekeiket a magyar nyelvű iskola padjaiba."

Néhány sor Frittmanné leveléből:

„Az albanyi magyarokkal hamar megszerettük egymást, sokan értékelik mostani erőfeszítésünket. Eljárunk összejöveteleikre, ahol szorgosan kérdezősködünk az első magyarok iránt, akik Szatmár, Ung, Bereg megyéből jöttek a múlt század végén Amerikába.

Az iskolai munka jól megy, a gyermekek édesek, szépen dolgoznak, szó sincs rendetlenkedésről.

Egy héttel ezelőtt vendégül láttuk az itteni néptánc-csoport tagjait, körülbelül tizenöten jöttek el. Klasszikus magyar zenét hallgattunk lemezről. Az ünnepség végén elénekelték velünk a Himnuszt. A táncscsoport házaspárokból áll, francia, olasz, amerikai feleségekkel, azok is tudták a Himnusz szövegét, akik különben az igen-nemet sem tudják magyarul. Nagyon megható volt.

Csodálom azt az erőt, amivel nyolcvan év viszontagságán átvergődtek, megtartva a hovatartozás tudatát, megőrizve a honvágyat, sőt magukhoz igazították a helybeli lakosok érzelmi életét is. Erre jellemző a kedd esti faluoktatás, ami ingyenes, kétévestől százévesig mindenki jöhet. Két órán át tanítunk magyart. Erre az alkalomra leckéket írunk, sokszorosítjuk. Ezen a kedden kevés volt a száz darab leckelap. Kis falu Albany, kilencszáz lakosa van, mégis még kértek a második leckéből százat. A nem magyar tanítók is eljárnak ezekre az órákra és velünk együtt próbálják az á és az ö hangot kiejteni. Magnóra veszik tanításunkat és a kazettákat átadják a hiányzóknak."

FALUDI IVÁN

AZ ELDOBOTT ANYANYELV

A külföldön letelepedett magyarok közt akad jó néhány, aki azt állítja egy pár külföldön töltött év után, hogy nehezére esik az anyanyelvén beszélni. Többször [illegible] berek véleménye szerint a bevándorolt gyermek könnyebben birkózik meg az idegen nyelvvel, ha tökéletesen bírja szülei anyanyelvét.

A [illegible] válaszoltak a szüleik finn kérdéseire.

Jómagam esete is elég szomorú.

1926-ban a svédországi magyar követség bevonta a magyar állampolgárságomat.

AZ ÓHAZA VONZÁSÁBAN

Nem tudok svédül. S most egy svéd nyelvű előadást hallgatok lankadatlan figyelemmel, a felfedezés örömével. Milyen dallamos, érdekesen lüktető, szép hangzású nyelv . . . !

A skandináv nyelveket tanuló budapesti bölcsészhallgatóknak persze még többet jelent ez az este: nem minden nap fordul elő, hogy egy svéd író, irodalmár nyelvészeti elemzését hallgathatják.

egyénisége. Engem különösen az érdekelt hogy mit ad Adynak Párizs. Azt válaszolta: „Párizs mindent ad, csak családot nem ad." — Később fölkerestem a lakásán is ott, ahol ma az emlékkiállítás látható. Most is előttem van az egyszerűen beren

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« SICILY AND THE DEVELOPMENT OF SCIENTIFIC CULTURE IN THE WORLD »

Palermo 4 - 5 - 6 April 1973

July 22, 1978

Dear Bernard:

As a result of several unfortunate circumstances (in particular a hernia operation) your letter of May 22, about Dr. Jaroslavsky, came to my attention only now. Please do let me know whether there is any change in his situation - I hope he is back at his family by now. But if this is not the case, I will be glad, in fact eager, to do my best on his behalf.

All good wishes and an apology

Sincerely

Eugene (Wigner)

EUEGENE P WIGNER
8 OBER RD
PRINCETON NJ 08540

LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803
College of Arts and Sciences

DEPARTMENT OF BOTANY

AMERICAN REVOLUTION BICENTENNIAL 1776-1976
LSU
A BICENTENNIAL UNIVERSITY

March 20, 1978

My dear Mrs. Dirac,

It was a great pleasure to meet you and Professor Dirac and to speak with you, though ever so briefly.

There must be few if any Hungarians who are not acquainted with Petöfi's works, although he remains virtually unknown to the rest of the world. I have never been in Hungary, the land of my parents, but grew up in New York City hearing only Hungarian as a child. While I have tried to cling to this heritage, for most of my adult life I have had no contact with anyone who speaks the language. I have known "Egy gondolat ...." for a long time and recently tried my hand at translating it into English verse. It may eventually be published, but the journal's editor is looking for someone who can make a Spanish translation as well, so that it may appear in triptych form. I understand that at the University of Puerto Rico, where the Revista/Review Interamericana is published, there are several Hungarian professors, one or more of whom may have some interest in this project. Still, it shall probably be some time before this plan is realized, so I am sending you a copy of my effort now, as I promised to do.

I hope that you will not find this interpretation entirely disappointing, although as you will see, I have taken some liberties with the original. It was my aim to transmit something of the fiery spirit of the lines, rather than to attempt a more literal rendition.

With kindest regards to you both,

Cordially yours,

B. Lowy

Bernard Lowy

You are cordially invited (including wives, husbands, or dates) for dinner and a bit of after-dinner socializing, Wednesday, March 15, L Club of the Assembly Center, 6:00 p.m. cocktails, 6:45 p.m. dinner.

Eugene P. Wigner

Also on 14-III I was at the informal gathering at Roy Goodrich's home. Wigner and Dirac answered questions and reminisced about the past. Wigner's sister, Mrs. Dirac, was also in attendance. We talked of Politi.

2-III-1978

Thank you again for the enjoyable evening and for the set of poems which I liked very much. Best wishes again and you may like to look at the Magyar Hirek and have the Hungarian calendar.

Sincerely Eugene (Wigner)

EUGENE P. WIGNER
8 OBER ROAD
PRINCETON, N.J.
08540

December 4, 1977

Dear Dr. Lowy:

It was very good of you to write to me and to express your sympathy with my sorrow. Letters from friends do bring some consolation and, I am afraid, I need it.

Many thanks again and I hope to see you in Baton Rouge.

Sincerely
Eugene Wigner

July 16, 1945 - Alamogordo
Aug 6, 1945 - Hiroshima
Aug 9, 1945 - Nagasaki

Nuclear surface and sub-marine ships. USSR's Ice Breaker Lenin. 1st 1959 - N.S. Savannah has a reactor & 15,000 lbs U & which ± 670 lbs = U-235.

N.S. Thresher 1963 lost

Dec 2, 1942 - 1st chain reaction, west Stands, Stagg Field, Chicago
Georgi Weil, Fermi, Wigner, Zinn, Anderson, Compton, (Noble) 3:53 PM Chicago

Aug. 2, 1939 Einstein to
Pres. Roosevelt, via Alex
Sachs, letter written by
Szilard, signed by E.

Briggs Committee
Szilard, Wigner, Teller —
not Einstein

2nd Einstein letter 7 March
1940 — to FDR | 112 Mercer |

1943 — US Navy Bureau of
Ordnance x Einstein

Nature & N's law lay hid in night
God said "Let Newton be" and —
It did not last; The Devil howling "Ho"
"Let Einstein be" restored the status quo

339—ENTRANCE TO THE HARVEY S. FIRESTONE MEMORIAL LIBRARY, PRINCETON UNIVERSITY PRINCETON, NEW JERSEY

The six-story, $6,000,000 Harvey S. Firestone Memorial Library of Princeton University, completed in 1949, provides not only adequate storage space for books and appropriate exhibition rooms for literary treasures, but also, through arrangement of study places and faculty offices, brings together in one place the three elements of an education: teacher, student and books.

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Nov 15, 1977

Dear Lowy:

Another set of reprints arrived today! About 20 of them! Thank you very much and please do not go to more trouble.

I do look forward to seeing you

Eugene Wigner

EUGENE WIGNER
8 OBER ROAD
PRINCETON NJ
08540

POST CARD

C3

Professor B. Lowy
Department of Botany
Louisiana State Univ.
Baton Rouge LA 70803

Dr. Mary W. Wigner, Ex-Professor Of Physics at Douglass College, 76

Dr. Mary W. Wigner, a former professor of physics at Douglass College in New Brunswick, N.J., died yesterday at the Princeton Medical Center. She was 76 years old and lived in Princeton.

Dr. Wigner taught at Douglass from 1958 until her retirement in 1964. Her husband Dr. Eugene P. Wigner, one of three winners of the 1963 Nobel Prize for Physics. Both of the Wigners were associated with Albert Einstein in work involving the atomic bomb.

Dr. Wigner, who was born in Fair Haven, Vt., graduated from Wellesley College in 1922. She earned her Ph.D. from Yale and was a professor of physics at Vassar College from 1931 to 1941.

She is survived by her husband, a daughter, Martha W. Upton, and a son, David W. Wigner.

Nov. 10, 1977

LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803
College of Arts and Sciences

DEPARTMENT OF BOTANY

16-XI-1977

My dear Professa Wiqner,

I have just heard the dreadful news. Although I scarcely knew your talented wife, anyone who saw you together could only have been struck by the deep affection and respect that you so obviously shared with each other. Together with your saddened friends and colleagues, I mourn your loss. My hope is that in the face of adversity you may be granted the strength and determination to continue pursuing your noble work.

Sincerely,
B. Lowy

Rev. Moon: Benefactor To Scholars

By DANIEL S. GREENBERG
Special to The Washington Post

The Rev. Sun Myung Moon is widely viewed as an ecclesiastical hustler who has made it big through the hypnotic recruiting of confused adolescents and some mysterious connections to the South Korean regime.

What is not generally revealed is that Moon is a benefactor of the learned professions, and that for the past five years some of the world's most distinguished scientists and scholars have annually traveled at his expense — though virtually all are indifferent to, or even offended by, his spiritual endeavors. An odd combination it is, and one worth looking at, for Moon's relationship with many of the thoroughbreds of academe illustrates several important peculiarities of the world of learning.

Starting in 1972 with 20 participants from eight countries meeting in New York, a Moon front, the International Cultural Foundation, has annually organized and financed what has grown into a big scholarly assemblage called the International Conference on the Unity of

Analysis

the Sciences. The format is scholarly traditional, consisting of papers by academic celebrities, discussions and eventual publication of a proceedings volume. The subject matter is vaporous, but according to a Foundation press release, "Reverend Moon initiated these events to start a dialogue among different fields of study so that critical social problems might be solved."

In any case, the New York meeting was followed year to year by sessions in Tokyo, then London, then back in New York. Last year's meeting, held in Washington, drew 363 participants, including seven Nobel laureates, from more than 50 countries. The forthcoming meeting, Thanksgiving weekend in San Francisco, is expected to draw 300, including a Nobel contingent that's up to 10.

Now, allowing for the usual sprinkling of idiot savants in their ranks, how are we to account for the willingness of certified scholars to be associated with a seamy figure that few would even not do on campus?

The answer is that Moon, though often occupied with avoiding irate parents seeking return of their offspring, has nevertheless had time to acquire a shrewd understanding of the social structure of the knowledge industry; thus equipped, he has been able to link himself to some eminently respectable people. The formula is a simple one: Give 'em freedom to say whatever they please and pay all expenses to an attractive meeting place, which accounts for recent annual budgets of $400,000 in Moon money for each of these conferences.

But how has he been able to draw such distinguished people as Eugene Wigner, the Princeton physicist, and Sir John Eccles, both Nobel laureates, plus scores of other luminaries from science, the humanities and other friends of scholarship?

For starters, let it be noted that in the academic trades, the domino theory is valid. For example, several years ago, when all sorts of improbable people were touted as being associated in one way or another with the conference, inquiry revealed a fascinating chain in invitations and acceptances. Several big fish, such as Wigner, said they signed on because of genuine concern over the fragmentation of scientific knowledge. Several lesser fry said they signed on at the invitation of eminences they admired. And several others said, in effect, why not? — it was a free trip over a long holiday weekend with an opportunity to get together with some interesting people. All stressed that the invitations came with iron-clad assurances of scholarly independence, and there have never been any complaints on that score. Furthermore, Moon confines his own participation to a brief, bland address.

In the early days of the annual conference, some invitees dropped out, insisting they were late in learning of Moon's involvement. Lord Ashby, a leading figure in British scientific circles, described his appearance on conference literature as "entirely bogus." But the character of the sponsorship has obviously been no deterrent to annual growth for the conference. And it is on this point that the rationalizing of some of the scholarly elite is most interesting.

"What's 'clean' money?" one of them typically asked, as he acknowledged the origins of Moon's largesse. Others insisted that some of our greatest foundations are endowed with the profits of long-ago sweatshops and dubious deals. As for the scientists' lending their respectability to Moon's tattered public image — well, some observed, it is official U.S. policy to collaborate in science with foreign [illegible] routinely abuse dissident

LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803
College of Arts and Sciences

DEPARTMENT OF BOTANY

AMERICAN REVOLUTION BICENTENNIAL 1776-1976
LSU
A BICENTENNIAL
UNIVERSITY

12-XI-1977

Dear Professor Wigner:

In today's mail I received the few additional reprints here enclosed of your articles published in the "Revista" and am fowarding them to you immediately. I understand that this is the total supply that the printer had on hand. Unaccountably, they were not sent out with the original shipment. I regret the delay in having these copies sent to you and hope you can pardon the mismanagement in handling the matter.

Cordially yours,

B. Lowy

Bernard Lowy

Kedves Professzor Úr!

Egy nagyon boldog születésnapot kívánok! On your 75th birthday I join your many well-wishers and admirers in sending you my felicitations. May your most distinguished career continue for many years to come, with good health and contentment in all your endeavors.

LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
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College of Arts and Sciences

DEPARTMENT OF BOTANY

1-IV-1977

Kedves Professzor Ur!

Yesterday at the annual Sigma Xi banquet your absence was missed, but we are hopeful that at some future date we may be privileged to have you address the young, aspiring scientists who are just beginning their careers.

Your two informal, evening talks at the homes of Drs. Goodrich and Jones were memorable. Those who were there are not likely to forget your good-humored, engaging reminiscences about some of your colleagues, whose ideas and works have so deeply influenced the lives of all of us in this century. My wife and I were very happy to join you at the spirited party you arranged at the assembly center. It was the first time in over two decades that I even attempted to dance.

I have no firm date for the appearance of your article in the "Revista Interamericana Review", except that it will be in vol. 6, No 4, but I'll have reprints sent to you as soon as they come off the press.

With kindest regards to you and your "better half".

Sok szivélyes üdvözlettel — Cordially,

Bernard Lowy

Out Looks

People

Dr. G. Randolph Rice, associate professor of economics, has been named chairman of the Department of Economics, succeeding Dr. Lamar Jones, who has become associate dean of the College of Business Administration.

New associate dean of University College is *Dr. Nan Singleton,* assistant professor of home economics.

Dr. St. John P. Chilton, head of the Department of Plant Pathology, has retired after 37 years' service to LSU. *Dr. Weston J. Martin,* professor of plant pathology, is now acting department head.

Dr. Norwin E. Linnartz, professor of forestry and wildlife management, has been named assistant dean of the Graduate School. *Dr. Carolyn Hargrave,* associate professor of quantitative methods and associate Graduate School dean, is currently on sabbatical leave at Stanford University.

Dr. Paul W. Murrill, chancellor of LSU, will serve for one year on the 15-member National Advisory Committee on Black Higher Education and Black Colleges and Universities, during which time the committee will, among other duties, investigate means of raising black participation in higher education, analyze and plan the future role and healthy development of America's historically black colleges, and recommend a 25-year plan for increasing the quality of black education.

The LSU Board of Supervisors has approved a recommendation to offer selected third- and fourth-year college courses on the campus of LSU at Alexandria. The program, which initially will make available courses in general studies and business administration, provides for courses to be taught primarily by faculty from LSU in Baton Rouge, with baccalaureate degrees awarded by the Baton Rouge institution. University officials have emphasized that the action does not confer status as a four-year institution on LSUA.

Spring enrollment on the LSU campus totals 22,245 resident students — 17,471 undergraduates, 4,774 in graduate and professional studies. This represents a drop of 448 students under the enrollment in the 1976 spring term. Current enrollment breakdowns are as follows: Junior Division, 5,182; Agriculture, 1,490; Arts and Sciences, 2,318; Business Administration, 1,804; Chemistry and Physics, 636; Education, 1,468; Engineering, 1,357; Environmental Design, 880; Music, 83; University College, 2,253; Graduate School, 2,508; Graduate Division of Education, 900; Law School, 932; Social Welfare, 225; Veterinary Medicine, 209.

The Louisiana Board of Regents has recommended implementation of the state's funding formula at 100 percent of instructional requests for all of the colleges and universities under their jurisdiction. However, they have trimmed capital-outlay requests for state colleges and universities from $400 million to $161 million over the

temperature-controlled incubator and cold rooms) have been carefully grouped for maximum efficiency of faculty instruction and research.

Office and laboratory furniture and equipment was moved in quantity to the new building from the former Coates Chemical Laboratories building (which is to be converted into a classroom-office facility). When the old furnishings did not seem to the new tenants to suit the splendor of their new building, faculty and students alike took up hammers, nails, saws, and paintbrushes, and became self-styled interior decorators.

ARCHITECTS for the Chemistry-Biochemistry Building were Harvey & Callari of Baton Rouge and Thompson B. Burk & Associates of New Orleans; contractor was Charles Carter and Company of Baton Rouge. Construction was begun in November 1972 and completed last September. The $8 million price tag was met with general-obligation bonds.

THE CHEMISTRY-BIOCHEMISTRY Building is now fully open for business, alive with brisk student and faculty activity. (Some 3,000 students each semester are enrolled in general chemistry courses alone.)

With the University's new $2.2 million Library-Classroom Building (which was completed last November) located to the immediate west, and the Life Sciences Building (which was finished in 1970) to the adjacent north, LSU has a "science-complex" that is virtually in the heart of the campus.

A MEETING OF CHEMICAL MINDS

IN CONJUNCTION WITH the dedication of the new Chemistry-Biochemistry Building, LSU held a symposium March 18-19, with eminent scientists discussing the impact of chemistry on the world today, and its potential for future societies.

NOBEL LAUREATE Melvin Calvin, director of the University of California Laboratory of Chemical Biodynamics in Berkeley, pointed to nature as a possible model for energy sources in years to come. He suggested that the principle of photosynthesis — the means by which plants produce chemical compounds with the aid of light — may be used in the distant future to construct synthetic systems for the production of fuel, fertilizer, and power. He suggested that Louisiana sugarcane and other plants are renewable sources of energy and materials, and cited the Brazilian use of fermented alcohol from sugarcane to fuel automobiles.

Dr. Milan R. Uskokovic, director of the Natural Products Chemistry Department of Hoffman-LaRoche, Inc., discussed the development of new drugs, with emphasis on the use of natural products in medicine. He described the laboratory synthesis of various intermediates of vitamin D, and their uses in managing metabolic disfunction, particularly in bone diseases.

Some myths and realities about the present condition of the ozone layer above the earth were presented by Dr. F. S. Rowland, professor of chemistry at the University of California at Irvine. He discussed the perils to the integrity of the ozone zone, and the potential hazards involved.

Dr. Philip West, LSU Boyd professor of chemistry, addressed the symposium on the good side of pollution, as he showed that absolutely "pure" water and air cannot support life. (However, Dr. West — a leading authority on pollution measurement — was by no means endorsing destructive pollution.)

Symposium banquet speaker was Dr. Norman Hackerman, president of Rice University, who traced the history of federal support to science, predicted that it will accelerate for basic science, but cautioned that along with that support must come some federal guidance.

Just prior to the official dedication on March 19, the symposium concluded with a panel discussion on the future of chemican education by Nobel laureate Dr. Willard F. Libby, professor emeritus of chemistry, University of California at Los Angeles, and LSU consulting professor; Dr. T. S. Burkhalter, corporate manager for environmental affairs, Texas Instruments; Dr. William Arceneaux, commissioner of higher education, Louisiana Board of Regents; and Dr. C. G. Overberger, vice-president for research, University of Michigan. Subjects examined with audience particpation included a general feeling that the chemistry Ph.D. degree has become too narrow, that industry is looking for chemists at all levels who have broad enough backgrounds to interact with the public, that too few legislators have sufficient scientific background, that university research has a significant place in the national societal scene, and that it is not possible to have quality without adequate financial support.

Dr. Hulen Williams, dean of the LSU College of Chemistry and Physics (left), at the chemistry-biochemistry symposium, with three Nobel laureates: Dr. Eugene Wigner, professor emeritus of theoretical physics at Princeton University and an LSU visiting professor; Dr. Willard Libby, professor emeritus of chemistry at the University of California, Los Angeles, and an LSU consulting professor; and Dr. Melvin Calvin, director of the Laboratory of Chemical Biodynamics at the University of California, Berkeley.

LSU Outlook

Published bimonthly by Louisiana State University. Entered as Second Class matter at the Post Office at Baton Rouge, La. Editorial Office, 244 Thomas Boyd Hall, LSU, Baton Rouge, 70803.

Letters to the editor

Iranian statements shocking

Dear Editor:

This reader was truly shocked by the statement of the Iranian Student Association which appeared in the March 30 issue. It accuses the Shah of fascism, the U.S. of having imposed a yoke of imperialism on Iran. If that is so, why do they grace a U.S. university with their presence? Why do they accept part of the help which the people of Louisiana extend to this University in order to assure a high standing therefor?

They scold the Shah for cruelty and terrorism. Yet, apparently, they are not afraid of the retribution of the Shah nor the retaliation of the CIA for their abuse. On the other hand, they do gravely threaten the student who supported this country and Iran's Shah, in case he returns to Iran. Whi side is the terrorist one, the one they do not fea the one that threatens?

There are also flagrant inconsistencies i article, in particular on the financial pro Iran. And, finally, do they happen to which country helped mankind most ir ation of nazism and fascism? It is t liberty and indulgence which they abus

E.P. Wigner

Iranian protest here defended

Dear Editor:

A letter from Professor Wigner appeared in the Reveille about two weeks back concerning the behavior of Iranian students. I waited all this time with the hope that Iranian Student Association or someone on their behalf would say something about it, but apparently it went unnoticed.

As an inhabitant of this planet, destined perhaps to live the rest of my life on it, my most precious dream remains that of a better world with greater freedom. Dr. Wigner's letter directly threatens my dream because it denies the basic human right to protest against oppression.

And that is why although I am not an Iranian and have not been tortured, imprisoned or maimed by the Shah and his regime, I feel compelled to protest the reverred professor's view.

His main grievance seems to stem from the fact that the protesting Iranians call the Shah a puppet of the U.S., yet they are carrying out all this protest in this very country. What is more, some of them are here only through the generosity of the Shah's government providing them with scholarships.

All this is very true. I hope the professor would at least agree that there is more than reasonable grounds to believe that the Shah's government is not exactly overflowing with the milk of human kindness. Were it so, I cannot think of even one sane person who would go into the trouble of printing and distributing pamphlets and such and be arrested (for disturbing the peace-tut! tut!) much less hundreds of them.

I have no firsthand knowledge whether the U.S. is actually sponsoring the alleged actions of the Shah, I doubt strongly if Dr. Wigner does. The fact is that the Iranians believe it to be so and they have a right to protest. As we all know so well, even a government of the people for the people by the people does not feel obligated to tell its people exactly in what pies its fingers are all the time.

What is wrong in making the people of the United States conscious that such an accusation exists and motivating a concerned citizen to look into his government's alleged involvement?

There may be something unheroic about fighting and denouncing a system while accepting the advantages it offers, but more often than not it is not only the most practical but also the most effective recourse. Doubtless, in terms of heroism, there are people in the Soviet Union who deserve more respect than Solzhenitsyn simply because they are fighting where the real battle is, to the best of their ability.

Unfortunately, the rest of the world does not know very many of them and their resistance does not seem to be all that effective either. (Hilbert and Heisenberg vs. Wigner and Szilard?).

Ironically enough, if the professor remained in the country of his birth or where he received the first of his long chain of doctorates, it is almost certain that the 1963 Nobel laurel in physics would have gone to someone who was living and not long dead 'cause he told the wrong stuff to the wrong people at the wrong time.

Ah well. Perhaps he is right. It has been some thirty years since the flames of the last great war died down and in the aftermath one may indeed sit down and think that if the professor stayed where he was, there is at least an even chance that the first A-bomb would not have been ready in time to do away with a hundred thousand Japanese. History has always been shaped by people with initiative. And no one can say that Dr. Wigner lacks initiative.

I am just not sure, like many many others belonging to this generation. That immeasurably great contributions in quantum mathematics weigh more than a few thousand deformed children.

Iranians, the professor is right. Go back, protest all you want out where you belong, and die. Who cares anyway? This is in keeping with what the professor believes in and has always practiced. Amen.

P.K. Dasgupta
Grad 7

ISA needs to prove anti-Shah allegations

Dear Editor:

World opinion of a country and its ruler is a powerful motivation force. A popular leader can be enhanced in the eyes of the world by the people who travel abroad. But when a group of people travel abroad and slander their ruler in the cause of "freedom" or whatever, and justify it for the masses, then one must consider two options: either the arguments are true or, if based on truth the degree, or secondly, whether or not the masses are really being manipulated through propaganda. The Iranian Students Association is justifying its cause to overthrow the Shah of Iran for the benefit of the masses. It would be interesting to note, however, exactly how they accomplish this.

After some time in America, this sad lot of students endeavor to hide while enlightening the world to certain actions performed by the Shah with the aid of the CIA and the Pentagon. Every paper, article or speech given, depicts the Shah as a puppet. Such accusations are never proven as--THE ISA NEVER ARGUES SPECIFICS. This is a significant fluke. Realize that the speculations abound but ARE NEVER PROVED. In all their years has the ISA ever shown proof of these secret deals? Instead, they deal with vague modalities and unsupportive generalities that look good on paper but fail to stand under close scrutiny. These accusations are forwarded to the public as things that exist (government) without offering any counter proposals (anarchy).

The Shah is accused of secret deals with government agencies, true, but the accusations extend further to the SAVAK, the Iranian equivalent to the gestapo, operating in the U.S. Unfortunately, not only do they fail to mention anyone being taken away in the middle of the night, but they fail to give any propensity for the SAVAK to scurry about in the middle of the night. Afterall, even James Bond sleeps, too. Realistically, they offer us nothing but their speculation. If they are so thoroughly convinced that their accusations are true, then where is the proof? A note, letter or something? There aren't any. But if such things do exist, it can be obtained. The Freedom of Information Act can be evoked to obtain information on such accusations, or to find out who's who in SAVAK, one may simply utilize the Foreign Agent Registration Act. It hasn't been done, but the allegations still persist. There is absolutely no justification for their statements, as there is no concrete proof. The proof, if it exists, is obtainable, but no action has been taken along these lines.

Every known problem in Iran is the fault of the Shah, his policies, his methodology of handling the problems, etc. (Doesn't that apply to President Carter if something goes wrong here?) Yet, he as the leader is responsible for his government. But not everything is caused by the Shah, nor is the effects of any of his actions bad. (Even Jimmy Carter would like to have a surplus budget). The cause and effect argument is one of the easiest arguments to use against the Shah. If the effect is famine, the cause is the Shah, for example, can be wielded with devastating results. The ISA, however, notes every "bad effect" to be caused by the Shah. Isn't it conceivable that

(See Page 6

ISA needs to prove anti-Shah allegations

(From Page Five)

the Shah has done at least ONE good thing?

In the game of politics one must be able to prove any given contention. Often, this fact can be side-tracked so that accusations can be made, demanding that the persons accused prove innocence.

Well, in America, innocence is guaranteed until proven guilty. Let the ISA PROVE guilt. The mechanisms exist. Until they do, though, they should follow the old gamblers' advice of "put up or shut up."

S.H.R.G.

SEE: HUMAN RIGHTS IN IRAN, HOUSE SUBCOMMITTEE U.S. PRINTING OFFICE- AUG-1976. 277P.

See: Wigner, E. 1969. Survival and the bomb. Indiana Univ. Press. 307 pp. 2d. pp 79-107. Francis F. Wagner on Siege of Budapest [April 1944 – Jan. 1945 esp. Dec-Jan.]

18-II-'77

John Thieret phoned at ±2:50 PM to ask me to give a talk to the students of Northern Kentucky University on a subject of my choice, said talk to be delivered via telephone to ±70 students who will be watching a screen as my slides are projected on my command. I said I was willing to think over the possibility of a ±15 minute presentation with ±5 minutes question period. No date has been set, but ± a month from now. ——— →

18-II-'77.

While I was speaking to Dr. Wigner, a young long-haired man, with motorcycle helmet in one hand came in to the office (after knocking). He was to be among the guests to hear Wigner speak at Jones's house at 8 PM. He asked the naive question of whether Dr. W. was associated with the "Manhattan Project"? Dr. W. calmly told him that he had been and they chatted for a few minutes more. When the young man left, I told Wigner that it seemed incredible that anyone should not know about his role in that famous project, but the questioner was probably only ±20

I have asked Dr. Wigner to talk at the Sigma Xi banquet and he has tentatively agreed, pending consultation with his wife (his "better half," he says). This evening at 8 he will talk to a group at the home of Dr. Wm V. Jones [508 Sunset Blvd.] and Dr. Wigner invited me to join them. The problem about the banquet is that the Wigners plan to leave B.R. on that day! — This evening at Dr. Jones's home (508 Sunset) D.W. spoke informally, reminiscing about his early life in Hungary & Germany. He will not be able to address Sigma Xi. Perhaps next year.

so all this was ancient history! Wigie picked up a well worn notebook which the young man was there, and commented about it containing quotes from Einstein + others — apparently a kind of diary. — I suggested to Dr. W. the contrast that his talks about research + science would have on young scientists just beginning their careers. whether he thinks it not may depend on how flexible Mrs. Wigie is about cleaning a day late!

38 people. I

18-II-'77

DR. JONES: 5880 SUNSET

8:30 PM — Dr. Wigner began by comparing idea of "scientist" in his day & today. Then something rare - strange. — Story of W's father asking him what he wanted to do when he grew up, he answered: "a scientist and a physicist." How many physicists jobs are there? "Four". "Do you think you will get 1 of them?"

Studied in Germany (Tech Hoch.) Chemical Engineering. Ev. there learned to experiment. His teacher specialized in making subject interesting — i.e. small explosions. His teacher were very good. —

Reminiscences: School with Planck, Einstein, Laue.

Einstein was extremely friendly.
Wigner's Ph.D. in Physical chem.
Paper anticipated the uncertainty
principle." Polyani Wigner is
teacher in Physics. — Reworks on
atomic structure; great mysteries
involved. This ± 1923. Returning
to Hungary, u. continued interest
in Physics. Heisenberg's article
"amazed" u. — 135 marks 70 pf.
(~ ± $93/mo.) his 1st teaching
Job. Zeit. f. Physic.: "Money
is not the most important thing."
Personal contacts better in old days.
Sommerfeldt the father of every
theoretical physicist.

Born very retiring - hard to approach. Hilbert had become (W's wife Marie occasionally reminds him of a name that escapes him.) [½ hr.]

Waring's theorem. New Ist at 250 marks (= ± $60/mo.).

Reminisce about Teller who was frustrated & called himself "stupid!" W. agreed w him. — Pauli - Heisenberg. Pauli invited to Princeton to talk: to Wigner! "You just have to know everything". Wigner's book on group theory - He earned 2100 marks (- $500.)

IV

Neumann and Wigner accepted a job at Princeton at $600/mo, ± 1930 Feb. 9:15 PM

7 period — "Guiding Fields"

Nernst:

March 11 next table.

Szilard - deep philosophical insights - couldn't stick to a problem. —

Dirac - detached, impersonal; not an inspiring teacher.

Schrodinger yes.

18-II-'77

Remarks introducing Dr. Wigner* at EK banquet:

* He cannot make it this year. Perhaps next.

EK is synonymous with RESEARCH – ZEALOUS R!

What could be more fitting then to have with us this evening one whose life has been dedicated to research — research in mathematical physics and atomic theory, fields that have profoundly changed the world in our lifetime. Dr. Wigner's record as a researcher is known to the world ~~[in ... physics]~~, so it would be not only presumptuous for one to attempt simply to catalog his achievements ~~accomplishments~~ in all their range and depth, but a task doomed to failure. Nor is there a need to recite the multitude of ~~...~~ international honors ~~...~~ that he has received in recognition of his ~~...~~ outstanding accomplishments. The purpose of our meeting is to initiate into ~~...~~ EK, young researchers who are beginning their careers in one of the noblest professions, the chief aim of which is a dedication to finding new knowledge that will enable us to better understand the universe ~~we live in~~ the nature of and our relationship to it. As a prominent contributor towards these aims, and as a living example of the meaning of a lifetime devoted to research, we are all deeply ~~profoundly~~ honored and in turn wish to honor ~~to welcome~~ our Visiting Professor of Physics, ~~and~~ Nobel Laureate Eugene Wigner!

508
Sunset Blvd.
Prof. Jones
8PM

Room

THE SOCIETY OF THE SIGMA XI

For the Encouragement of Scientific Research

LOUISIANA STATE CHAPTER
BATON ROUGE, LOUISIANA 70803

February 14, 1977

"SIGMA XI" PROGRAM COMMITTEE MEETING:

FRI 10:40

FRIDAY: FEBRUARY 18, 1977 - 10:40 A.M. - DEPARTMENT OF FOOD SCIENCE CONFERENCE ROOM 113

Eleanor Kelly - Home Economics
Bernard Lowy - Botany
Carruth McGehee - Mathematics
Rhonda F. Cooper - Microbiology
Bill Johnson - Poultry
Bob Grodner - Food Science
M.C. Morrissette - Veterinary Physiology Pharmacology & Toxicology

A meeting of the Sigma Xi Program Committee has been set for Friday, February 18, 1977 at 10:40 A.M. in The Food Science Conference Room, Room No. 113, Food Science Building.

The main topics will be recommendations for the Banquet Speaker, Thursday Evening, March 31, 1977, and a Luncheon Speaker for May 5, 1977.

If you cannot attend, please let me know at your earliest convenience by calling me at Ext. 5206.

Thank you for your help.

Bob

Robert M. Grodner
Vice-President, Louisiana Chapter
The Society of Sigma Xi

Signed for Sigma Xi

INTER AMERICAN COMMISSION ON HUMAN RIGHTS
COMISION INTERAMERICANA DE DERECHOS HUMANOS
COMISSÃO INTERAMERICANA DE DIREITOS HUMANOS
COMMISSION INTERAMERICAINE DES DROITS DE L'HOMME

ORGANIZATION OF AMERICAN STATES
WASHINGTON, D. C. 20006 U.S.A.

24 de noviembre de 1979

Ref: CASO 3387

Estimados señora Gerchunoff:

Tengo el agrado de referirme al caso arriba citado, relacionado con la situación de Máximo Eduardo Jarolavsky en Argentina.

Me permito informarle que el Gobierno de Argentina, en nota de 15 de noviembre de 1979, ha dado respuesta a nuestra solicitud de información respecto de este caso. Las partes pertinentes de dicha respuesta se acompañan a la presente.

Le rogamos que nos envíe, a la brevedad posible, sus observaciones sobre la respuesta del Gobierno, junto con cualquier información nueva o complementaria, particularmente la que tienda a impugnar la respuesta de dicho Gobierno.

Confiando en que las gestiones de la Comisión ayuden a esclarecer la situación en referencia, me subscribo de usted,

Atentamente,

Edmundo Vargas Carreño
Secretario Ejecutivo

Señora
Blanca Gerchunoff
a/c Dra. Luis J. de Aslan
Juan Francisco Seguí 4400
1425 Buenos Aires, Argentina

Received from Lucha: II, 1980.

Caso: 3387 (JAROLAVSKY, Máximo Eduardo)

En relación a la comunicación efectuada a esa Comisión, donde se denuncia la desaparición del ciudadano Eduardo Máximo JAROLAVSKY, el Gobierno Argentino hace saber:

Se expresa que el nombrado concurrió el día 19 de noviembre de 1975 a visitar un paciente, en su calidad de profesional de la medicina, desapareciendo desde esa fecha, careciéndose de noticias sobre su paradero.

Se agrega creer que el mismo fue secuestrado por fuerzas militares y llevado a un supuesto campo de detención, incluso se piensa que se encuentra vivo en uno de esos establecimientos, probablemente en la provincia de Tucumán.

Se apuntan diversas consideraciones en cuanto a la personalidad del citado, efectuándose rogatorias tendientes a preservar su integridad.

De las averiguaciones practicadas se ha podido establecer en forma definitiva que el causante no fue detenido por personal dependiente de las Fuerzas Legales en el ejercicio de su competencia, descartándose categóricamente los terminos vertidos en cuanto a la autoria del presunto hecho delictual.

Los informes vertidos por los respectivos organismos evidencia con meridiana claridad lo expresado con anterioridad. Así la Policía Federal manifiesta con fecha 8/9/78 y 28/9/78, desconocer el paradero y situación legal del causante, como así también ignorar todo antecedente sobre su presunta desaparición, detención o secuestro.

En el mismo sentido que el apuntado, con fecha 13 de septiembre de 1978 el Ejértico Argentino manifiesta no tener constancia alguna de que esa fuerza halla intervenido en ningún procedimiento o halla efectuado algun acto tendiente a la privación ilegal de la libertad del causante, agregando que el mencionado no se encuentra alojado en ningún establecimiento de su dependencia.

De los informes requeridos a las autoridades de la Provincia de Tucumán, surge que la persona por la cual se pide, no fue detenida en el ambito de la misma.

En cuanto a los recursos que otorga la jurisdicción interna, de las averiguaciones practicadas se desprende que no han sido agotados, encontrándose entorpecida su actuación ante la falta de datos y elementos que permitan una investigación más profunda del hecho en cuestión.

De lo circunstanciado y de los informes arrimados debidamente surge que los dichos vertidos en la respectiva denuncia deben ser descartados in limine en razón de constituir un agravio a los habitantes de esta Nación constituyendo meros relatos fantasiosos y carentes de toda seriedad.

Por último, Sres. miembros de la Comisión, se recalca enfaticamente que en la República Argentina no existen los "Campos de Detención", inventados arteramente en la denuncia, cuya mención no persigue otro fin que el desprestigio de la Nación toda y crear confusión en el ánimo de los integrantes de ese Organismo.

Copy given to Dr. Wigner for corrections, additions, etc, with his changes penciled in. Brought to my office 17-II-1977.

Response to Dr. Cobas's article

Several of Dr. Cobas's statements are in agreement with my views. For example, it surely would be useful to economize and not allow energy consumption to increase to our much more, and certainly not to the extent that Dr. Cobas assumes ~~that~~ it will. I heartily concur with his suggestion to reduce the consumption of fossil fuels. As we both observed, these will continue to be needed for a variety of other functions, including the reduction of iron ores to iron. I also mentioned the danger of the "greenhouse effect," an increase in the temperature of our environment by the accumulation of carbon dioxide produced by the burning of coal, oil or natural gas. I too concur with the suggestion to provide more effective insulation for our homes and more efficient motors for our transportation media. Dr. Cobas does not mention the possibility of using heat pumps in our homes, but this would also be desireable. ~~Nor am I~~ Also, I am wholeheartedly in favor of ~~at all opposed to~~ the further exploration of the use of solar energy.

Dr. Cobas suggests that the power consumption of industry should be reduced, but ~~but even if that were practicable,~~ proposes no concrete measures ~~are proposed~~ towards achieving this goal. It should be pointed out that at present, U.S. industry hardly consumes more power per unit gross national product than the industries of other nations.

~~I believe that some parts~~ Some of Dr. Cobas's proposals remarks are not too very clearly defined. ~~As an example,~~ He proposes the production of "electrical energy as a by-product of the steam produced in factories." Which factories produce significant amounts of steam and how is that steam to be ~~harnessed~~ captured and used? Does he mean, conversely ~~Conversely,~~ does this mean that also the heat ~~produced~~ rejected when electricity is generated can also be used for the heating of homes? This would be a worthwhile proposal, even though it would require considerable investment to make it operational.

Dr. Cobas criticizes the relatively low estimate given in my article for

U.S. power requirements. These estimates are based on the belief that we shall not want to consume much more energy in the future than we are doing now. That some estimates of our future energy consumption are grossly exaggerated is supported by the observation that our per capita energy consumption increased only by a factor of 1.6 in 20 years, whereas that of Europe doubled in 12 years and Japan in 6 years. Does this not indicate that we are approaching the fulfillment of our energy demands? Dr. Cobas does not comment on this question.

Another of Dr. Cobas's points that is not very clear is his doubt that an increase in the cost of energy will induce the more economical use thereof. He does not believe that "energy conservation is achieved more by price than by policy; that is, it is more rhetorical than real." Does it not seem logical that a higher cost of energy would induce individuals and perhaps industries to an even greater extent, to adopt stringent measures to reduce consumption? Finally, what is meant by "soft technologies"? Let us turn to those points on which I disagree with Dr. Cobas. The most important of these is associated with his fear that unless we discontinue the operation and construction of nuclear reactors, terrorists will acquire nuclear explosives and create havoc. We are as apprehensive of terrorist acts as he is and in my article I suggest that more attention be given to this problem. However, abolishing nuclear power would give very little assurance against the acquisition of nuclear materials by a terrorist, as long as other nations have nuclear reactors. Nuclear materials can be stolen from, or even furnished by, other countries , then clandestinely imported. In fact, it is highly probable that the perpetrators of an explosion could be more easily traced, had they previously visited one of our nuclear installations. Consequently, the terrorists would do better acquiring their explosives in another country. Even more important is the fact that other terrorist weapons such as pathogenic bacteria can be used to contaminate a water supply. These organisms can be acquired with relative ease and a saboteur is far more likely to

escape detection. Altogether, I do not believe that the operation of nuclear reactors adds significantly to the danger of terrorist acts.

I should like to add a remark on the bomb design made by a Princeton University student mentioned by Dr. Cobas. As it happens, I was one of the readers of that student's thesis. I thought it showed considerable skill and understanding and it was therefor recommended for acceptance. Nonetheless I must emphasize that the equipment designed by that student would never have exploded. This is not surprising, since the design of the nuclear bomb which eventually did explode took the concentrated effort over a considerable period of time of many of our most able physicists. Their work could ~~not conceivably be successfully~~ hardly be duplicated by a single individual, ~~regardless of his ingenuity or determination~~ sideline work.

Dr. Cobas criticizes the author, who "places such great emphasis on the pollution produced by the burning of fossil fuels while he gives very little importance to radioactive contamination produced by nuclear reactors or to the danger of possible catostrophic accidents." ~~As~~ It was pointed out, however, that the burning of most coal causes more radioactivity to escape into the atmosphere than is emitted by a nuclear reactor with the same power production. This is, perhaps, difficult to believe but true nonetheless. Furthermore, most coal contains sulphur, and its oxidized product, sulphur dioxide, creates a much greater health hazard than (its) radioactivity. We hope that means will be discovered to reduce the emission of sulphur dioxide by coal burning plants, and we ~~hope~~ expect likewise, that the safety of nuclear reactors will be still further perfected. This ~~is~~ remains desirable even though, in contrast to the record of some 100,000 cases of black lung among coal miners, nuclear reactors have not caused a single known accident to date.

Regarding the employment question, it would be interesting to know the reason for Dr. Cobas's objection to the large number of engineers (100,000), skilled workers (420,000) and unskilled workers (140,000) which the construction of nuclear reactors would require, since he strongly approves of the fact that fossil fuel plants would"provide work" for many people? Is there not a "slight" contradiction between these views? In any case, I do not think it likely that the design, construction and supervision of 830 units of machinery, many of them identical, would require the work of 100,000 engineers for 10 years.

~~My~~ The refutation of some of Dr. Cobas's arguments should not obscure the fact that in spite of our different interpretations regarding the uses of nuclear power, I am grateful to him for having stated his views. Only by considering such an exchange of ideas will it be possible for the layman to reach an informed decision. ~~I am convinced that a~~ The consideration of his objections to nuclear power, which fairly represent the views of those who oppose it, will only strengthen the arguments for its controlled, intelligent use and will make still more cogent and decisive our need to harness nuclear energy for the benefit of us all, in the long run. As to myself, the reading of the points he makes, which I assume to be a fair summary of the objections to nuclear power, strengthens my belief that an intelligent and careful use of this power will be beneficial in the long run.

Copy of Dr. Wigner's article with my editorial changes. Dr. Wright came to my office with it on Feb. 14, 1977. After making these changes I retyped the ms, with additional changes on Feb. 16.

Several of Mr. Cobas's statements on the energy problem are in ~~full~~ agreement with ~~our~~ my views. It surely would be useful to economize on energy and ~~surely, the~~ its consumption should not increase much further, ~~surely~~ certainly not as much as he assumes it ~~actually~~ will ~~increase.~~ ~~Second, we~~ Also, I heartily concur with his ~~request~~ suggestion to reduce the consumption of fossil fuels. As both ~~he and also the article he comments upon~~ we observed, fossil fuels will continue to be needed for a variety of other functions ~~as~~ including the reduction of iron ores to iron, ~~is one that was mentioned in the original article.~~ ~~This~~ I also mentioned the greenhouse effect, ~~i.e.~~ the increase of the temperature of our environment by the accumulation of carbon dioxide produced by the burning of coal, ~~or~~ oil or natural gas. ~~Third, we~~ I heartily concur with his suggestion to provide more effective insulation for our houses, and more efficient motors for our transport media. ~~He~~ Dr. Cobas does not mention the possibility of using heat-pumps for heating our houses but ~~we would concur with that suggestion also.~~ this would also be desirable. Finally, ~~we agree with his suggestion that~~ I am not at all opposed to the possibility of the use of solar energy be further explored.

Mr. Cobas ~~also~~ suggests that the power consumption of the industry should be reduced, ~~the initial article's author wrote that he does not know whether~~ however, I am not sure that this ~~will~~ would be practically ~~feasible~~ possible and Cobas does not propose concrete measures to accomplish ~~it.~~ towards its attainment. ~~We~~ I hope that he ~~will~~ turns out to be right and that it will be done in all countries. At present, the U.S. industry hardly consumes more power per unit gross national product than other nations.

There are some parts of Mr. Cobas's article that are not so clearly defined. ~~we did not understand.~~ He proposes the production of "electrical energy as a by-product of the steam

produced in factories." Which factories produce significant amounts of steam and ~~what~~ how is that steam used ~~for~~ to be? Does he mean, conversely, that the heat ~~rejected~~ produced? when electricity is generated be used for the heating of houses? This would be a worthwhile proposal, even though it would require considerable investment, to make it operational.

~~As was alluded to before,~~ Mr. Cobas criticizes the low estimate ~~of the~~ given in ~~my original~~ article relatively for ~~the~~ U.S. power requirements. These estimates were supported by the belief that we will not want to consume much more energy in the future than we do now ~~consume~~ since we already have enough of it. Similarly, there ~~also~~ should we ~~do not~~ want to consume more food ~~than we now consume~~. That some of the estimates of our future energy consumption are grossly exaggerated was supported by the observation that our per capita energy consumption increased only by a factor 1.6 in 20 years, ~~while~~ whereas those of Western Europe doubled in 12 years, and of Japan in 6 years. Does this not indicate that we are getting close to having our energy demands satisfied? Mr. Cobas does not comment on this point.

Another of Dr. Cobas's points was not clear ~~A second remark~~ which ~~we did not understand~~ was ~~expresses~~ his doubt that an increase in the cost of energy will induce more economical use thereof. He criticizes the idea that "energy-conservation is achieved more by price than by policy; that is, it is more rhetorical than real." Does it not seem logical that ~~Would~~ a higher cost of energy would ~~not~~ induce individuals ~~the people~~, and perhaps even industries to a greater extent, ~~more the enterprises~~, to adopt ~~introduce economic~~ measures for ~~to~~ reduce ~~such~~ consumption?

Finally, ~~it is not at all clear to us~~ what is meant by "soft technologies"?

Let us now turn to those points on which ~~we~~ I disagree with Mr. Cobas. The most important of these is connected with his fear that unless we discontinue the operation and the construction of nuclear reactors, terrorists will acquire

nuclear explosives and ~~will~~ create havoc. Of course, we are as apprehensive of terrorist acts as he is and ~~the original~~ my article ~~does~~ suggests that may have to be given added attention to this problem; ~~these may create.~~ However, ~~our~~ abolishing nuclear power would give very little assurance against the terrorist's acquisition of nuclear materials as long as other nations have nuclear reactors. The nuclear materials can be stolen from, or perhaps even be furnished by, other countries and then imported clandestinely ~~into ours.~~ ~~As a matter of~~ In fact it is highly probable that the ~~originators~~ perpetrators of an explosion could be more easily traced if they had previously visited one of our nuclear installations ~~before.~~ Hence, the terrorists would do better acquiring their explosives in another country. Even more important is the observation that there are other terrorist weapons, such as pathogenic bacteria which can be pumped into ~~the~~ a water system, which are far more likely to escape the detection of a saboteur and ~~used with less danger to the user~~. Altogether, ~~we~~ I do not believe that the operation of our nuclear reactors adds significantly to the danger of terroristic acts.

For the sake of completeness, ~~we~~ I should add a remark on the bomb-design of the Princeton student mentioned by Mr. Cobas. It so happens that ~~one of us (EPW)~~ I thought was ~~the~~ a ~~one of the~~ readers of this student's thesis. It showed considerable skill and understanding and it was, therefore, recommended ~~to~~ for ~~favorable~~ acceptance by Princeton University. Nevertheless, I must emphasize that the equipment designed by the student would not have exploded. This is not surprising, for the initial design of the nuclear bomb which eventually did explode took the concentrated efforts ~~several months~~ long range ~~time~~ of ~~several dozen~~ many of our most able physicists — their work ~~hardly~~ could not conceivably be duplicated successfully by a single ~~person's sideline work.~~ individual, regardless of his ingenuity or determination.

Mr. Cobas ~~criticizes~~ says that author of the ~~original~~ article ~~that it~~ "places such great emphasis on the pollution produced by the burning of fossil fuels while he

gives very little importance to radioactive contamination produced by nuclear reactors or to the danger of possible catastrophic accidents." ~~Well, As~~ was pointed out, ~~in the article criticized by Mr. Cobas,~~ the burning of most coal causes more radioactivity to escape ~~the furnace~~ than is emitted by ~~the~~ a nuclear reactor with the same power production. This is, perhaps, difficult to believe but true nevertheless. Further, most coal contains sulphur ~~and~~ or and its ~~the~~ ~~burning~~ oxidized product, ~~of this,~~ sulphur dioxide, creates a much greater health hazard than ~~the~~ radioactivity! Of course, we hope that means will be ~~invented~~ discovered to reduce the emission of sulphur dioxide by coal-burning plants but similarly we also hope that the safety of nuclear reactors will ~~also~~ be even further assured. This is desirable even though, ~~it~~ in contrast to ~~the~~ some cases of 100,000 black lungs among coal miners, ~~it~~ nuclear reactors have so far not caused ~~so far~~ a single known accident.

Finally, ~~we do not understand~~ what is Mr. Cobas' objection to the great number of engineers (100,000), skilled workers (420,000) and unskilled workers (140,000) which the construction of nuclear reactors would require since, ~~on the other hand,~~ he heartily approves of the fact that fossil fuel ~~burning~~ plants would "provide work" for many people? Is there not a slight contradiction between these views? In addition, ~~we cannot see~~ I do not think it likely that the design ~~and~~ construction and supervision of 830 units of machinery, many of them identical, would require the work of 100,000 engineers for 10 ~~whole~~ full years.

~~Well we have refuted a sufficient number of Mr. Cobas' arguments. Our~~ There points of disagreement with Dr. Cobas should not obscure the fact that, ~~as was mentioned at the beginning,~~ ~~we~~ I agree with some of what ~~much that~~ he has said. Even though, on the other hand, ~~we~~ I disagree with much ~~that he wrote on~~ of his interpretation on the use of nuclear power, ~~we are~~ I am grateful to him for having ~~voiced his points~~ stated his view. ~~They~~ He summarizes the objections to nuclear power very concisely and the knowledge of the possible objections renders us even more ~~sure~~ certain of the attractive features of nuclear energy in the long run.

Copy of Dr. Cuigner's article incorporating my changes, which I typed on Feb. 17, 1977.

Response to Dr. Cobas's article

Several of Dr. Cobas's statements are in agreement with my views. For example, it surely would be useful to economize and not allow energy consumption to increase much more, and certainly not ~~as much as~~ to the extent that Dr. Cobas assumes ~~that~~ it will. I heartily concur with his suggestion to reduce the consumption of fossil fuels. As we both observed, these will continue to be needed for a variety of other functions, including the reduction of iron ores to iron. I also mentioned the danger of the greenhouse effect, an increase in the temperature of our environment by the accumulation of carbon dioxide produced by the burning of coal, oil or natural gas. I ~~also~~ too concur with the suggestion to provide more effective insulation for our homes and more efficient motors for our transportation media. Dr. Cobas does not mention the possibility of using heat pumps in our homes, but this would also be desireable. ~~Finally, I am not~~ Nor am I at all opposed to the further exploration of the use of solar energy.

Dr. Cobas suggests that the power consumption of industry should be reduced, but even if that were practicable, no concrete measures are proposed towards achieving this goal. It should be pointed out that at present, U.S. industry hardly consumes more power per unit gross national product than other nations.

I believe that some parts of Dr. Cobas's remarks are not too clearly defined. As an example, he proposes the production of "electrical energy as a by-product of the steam produced in factories." Which factories produce significant amounts of steam and how is that steam to be ~~harnessed~~ captured and used? Conversely, does this mean that the heat produced when electricity is generated can also be used for the heating of homes? This would be a worthwhile proposal, even though it would require considerable investment to make it operational.

Dr. Cobas criticizes the relatively low estimate given in my article for

U.S. power requirements. These estimates are based on the belief that we shall not want to consume much more energy in the future than we are doing now. That some estimates of our future energy consumption are grossly exaggerated is supported by the observation that our per capita energy consumption increased only by a factor of 1.6 in 20 years, whereas that of Europe doubled in 12 years and Japan in 6 years. Does this not indicate that we are approaching the fulfillment of our energy demands? Dr. Cobas does not comment on this question.

Another of Dr. Cobas's points that is not very clear is his doubt that an increase in the cost of energy will induce the more economical use thereof. He does not believe that "energy conservation is achieved more by price than by policy; that is, it is more rhetorical than real." Does it not seem more logical that a higher cost of energy would induce individuals and perhaps industries to an even greater extent, to adopt stringent measures to reduce consumption?

Finally, what is meant by "soft technologies"? Let us turn specifically to those points on which I disagree with Dr. Cobas. The most important of these is associated with his fear that unless we discontinue the operation and construction of nuclear reactors, terrorists will acquire nuclear explosives and create havoc. We are as apprehensive of terrorist acts as he is and in my article I suggest that more attention be given to this problem. However, abolishing nuclear power would give very little assurance against the acquisition of nuclear materials by a terrorist, as long as other nations have nuclear reactors. Nuclear materials can be stolen from or even furnished by other countries, then clandestinely imported. In fact, it is highly probable that the perpetrators of an explosion could be more easily traced, had they previously visited one of our nuclear installations. Consequently, the terrorists would do better acquiring their explosives in another country. Even more important is the fact that other terrorist weapons such as pathogenic bacteria can be used to contaminate a water supply. These organisms can be acquired with relative ease and a saboteur is far more likely to

Regerding the employment question, it would be interesting to know the reason for Dr. Cobas's objection to the large number of engineers (100,000), skilled workers (420,000) and unskilled workers (140,000) which the construction of nuclear reactors would require, since he strongly approves of the fact that fossil fuel plants would"provide work" for many people? Is there not a slight contradiction between these views? In any case, I do not think it likely that the design, construction and supervision of 830 units of machinery, many of them identical, would require the work of 100,000 engineers for 10 years.

My refutation of some of Dr. Cobas's arguments should not obscure the fact that in spite of our different interpretations regarding the uses of nuclear power, I am grateful to him for having stated his views. Only by considering such an exchange of ideas will it be possible for the layman to reach an informed decision. I am convinced that a consideration of his objections to nuclear power, which fairly represent the views of those who oppose it, will only strengthen the arguments for its controlled, intelligent use and will make still more cogent and decisive our need to harness nuclear energy for the benefit of us all, in the long run.

escape detection. Altogether, I do not believe that the operation of nuclear reactors adds significantly to the danger of terrorist acts.

I should like to add a remark on the bomb design made by a Princeton University student mentioned by Dr. Cobas. As it happens, I was one of the readers of that student's thesis. I thought it showed considerable skill and understanding and it was therefor recommended for acceptance. Nonetheless I must emphasize that the equipment designed by that student would never have exploded. This is not surprising, since the design of the nuclear bomb which eventually did explode took the concentrated effort over a considerable period of time of many of our most able physicists. Their work could not conceivably be successfully duplicated by a single individual, regardless of his ingenuity or determination.

Dr. Cobas criticizes the author, who "places such great emphasis on the pollution produced by the burning of fossil fuels while he gives very little importance to radioactive contamination produced by nuclear reactors or to the danger of possible catostrophic accidents." As was pointed out, however, the burning of most coal causes more radioactivity to escape into the atmosphere than is emitted by a nuclear reactor with the same power production. This is, perhaps, difficult to believe but true nonetheless. Furthermore, most coal contains sulphur, and its oxidized product, sulphur dioxide, creates a much greater health hazard than radioactivity! We hope that means will be discovered to reduce the emission of sulphur dioxide by coal burning plants, and we expect likewise, that the safety of nuclear reactors will be still further perfected. This is desirable even though in contrast to the record of some 100,000 cases of black lung among coal miners, nuclear reactors have not caused a single known accident to date.

16-II 1974

Dr. Wiggin —

Please look over the manuscript which I have retyped with some editorial changes. If it meets with your approval, perhaps your secretary could type it in final form for publication. If you do not approve of the changes I have made, I shall gladly make such additions or corrections as you suggest. In any case, please phone me (8485) whenever you are ready. I think your statement is an excellent reply to Cobes.

Lowy

Final copy of Dr. Wright's paper including his corrections etc.

Response to Dr. Cobas' article

Several of Dr. Cobas' statements are in agreement with my views. For example, it surely would be useful to economize and not to allow our energy consumption to increase much more, and certainly not to the extent that Dr. Cobas assumes it will. I also heartily concur with his suggestion to reduce the consumption of fossil fuels. As we both observed, these will continue to be needed for a variety of other functions, including the reduction of iron ores to iron. I also mentioned the danger of the "greenhouse effect", an increase in the temperature of our environment by the accumulation of carbon dioxide produced by the burning of coal, oil, or natural gas. I concur too with the suggestion to provide more effective insulation for our homes and more efficient motors for our transportation media. Dr. Cobas does not mention the possibility of using heat pumps in our homes, but this would also be desirable. Also, I am wholeheartedly in favor of the further exploration of the use of solar energy.

Dr. Cobas suggests that the power consumption of industry should be reduced, but proposes no concrete measures towards achieving this goal. It should be pointed out that, at present, U.S. industry hardly consumes more power per unit gross national product than the industries of other nations.

Some of Dr. Cobas' proposals are not very clearly defined. He proposes the production of "electrical energy as a by-product of the steam produced in factories." Which factories produce significant amounts of steam and how is that steam to be used? Does he mean, conversely, that the heat rejected when electricity is generated can be used for the heating of homes? This would be a worthwhile proposal, even though it would require considerable investment to make it operational.

Dr. Cobas criticizes the relatively low estimate given in my article for U.S. power requirements. These estimates are based on the belief that we shall not want to consume much more energy in the future than we are doing now. Similarly, I do not believe we want to consume more food than we now consume. That some estimates of our future energy consumption are grossly exaggerated is supported by the observation that our per capita energy consumption increased only by a factor of 1.6 in 20 years, whereas that of Western Europe doubled in 12 years, that of Japan in 6 years. Does this not indicate that we are approaching the fulfillment of our energy demands? Dr. Cobas does not comment on this question.

Another of Dr. Cobas' points that is not very clear is his doubt that an increase in the cost of energy will induce the more economical use thereof. He does not believe that "energy conservation is achieved more by price than by policy; that is, it is more rhetorical than real." Is it not reasonable to assume that a higher cost of energy would induce individuals, and industries probably to an even greater extent, to adopt measures to reduce their energy consumption? Finally, what is meant by "soft technologies"? Let us now turn to those points on which I disagree with Dr. Cobas. The most important of these is associated with his fear that unless we discontinue the operation and construction of nuclear reactors, terrorists will acquire nuclear explosives and create havoc. We are as apprehensive of terrorist acts as he is and in my article I suggest that more attention be given to this problem. However, abolishing nuclear power would give very little assurance against the acquisition of nuclear materials by a terrorist, as long as other nations have nuclear reactors. Nuclear materials can be stolen from, or even furnished by, other countries, then clandestinely imported. In fact, it is highly probable that the perpetrators of an explosion could be more easily traced, had they

previously visited one of our nuclear installations. Consequently, the terrorists would do better acquiring their explosives in another country. Even more important is the fact that other terrorist weapons such as pathogenic bacteria can be used to contaminate a water supply. These organisms can be acquired with relative ease and a saboteur is far more likely to escape detection. Altogether, I do not believe that the operation of nuclear reactors adds significantly to the danger of terrorist acts.

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further perfected. This remains desirable even though, in contrast to the record of some 100,000 cases of black lungs among coal miners, nuclear reactors have not caused a single known accident to date.

Regarding the employment question, it would be interesting to know the reason for Dr. Cobas' objection to the large number of engineers (100,000), skilled workers (420,000) and unskilled workers (140,000) which the construction of nuclear reactors would require, since he strongly approves of the fact that fossil fuel plants would "provide work" for many people? Is there not a "slight" contradiction between these views? In any case, I do not think it likely that the design, construction, and supervision of 830 units of machinery, many of them identical, would require the work of 100,000 engineers for 10 years.

The refutation of some of Dr. Cobas' arguments should not obscure the fact that in spite of our different interpretations regarding the uses of nuclear power, I am grateful to him for having stated his views. Only by considering such an exchange of ideas will it be possible for the layman to reach an informed decision. As to myself, the reading of the points he makes, which I assume to be a fair summary of the objections to nuclear power, strengthens my belief that an intelligent and careful use of this power will be beneficial in the long run.

I am much indebted to Dr. B. Lowy for helping me to formulate these comments on Dr. Cobas' article.

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Acknowledgment in Dr. Weigel's handwriting.

THE DEPARTMENT OF STATE

News Release

January 5, 1977
Washington, D.C.

Bureau of Public Affairs
Office of Media Services

ENERGY AND THE WORLD ECONOMY

The following is a statement by Julius L. Katz, Assistant Secretary for Economic and Business Affairs, before the Senate Committee on Banking, Housing and Urban Affairs.

I welcome the opportunity to appear before your committee to discuss the international energy situation and its impact on the world economy. This hearing takes place against the background of a further demonstration at the recent OPEC [Organization of Petroleum Exporting Countries] meeting in Doha, Qatar, of the extent to which the economic well-being of the United States and the rest of the world is vulnerable to unilateral decisions on oil prices by the OPEC oil producers. In these remarks I would like to discuss the recent OPEC price decision, to comment on the effect of this and earlier oil price increases on the global economy, and to elaborate a number of longer term economic and energy policy considerations that emerge from the oil price situation.

The Doha Price Decision

In many ways, the OPEC ministerial meeting in Qatar in mid-December followed the familiar pattern of OPEC meetings in recent years. Accompanied by wide-ranging speculation about the outcome of their deliberations, the 13 member nations met in closed sessions to decide among themselves on the price other nations would have to pay for oil. But the Qatar meeting was unique in one important aspect. Failing to agree on a common price for the marker crude, upon which all their prices have been based in the past, the OPEC countries broke openly and in effect created a two-tier price system.

Eleven OPEC members announced their intention to raise their prices by 10 percent on January 1 and a further 5 percent in July. Saudi Arabia and the United Arab Emirates [U.A.E.], on the other hand, refused to go along with the majority. They indicated the intention to increase their prices by 5 percent and to hold this level throughout 1977.

It will be several weeks or months before we know whether the OPEC majority can sustain their high posted prices or whether prices will drift down toward the level established by Saudi Arabia and the United Arab Emirates. A number of factors contribute to this uncertainty.

The most important of these is the level of demand for oil from the 11 high-price members of OPEC over the next several months. If demand for their oil remains at or near the level of late 1976, they will be able to make their 10 percent increase stick. However, if their market begins to shrink appreciably, they will have to choose between maintaining their higher prices and accepting a lower level of revenues or lowering their prices to compete with lower priced Saudi Arabian and U.A.E. oil in an effort to maintain their share of the market.

The market outlook for these 11 countries

will depend on the level of total world demand for oil and on the speed with which Saudi Arabia and the United Arab Emirates can increase production. Total demand for oil should decline over the next few months as companies draw down the inventories they built up in the final months of 1976 in anticipation of a large OPEC price increase, although a cold winter and the ambiguous state of economic recovery in some major industrial countries have created unusual uncertainty in the demand outlook.

The Saudis and United Arab Emirates have stated their readiness to raise their production to meet increased demand for their less expensive oil. And some substantial increase should be possible. However, Saudi production at the end of 1976 had already risen to near capacity levels, and it is unclear how much incremental capacity can be brought into production quickly.

There are other factors which make it even more difficult to assess the outcome of the OPEC meeting. For example, it is unclear how much companies can shift their sources of supply quickly, despite the price differential. They purchase much of their crude under long-term contracts and in many cases have already contracted for crude into the first and second quarters of 1977. Also, there are questions about the demand for the particular qualities of additional crude oil available from Saudi Arabia and the United Arab Emirates. This will depend on the refining capabilities and marketing requirements of individual companies and importing countries.

General Economic Implications of Oil Prices

Because of these uncertainties, we cannot yet draw final conclusions about the consequences and impact of the price decision on the world economy. But one fact is clear. Notwithstanding the pressure on the OPEC majority to hold the price increase below the level they established, there will be an increase in the price of imported oil. Saudi Arabia and the United Arab Emirates demonstrated a greater sense of responsibility for global growth and stability than the other 11. But whether the increase is ultimately 5 percent or 10 percent or something in between, it is nonetheless a price increase, an increase that is both unwarranted and harmful to the world economy.

Moreover, it comes on top of the massive oil price increases of the past few years as the price of this essential economic input has risen more than fivefold since January 1973. This unprecedented price rise constitutes a massive income transfer from oil-importing countries to a handful of oil-exporting countries. It has had, and continues to have, a profound impact on the world economy and on growth and income in oil consuming countries. It contributed in a major way to the worldwide inflationary pressures of 1974-75. It also seriously aggravated the recession of the same period when the abrupt increase in oil import costs drained consumer purchasing power, acting in effect as an excise tax on the economies of the importing countries.

Given the already high level of oil prices, even a relatively small increase in percentage terms can have a substantial economic impact. Our analysis in advance of the Doha meeting indicated that each 5 percent increase in the cost of crude oil would cost oil consuming countries approximately $6 billion in higher oil bills, with the United States paying around $1.7 billion of that total. Absent compensating domestic policy actions, each 5 percent increase costs the seven largest industrialized countries an average of 0.3 percent each in real GNP [gross national product] growth and adds roughly 0.3 percent to consumer prices.

The oil price rise has also had a fundamental impact on income distribution because increases in the price of gasoline, home heating, and electricity have a disproportionate effect on lower income groups. It has caused structural adjustments in industry and the premature obsolescence of industrial plant. In addition, the new energy situation will have a continuing impact on the allocation of investment capital; much more investment will be needed in the energy area, leaving less capital available for other economic and social objectives.

We made a major effort in the months prior to the Doha meeting to persuade the oil producing countries not to raise prices. We stressed that any increase in the price of oil would seriously harm the effort to regain sustainable, noninflationary growth and would have particularly serious consequences for the weaker developed country economies and the developing countries. We also countered the argument of some of the producers that

an increase in oil prices was justified by an increase in the cost of their imports; in fact, the cost of exports to OPEC from the seven largest industrialized countries has risen less than 4 percent since September 1975, when the oil price was raised by 10 percent.

We believe that our efforts and those of other industrialized countries and some developing nations probably moderated the final OPEC decision. But the fact that an unwarranted and unjustified increase occurred despite this major diplomatic effort underlines the need for effective long-term action in the energy area to lessen our vulnerability to continued increases in the price of oil. OPEC meets every six months, and in the absence of action to affect the supply-demand balance for energy, the world will confront every six months the possibility of a further increase in the price of oil.

The Financial Impact of Oil Price Increases

The entire range of U.S. economic policies and objectives has to take account of higher oil prices and the structural adjustments needed to cope with these higher prices in the United States and the rest of the world. Our central concern is to insure a sustainable and noninflationary expansion over the next several years.

This task will be complicated by the divergent economic trends among major industrialized economies. It will require an intensification of the process of economic policy collaboration through the OECD [Organization for Economic Cooperation and Development] and other contacts, including meetings at the summit. One of the central objectives of such collaboration will be concerted action to deal with the serious financial imbalances which have resulted from higher oil prices and will continue at least through the end of the decade.

In the 1974-76 period, OPEC members had a cumulative current account surplus of $142 billion. With annual surpluses in excess of $40 billion likely for the next few years, OPEC's accumulation of financial assets could easily surpass $300 billion by the end of 1980. This represents the oil consuming countries' aggregate indebtedness to OPEC members, a net claim on our resources. The bulk of these claims are held by three OPEC members.

The large surplus position of OPEC nations is matched by aggregate deficits in oil-importing countries, both developed and developing. No amount of adjustment action by oil-importing countries as a group can eliminate the deficit in the medium term. Under these circumstances it would be foolhardy and dangerous for individual oil-importing countries to try to improve their position at the expense of others through "beggar-thy-neighbor" policies of import restriction and artificial export stimulation. Rather, the key questions are how the deficit will be distributed and how it will be financed.

In the aggregate, the huge OPEC current account surplus is self-financing. The OPEC countries in a strong financial position have no choice but to invest their surplus funds in oil-importing countries. The pattern of investment of OPEC financial surpluses, however, does not match the needs of individual countries to finance costly oil imports. The current account deficit of oil-importing countries is very unevenly distributed. In the industrialized world, the diverse impact of oil price increases aggravates the divergent rates of growth and inflation, with the already weaker economies the hardest hit. Some OECD nations, particularly the Federal Republic of Germany, have had consistent surpluses. Others, such as the United Kingdom and Italy, have had to make fundamental adjustments in growth rates as well as investment and consumption levels to take account of energy needs and higher oil prices. This process will take longer than classic balance-of-payments adjustments.

Certain developing countries also suffer disproportionately. Generally, the capacity of developing countries to adjust their economies to higher oil prices is limited. Many developing countries therefore face painful choices as they reassess their development prospects in light of added burdens of strained financial resources and mounting bills for imported oil.

These changes in the structure of financial relations have a number of important implications and repercussions:

- There is pressure on weaker industrialized countries to adjust through restrictions that would threaten our system of open trade and capital flows. To avoid such actions, we must insure that

they have enough financing to allow orderly adjustment. A balanced and concerted strategy for sustained recovery, which will enhance their export prospects, is also essential.

• Until 1973, developed countries as a group ran consistently large current account surpluses, which enabled them to provide sufficient financing to developing nations through aid and investment flows. The vastly larger financing requirements of developing nations and the deficit position of developed countries as a group now make such flows inadequate. As a result, higher income developing countries (as well as weaker industrialized ones) have increasingly turned to private markets for financing, mostly in the form of Eurodollar credits and syndicated bank loans. The terms and conditions of these credits have not always been appropriate to the adjustment problem faced. Moreover, while private lenders presently can continue to provide a high volume of financing, they will become more selective in their lending policies. In particular, their willingness to maintain lending levels to certain important problem countries may diminish.

• The unprecedented external borrowing of developing countries has swelled the debt-service payments they face in the coming years. 1976 debt-service payments of non-oil-producing developing nations are in excess of $21 billion, or more than double the 1973 level—of which over 80 percent relate to payments on commercial debt. These payments consume about 20 percent of their income from merchandise exports, as compared to 15 percent in 1973. In the 1977-80 period there will undoubtedly be a bunching of debt-service payments, which will increase these figures. The debt is heavily concentrated in higher income developing nations which have dynamic economies and a strong debt-service capacity. Nevertheless, some countries may not find sufficient capital to pay their debts without imposing very restrictive economic policies. Debt-service difficulties in one or more important developing nations could trigger a credit squeeze which would cause private lenders to take a restrictive view of the creditworthiness of less developed countries as a group.

One of the fundamental limitations of heavy reliance on international lending from private sources is that these lenders cannot carry out the function of developing comprehensive economic stabilization programs with the borrowing country. Facilitating such stabilization as a condition of financial support is an essential function of official multilateral lending, in particular from the International Monetary Fund [IMF].

These considerations point clearly to the need to insure adequate amounts of official financing in the coming period to facilitate sound adjustment in the economies of oil-consuming countries. External financial support is an essential ingredient in reinforcing the adjustment efforts of borrowing countries. In the period ahead, we will therefore need to develop and strengthen further the framework of the international financial system to insure that it has the flexibility necessary to meet the needs of an international economy which has been so profoundly changed by the high cost of imported oil.

In the first instance, this means more active use of the International Monetary Fund, including both its normal lending operations and new facilities such as the Extended Fund Facility, the liberalized Compensatory Financing Facility, and the special Trust Fund for the poorest developing countries. We have also negotiated and submitted to Congress a supplementary OECD Financial Support Fund. In conjunction with IMF facilities, it could provide a safety net to deal with the particular financial vulnerability of the industrialized economies. Finally, we should strongly support the activities of the IMF/IBRD [International Bank for Reconstruction and Development] Development Committee aimed at strengthening the access of less developed countries to long-term private capital markets.

Energy Objectives

Over the next several years, we must pursue economic, trade, and financial policies designed to minimize the extent to which high oil prices jeopardize our objective of sustainable, noninflationary growth. But we cannot be in a position of only reacting to the evolving world energy system; we must also act to shape the development of that system.

The events of the past four years have clearly demonstrated the extent to which the United States and our major trading and security partners are vulnerable to unilateral OPEC decisions to raise oil prices and to the threatened or actual use of an oil embargo by some oil-exporting countries as an instrument of national policy.

But the existence of OPEC is not the sole cause of our energy vulnerability. Our weakness stems directly from our increasing dependence on imported oil for our complex, energy-intensive economy. As recently as the mid-1960's, the United States, while an importer of oil, had substantial unused domestic production capacity. By the late 1960's, rising consumption had eliminated that surplus capacity, and we became a larger and larger net importer. This combined with rising oil imports by Japan and Western Europe to bring about a major increase in world requirements for OPEC oil and a profound shift in the world balance of supply and demand.

OPEC countries have taken advantage of this supply-and-demand situation to control the supply of oil offered in world markets. This control over supply, together with the absence of a readily available substitute for imported oil, enables OPEC to dictate the world price.

In this regard, it would be a mistake to view the split decision at Doha as evidence of an imminent breakup of OPEC. There are obvious differences of view and interest within OPEC, but each member has an overriding interest, political as well as economic, in the viability of OPEC. OPEC survived a major drop in world demand for oil during the recession of 1975. With economic recovery and increasing demand, the latest disagreement does not appear to pose a major threat to OPEC solidarity.

We have taken action to reduce our vulnerability to interruptions of oil supplies. Through the emergency sharing system of the IEA [International Energy Agency] and our national strategic petroleum reserves, we have significantly enhanced our ability to deter another oil embargo and to withstand the economic impact of an embargo should one occur.

In the area of oil prices, we have made progress in strengthening our relationships with key members of OPEC and in convincing them of the extent to which their own economic interests are adversely affected by actions which threaten the well-being of the world economy. However, until there is a basic change in the supply-demand balance the effectiveness of these diplomatic efforts on the issue of oil prices will be limited.

The United States has a tremendous potential to help bring about a more acceptable balance of supply and demand by reducing its dependence on imported oil. On the one hand, we are the largest single consumer of energy. The development of our industrial, residential, and transportation systems has been based on a premise of unlimited quantities of inexpensive energy. That premise is no longer valid, and the entire structure of our economy must undergo a series of profound changes designed to improve the efficiency of our energy systems. In some cases, this greater efficiency will result from the stimulus of higher prices. In other cases, however, it will have to be mandated or encouraged by tax and other incentives.

At the same time, the United States is blessed with an enormous potential for the development of new energy supplies, including conventional oil, gas, nuclear, and coal power and eventually synthetics and nondepletable energy sources such as solar and fusion power. There are of course constraints on the development of new energy supplies, and these must be carefully evaluated. But the development of major new energy supplies will require both adequate incentives for the enormous investment outlays needed and, unavoidably, some compromise among our legitimate energy, economic, and environmental policies.

Unfortunately the U.S. response to the energy challenge has thus far been inadequate. We are now more dependent on imported oil than we were at the time of the October 1973 embargo. More importantly, we still have not as a nation made a credible, long-term commitment to the goal of reduced import dependence and the policy measures necessary to achieve that goal.

The design and implementation of the new actions necessary to achieve our goal of reduced energy vulnerability will require the close and active collaboration of the Congress and the executive. We urgently need a consensus on a comprehensive and effective energy policy.

Our energy concerns, like our general economic and financial interests, cannot be viewed solely in a national context. Energy is just one element—although a central element—in the web of our political, economic, and security ties with the rest of the world. The other industrialized consuming countries face greater vulnerability in energy

than the United States because of even greater dependence on imported oil. By the same token, it is not enough for the United States alone to reduce its import dependence; U.S. success could be offset by the failure of other major nations to limit their requirements for imported oil.

In energy, as in other areas, our industrialized-country allies look to us for leadership. Because we account for roughly one half of OECD energy consumption and for nearly one quarter of demand for OPEC exports, our leadership, if it is to be effective, requires visible evidence that we are meeting our national energy responsibilities by improving the efficiency of our energy use and developing new supplies.

Just as we recognize that our efforts to establish a more stable world energy balance could be undercut by the failure of other major consumers to limit their dependence on imported oil, so do they recognize that they will be unable to reduce their energy vulnerability unless U.S. import dependence is reduced. Therefore we must work together, strengthening national policies and pursuing common programs, where possible, in energy conservation, in the development of new supplies, and in research and development [R.&D.]. The common objective of such measures is to reduce our total dependence and to achieve a global energy balance in which consumers share control with producers.

We have made the International Energy Agency the principal vehicle for this cooperation in energy with the rest of the industrialized world. This organization has achieved notable success in the two years of its existence. It has:

- Put in place a comprehensive emergency program to build oil stocks, to establish standby demand-restraint measures, and to share available oil supplies in the event of future disruptions in the supply of imported oil;
- Agreed to a long-term cooperative program of conservation and the development of alternative supplies, including a number of joint R.&D. projects and a framework for joint projects in the actual development of new supplies;
- Established an oil market information system aimed at improving understanding of the international oil market; and
- Provided the forum for industrialized-country coordination for the energy dialogue in the Conference on International Economic Cooperation.

Conclusion

The oil price increases over the past several years have caused fundamental structural changes in the international economy. The adjustments that are already taking place and which will be required in the future are profound. To meet these new challenges, we must, as a nation and in cooperation with others, implement policies to sustain global growth, to preserve and improve the world trading system, and to strengthen the international framework for financial cooperation.

We must also act decisively to end our energy vulnerability. As the leader of the industrialized world, we have the capacity to confront directly and overcome our national and collective energy vulnerability. We must also demonstrate a determination to take the hard decisions required.

At a U.S. initiative, the IEA is currently engaged in a process to establish group and individual national targets for reducing dependence on imported oil by 1985. It is envisioned that member countries will undertake political commitments to these targets and the policy measures necessary to achieve them at an IEA ministerial meeting in the first half of 1977.

We are also seeking to expand our cooperative efforts with the oil producers in the development and diversification of their economies. As their economies become more dependent on the health of the international economy, they should accept more readily their own responsibility for global economic stability and growth in their oil pricing and production policies. We also appreciate the special energy difficulties of the non-oil developing countries and have made clear our readiness to facilitate access to, and modification of, our energy technology to help them develop their indigenous resources and use energy more efficiently.

U.S. Testing Six New Windmills As a Source of Power for Farms

By RICHARD D. LYONS

Special to The New York Times

ROCKY FLATS, Colo., Feb. 20—On the barren Great Plains here today the Federal Government unveiled six little windmills straining at the knots of breeze sweeping from the Rockies in an experiment tsting the thesis that, for some energy requirements, smaller may be better.

The wind machines, as they are called by the Energy Research and Development Administration, were constructed by American, French, Swiss and Australian companies and erected here as part of a $24 million Federal wind generation program.

The aim is to exploit free, nonpolluting wind power for the needs of rural communities, ranches and farms.

Although windmills have been in use for at least 800 years and have been widely deployed throughout the Great Plains for a century, there has been virtually no attempt to apply modern technology to the development of better windmills, scientists at the energy agency say.

"Cheap oil and natural gas, plus the Rural Electrification Administration's program of bringing electricity to even the most remote parts of the country, had virtually stifled the technological development of newer and better wind machines," said Dr. Louis V. Divone, the director of the wind generation project.

He said that a highly reliable wind machine produced on an assembly line could be economically feasible in a few specific areas, such as parts of Alaska and Hawaii, that have high, steady winds and

Continued on Page 36, Column 1

The New York Times

French-built Aerowatt was one of six windmills unveiled by Federal Government yesterday. Device, with blades 30 feet in diameter atop a 50-foot tower, is designed to provide enough power to light a home.

meetings in 35 communities around the tate yesterday adopted local resolutions anning the construction of atomic power lants and the transportation and storage f nuclear waste within their geographi- al borders.

Anti-nuclear forces were claiming a major victory against the expansion of tomic power in the state, but the resolu- ons were discussed in only 36 of the 38 communities holding annual town eetings.

The opposition drive was spearheaded y the Vermont Public Research Interest roup, a statewide consumer lobby, hich is fighting to prevent further devel- oment of nuclear power in the state.

Vermont has one nuclear power plant, hich is a 540,000-kilowatt facility oper- ed by the Vermont Yankee Nuclear wer Corporation in southeastern Ver- ont.

Head of Lobby Hails Vote

Herman Bluestein, director of the lobby, d: "Vermont today became the first te in the country in a broad sampling public opinion to decisively say no further nuclear power development. hink the state's utilities have gotten message and hope to get state Con- sional delegation to urge the Federal rgy Research and Development Ad- stration to look no further to develop ear power plants in Vermont."

e Vermont Yankee officials have said they will challenge the resolutions ourt. John Beck, corporation vice dent, said:

onsidering the wording of the sals and the misinformation and tactics circulated in the last few s, we are not surprised at the result vote. The defeat of the ordinance stleton where a lot of discussion th sides has gone on in the last hows that informed voters realize by chance."

...y shortage is by choice

Castleton was the only town vo on the issue to reject a proposal to the transportation of nuclear wa within the town limits. But the vict for pro-nuclear forces there was mi because a prohibition on the construct of nuclear plants voted last year s stands.

The most important balloting will co on March 19 when Brattleboro voters cide whether to enact an ordinance b ning the transporation of nuclear wa in that community. It is just north the Yankee plant in Vernon, and tru traveling to and from the plant must p through it.

Former Senator George D. Aiken, w retired two years ago after 34 years Washington, tried to block the anti-n clear vote in his home town of Putney But the proposal passed by a wide mar gin.

Gov. Richard Snelling, a proponent o a strong national energy policy, is op- posed to towns attempting to dictate energy policy to the state. Commenting on yesterday's voting and legislation pending in the General Assembly that would give Vermont veto power over the construction of nuclear power plants and the storage of nuclear wastes in the state, Mr. Snelling said, "I would oppose that portion of the bill that gives Vermont the right to say it will not accept its share of the consequences of a natiional energy policy."

South Korea Inquiry Funds Voted

WASHINGTON, March 2 (AP)—A House subcommittee today authorized $300,000 to investigate alleged operations of the Korean Central Intelligence Agency in the United States. The money, if given full House approval, will be used for an investigation by the House Internal Relations subcommittee, which sought a $358,000 budget for the first year.

Why nuclear--it's safe says biologist

By ROXANNE KEARNS

Anti-nuclear advocates are wrong and "the record proves it," Edward Lambremont, director of LSU's Nuclear Science Center said.

Not one single member of the public has been harmed by the nuclear power plants since their beginning, in 1957, he said.

Coal burning plants have put "more radioactivity in the environment than fissioning uranium," he said, and coal burning has a much higher public health impact.

EVERYONE IS naturally radioactive and exposed to a relatively constant amount of radiation from the environment -- about 120 millirem per year, he said.

A millirem is a measure of the amount of energy deposited in living bodies as the result of radiation interacting with it. It comes from television, food, water, air, clothes and has been on earth since its creation, he said.

A person would be exposed to less radiation if he lived in the backyard of a nuclear power plant than if he took a jet plane from New Orleans to Los Angeles, Lambremont said.

If someone lived "right at the fence" of a nuclear plant all year, never leaving, grew his food and drew his water from a well in the area, he would be exposed to .05 millirem, but probably less, Labmremont said.

A PERSON is exposed to about 3.0 millirem in a jet trip from New Orleans to Los Angeles, roughly six times that of the man living next to the plant, he said.

Lambremont calls himself a "fierce" environmentalist and biologist, and for that reason he says he advocates nuclear power. Those who call themselves environmentalists and knock nuclear power are well-intentioned, but have a basic fear because they don't understand nuclear energy, he said.

President Jimmy Carter has requested that the federal government spend less on nuclear energy research and more on coal, conservation and solar energy.

Lambremont said he is in favor of increasing all types of energy research, but does not think money going toward nuclear research should be cut.

HE IS NOT an advocate of a total nuclear economy, and says all forms of energy should be utilized to keep any one area from dominating the price market.

Terrorism in nuclear plants is "part of anti-nuclear folklore" and a "tremendous lore of balony," Lambremont said.

Terrorists can find many more safe and easier ways to cause havoc then to take over nuclear plants, he said. But security in nuclear plants has been increased considerably in recent years because terrorism in general has increased, he added.

The only difference between nuclear and other types of power plants is the source of heat--uranium.

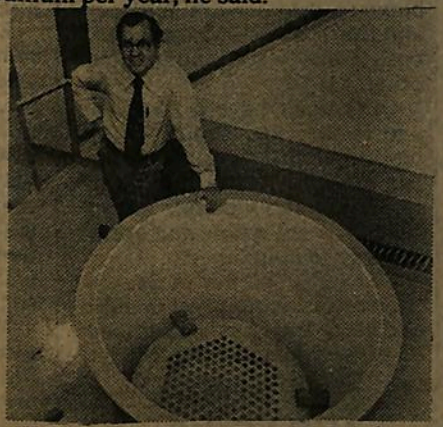
The uranium-fueled reactor is basically a very heavy stainless steel reactor vessel with uranium fuel rods in a geometric array inside, Lambremont explained.

AROUND THE fuel rods are control rods that keep restrictions from occurring. As the control rods are slowly drawn up, an automatic reaction takes place with the uranium, he said.

Uranium atoms split, releasing heat energy which boils water into steam, turning a steam turbine and generating electricity, he said.

Lambremont said he'd rather burn uranium, because when coal, oil and natural gas "are gone, they're gone." The fossil fuels are much more useful in organic feedstock and are non-replacable while man-made elements can be used for nuclear power, he said.

A regular coal-burning plant uses about 80 train carloads of coal a day while a nuclear plant uses about one carload of uranium per year, he said.



WHY NUCLEAR--Edward Lambremont says no one has been harmed by nuclear power. He is in favor of increasing all types of energy research.

Thursday, February 24, 1977

The Daily Reveille

Associated Press

Published by the Students of Louisiana State University, Baton Rouge

Vol. 81, No. 76

Reprinted from REVISTA/REVIEW INTERAMERICANA Vol. VI, No. 4, Winter 1976-77

Our Needs for Energy and Ways to Satisfy Them

Eugene P. Wigner

I. Observations of a Physicist

Our subject is not only a very important one, it is also very large and complex. As a physicist, I should first point out that the problem is not really one of energy. We have plenty of energy: the atmosphere has a temperature of around 300° absolute and so have our seas (this corresponds to about 50°F). If we could bring only a tiny fraction of their heat content into our houses in the winter, we would need no heating. Unfortunately, heat does not move from a colder region to a warmer one, that is it does not move from the outside of our houses in the winter to the warmer region inside—it flows in the other direction. When we speak about energy requirements, we really mean requirement of *available* energy and this is limited, even in principle, by the second law of thermodynamics. It is limited also by our lack of skill to make full use of even that part of the energy which seems to be available even if the second law of thermodynamics is taken into account. An expression for this latter amount was already given by Gibbs: if a container is available which can act both as a source and a sink of heat at a definite temperature T_o—and our atmosphere or our seas can furnish or accept heat at a temperature around 300°K—the amount of available energy is given by the expression $G = U - T_oS$ where U is the actual energy difference between initial and final state of the material furnishing us with what we call energy in this discussion, and S is the difference between the entropies of the two states of this material, the difference of the entropies of its initial and its used-up state. If we apply Gibbs' law to an inert material, such as water, it follows that it contains some available energy if its temperature is above T_o, none if its temperature is T_o, but some also if its temperature is below T_o,

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EUGENE P. WIGNER is a Nobel Prize Winner in Physics. The above remarks were made at the Louisiana State University Nuclear Energy Symposium held on April 23, 1976. [They have been edited for print by removing references to other speakers and by minor textual emendations.—Ed.]

Comments on Eugene P. Wigner's article:
"Our Needs for Energy and Ways to Satisfy Them" *

By Amador Cobas

In his article, "Our Needs for Energy and Ways to Satisfy Them," Dr. Eugene P. Wigner points out that the energy problem is not one of the total amount of energy in the world -- since that is practically unlimited -- but that only a very tiny fraction of the total is available for our use, available in the sense that such energy may be made use of through some appropriate technology. Dr. Wigner gives, as an example, the atmosphere, in which the enormous amount of existing energy is not available. Fossil and nuclear fuels, on the other hand, are substances with a high concentration of available energy, and the problem is that quantities of these substances are limited.

Dr. Wigner points out that the human body is a system which, under normal conditions, consumes the same amount of energy as a 100 watt bulb -- which is fairly little. He indicates that the per capita consumption of energy in the United States is equivalent to that of a 10,000 watt machine, which is one hundred times greater that that used by the body. In all the other countries of the world, the per capita consumption of energy is less than in the United States, and in some countries it is very considerably less.

Though these statistics indicate the fact, Dr. Wigner does not point out that in the United States energy is wasted unnecessarily. Stewart Udall, in his book The Energy Balloon, calls attention to this wastage, giving as an example the many families with two or more automobiles, with their enormous engines functioning at 20% efficiency; ornamental lamps burning

* Translated by Marshall Morris

natural gas 24 hours a day; hermetically sealed skyscrapers which require constant artificial temperature control; buildings which often require more energy to operate than a town of 150,000 inhabitants, and all kinds of huge structures such as airports, sports facilities, shopping centers, etc. It is estimated that the per capita consumption of energy in the United States is the equivalent of each person having 200 servants.

Dr. Wigner thinks it is very difficult to know whether it is possible to reduce the consumption of energy by industry. However, the document "Potential for Effective Use of Fuel in Industry," published by the Thermo Electron Corporation and sponsored by the Ford Foundation Energy Project, indicates that by the use of technology it is possible to reduce energy consumption by 33% in one sector of industry, and that greater savings will be possible using industrial processes now on the technological horizon.

Dr. Wigner says that all indications are that in the United States it would be difficult to reduce the consumption of energy and at the same time maintain industrial production. However, in the report "A Time to Choose -- America's Energy Future," published by the Energy Project of the Ford Foundation, we are informed of an analysis of the relation between the consumption of energy and the Gross National Product, using an econometric model designed by Data Resources, Inc., which concludes that a gradual reduction in energy consumption would have a surprisingly small effect. This is not the case when there is a sudden, unexpected interruption in the supply of fuels such as occurred in the case of the oil embargo by the Arabs.

In regard to the consumption of energy in the residential sector, Dr. Wigner asks how much energy we could save without changing the life style of the United States. It seems to me that given the rapidity with which we are consuming the fossil fuels which were produced millions of years ago, and cannot be replaced, the question ought not be how much we can save without changing our life style, but what changes we ought to make in our life style in order not to exhaust the fossil fuels which are the heritage of all humanity. There is no justification at all for generations -- recent, present and in the immediate future -- to use them up, forgetting the right of future generations also to enjoy their use. Dr. Wigner then arrives at the conclusion that in the residential sector we are coming to a stable level of energy use, but he does not give convincing data to support his thesis. He concludes, inexplicably, that the search for more energy will subside.

Dr. Wigner enumerates the energy resources of the inhabitants of the United States, indicating that oil accounts for 60% of these, coal for 25%, natural gas 5%, and nuclear reactors 4%, the rest being produced by hydroelectric and other sources. He also gives the following estimates of the time these will last: oil, 13 years (which I consider very low); coal, 100 to 1,000 years (which seems extremely high); natural gas, 5 years (very low). He calls our attention to the fact that coal mining causes serious ecological damage, and the burning of coal produces great quantities of sulphur dioxide, a harmful pollutant. He goes on to say that the burning of fossil fuels increases the carbon dioxide content of the atmosphere, which has grave consequences for the ecology.

Given this serious situation, Dr. Wigner offers nuclear energy as an ideal solution for the energy problem. According to his analysis, the use of nuclear energy is cheaper and less dangerous ecologically than the burning of fossil fuels; that, by making use of the breeder reactor, the supplies of uranium become an unlimited source of energy. In his enthusiasm for nuclear energy, Dr. Wigner says: (a) that, due to the uranium content, a ton of any kind of rock contains ten times as much energy as a ton of coal, which is true, but at the present it is not possible technologically to make use of it; (b) that the electrical energy produced by nuclear reactors is cheaper that that produced by fossil fuel burning generators, which is true; (c) that there are breeder reactors functioning in France, England and Russia, and that their installation in the United States has been prevented by red tape; (d) that objections to the use of breeder reactors are not justified.

It is curious that Dr. Wigner should place such great emphasis on the pollution produced by the burning of fossil fuels while he gives very little importance to radioactive contamination produced by nuclear reactors or to the danger of possible catastrophic accidents. At the same time, he admits that he is not satisfied with the measures taken to prevent the sabotage of nuclear installations, and that it is quite possible to enter "protected" areas illegally. As to nuclear wastes, which involve the gravest dangers to mankind for periods of over a thousand years, Dr. Wigner thinks that this problem will be

resolved when such wastes can be sent off into space by using rockets. This is not done now because present-day rockets are not safe enough for the task.

On October 1, 1976, a news item was published in the New York Times regarding the decision of the Atomic Safety and Licensing Appeals Board to stop construction indefinitely on a $6,000,000 nuclear center in Seabrook, New Hampshire, due to unsatisfactory answers to questions about the disposal of nuclear wastes. On October 9, in the same newspaper, it was reported that a fourth-year physics student at Princeton had designed an atomic bomb costing about $2,000 to build. The student pointed out that any physics major who pays attention to his teachers can design and build an atomic bomb if he can get the necessary materials. The bomb designed by this student is one-third the strength of the Hiroshima bomb exploded at the end of World War II.

In the same paper, on October 8, there was an item concerning the Stockholm International Peace Research Institute, indicating that within nine years 35 nations will be capable of manufacturing atomic bombs. Until now only six nations have exploded bombs: the United States, the Soviet Union, England, France, China and India. In May of 1974 India exploded an atomic bomb made of materials and equipment provided for peaceful purposes by the United States and Canada.

Dr. Wigner concludes his article with a brief discussion of other energy sources. He begins by mentioning the energy obtainable from the process of fusion, and indicates that this is the most abundant source of energy available today, and that it will soon be shown to be viable.

I believe that Dr. Wigner is very optimistic. Then he makes mention of geothermal energy, energy obtainable from the conversion of thermal energy from the sea, and finally solar energy -- to which only a few lines are given. It is inexplicable that Dr. Wigner should give so little importance to solar energy considering that this is the most abundant source of energy we have and that it is virtually inexhaustible. To give an idea of just how enormously abundant solar energy is, it is sufficient to say that the solar energy which reaches Puerto Rico in a single day is five times what the Autoridad de Fuentes Fluviales (the government power authority) generates in an entire year. This means that if we could convert the twentieth part of one percent of the available solar energy to electrical energy, we would have as much energy as Fuentes Fluviales now produces. This is not technologically feasible at present, but it makes it clear that if even a tiny fraction of the available solar energy were used, it would allow us to reduce petroleum imports by several millions barrils per year.

In the October 1976 edition of Foreign Affairs* Dr. Amory B. Lovins, Consulting Physicist and Representative for England to Friends of the Earth, Inc., published an article entitled "Energy Strategy: The Road Not Taken?" in which he outlines and contrasts two possible paths that we can follow in trying to resolve the energy problem. The first of these is to follow along the lines traced in the recent past, making use of advanced, centralized technology and increasing energy supplies. The second path combines a firm commitment to efficient use of energy, a

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* Vol. 55, No. 1, pp. 65-96.

rapid development of renewable energy sources, making sure that the quantity and the quality of the energy are adequate to necessities, and a transitional technology using fossil fuels. These two paths are mutually exclusive since a commitment to one makes it impossible to follow the other. According to Dr. Lovins we must make our decision soon.

The first path requires rapid expansion in three sectors: coal (principally by open-pit mining), oil and gas (largely from Arctic and off-shore wells), and nuclear fission (eventually using breeder reactors). Along this path, energy conservation is achievedmore by price than by policy; that is, it is more rhetorical than real. Non-traditional energy production is relegated to an unimportant role and its contribution is postponed until the year 2000. It is held that this path can be maintained in the long run by using a combination of both fission and fusion breeder reactors. According to studies already made, this path would require the following in the next 10 years: 900 additional off-shore oil wells, and 170 additional open-pit coal mines which would have to produce 320 million tons per year. The nuclear reactors would require 100 additional uranium mines, one additional unit for enriching uranium 235, 40 additional factories to produce the fuel elements for the reactors and three installations for reprocessing. The electrical system required for this would include 180 coal-burning electrical generating plants of 800 megawatts, 140 reactors of 1,000 megawatts, 160 hydroelectric plants and 350 gas turbines. To construct these units 100,000 engineers, 420,000 skilled workers and 140,000 unskilled workers would be required. By the year 2000 there would be 450 to 800 reactors (including 80 breeder reactors each using 2.5 metric tons

of plutonium), from 500 to 800 coal-fueled electrical generating plants, from 1,000 to 1,600 additional coal mines and 15 million electric automobiles. Massive electrification would produce a volume of waste heat that would increase the temperature of the rivers of the United States, excluding Hawaii and Alaska, from 34° to 49° Farenheit. The volume of carbon dioxide in the atmosphere would double, producing substantial and irreversible changes in the climate of the globe.

The second path involves technical modifications in the ways energy is used. In the first place, energy-saving technologies would be employed, permitting us to produce the same volume of products and services as at present but with an expenditure of much less energy. The means include the following: thermal insulation, more efficient motors, reduction of excessive illumination and ventilation in commercial buildings, and the use of devices to recuperate waste heat in industry. With these technical modifications, efficiency in the use of energy could be doubled, and we could keep the same level of economic activity with primary energy consumption approximately fixed for the next decades, and in this way stretch our present supplies rather than have to augment them massively. It is well known that Americans could considerably reduce energy consumption if they were as efficient as the Swedes.

Some of these changes have already come about and are functioning. The 1977 cars will get 27% more mileage per gallon of gas than those produced in 1974. Kitchen utensils waste great amounts of energy. The

design and construction of more efficient utensils would produce twice the number of jobs as the construction of electrical generating plants -- which is the least labor intensive of industries.

It is estimated that the capital investment required to reduce the consumption of oil by a barrel a day varies from zero to $25,000, in comparison with estimates of from $100,000 to $300,000 to produce an increase in the energy generated by the equivalent of a barrel of oil per day in generators that burn coal or other fossil fuels.

Another area of energy saving along the second path is what is called co-generation which consists of the generation of electrical energy as a by-product of steam produced in manufacturing. It is estimated that by 1985 American industry could supply half its own needs for electrical energy by this technique. Co-generation could save $20 to $50 billion in capital investment, and from 2 to 3 million barrels of oil per day, and it would eliminate the necessity to construct 50 large, nuclear generating plants. At present, co-generation provides 29% of the electrical energy produced in West Germany but only 4% in the United States. These modifications, besides being permanent, would cost less than increasing the supplies of energy.

The barriers to the efficient use of energy are neither technical nor, for the most part, economic. They are the product of 3,000 confict-ing and obsolete building codes, of a construction industry resistent to change, of a lack of mechanisms to facilitate the transition from kinds of jobs we no longer need to those that we now do, of the way engineers are paid (by fixing a percentage of the cost of equipment installed),

of a fragmentation of government responsibility, etc.

The technologies required for the first path are called hard technologies, and those of the second soft technologies. The characteristics of the soft technologies are these:

1. They depend on renewable energy sources which will always be available, whether we use them or not, such as solar, wind and vegetable energy. It is a matter of using energy "income" that will last indefinitely rather then energy "capital" which can be exhausted.
2. There are many forms, and the energy supply is the product of many small, individual contributions.
3. They are flexible and involve a technology which is simple to use without esoteric skills.
4. They adapt in scale and geographic distribution to the purposes to which they will be put.
5. They adapt in regard to the quality of the energy produced to the purposes to which they will be put.

People do not want either electricity or oil as such; they want comfortable homes, light, vehicles, food and other things which are real and palpable. In the United States 58% of the energy is needed, in its final form, as heat -- about half above and half below the boiling point of water. In addition, about 38% is used for driving machines: 31% for vehicles, 3% for tubing, and 4% for industrial engines. The remaining 4% is used for illumination, electronic equipment, telecommunications, electrometalurgy, electrochemistry, arc-welding and electric motors for kitchen utensils. From all this one comes to the conclusion that we use

fuels of high quality and electricity for many purposes not requiring such high quality. Where we need to produce heat on a scale of tens of degrees we ought to use an energy source capable of producing tens or hundreds of degrees, not a flame whose temperature is thousands of degrees or a nuclear temperature of millions of degrees. This is like cutting butter with a mechanical saw.

Soft technologies can produce savings in the following ways:

1. They can reduce overhead. Approximately half of the charges that you pay for the electrical energy that you consume are due to overall costs: transformers, cables, meters, and the people necessary to read them, the planners and computers, etc.
2. They eliminate the losses of energy involved in distribution.
3. They eliminate the need for large reserve units to supply sudden energy requirements.
4. They eliminate the costs of errors in the calculation of demands for energy.
5. They permit the construction, on a massive scale, of small units with the consequent savings in production costs.

The use of fusion energy involves the following dangers:

1. The neutrons could be used to make materials for nuclear bombs.
2. If it turns out to be a "dirty" source of energy as many experts think it will, we will use it anyway; and if it turns out to be "clean," the volume of waste heat produced would alter the temperature of the earth dangerously.

3. The use of a complex, costly and centralized technology to produce electricity takes us in the direction opposite to the one we ought to follow.

Hard technology and soft technology both carry us into a post-petroleum, post-gas era. Soft technology is simple, inexpensive and uncomplicated; hard technology is extremely costly and complex. The investment costs of soft technology are small and the user himself covers them; hard technology involves enormous costs and the government has to cover them. Risks are consequently greater for hard technology. Hard technology depends on a few, highly complex technologies while soft technology depends on a great variety of simple technologies.

All that has been said here with reference to the United States applies to Puerto Rico, but with the added, weighty factor that Puerto Rico does not have its own, domestic sources of energy. Almost 100% of the energy consumed in Puerto Rico comes from imported oil. The possibilities of getting oil from the fields which are said to exist off the coast of Puerto Rico are very remote. In contrast to this uncertainty we have the sure fact of the enormous amount of solar energy which reaches us daily and which we do not use. The task before us is simple and clear: OUR FUTURE IS IN THE USE OF SOLAR ENERGY.

Reprinted from REVISTA/REVIEW INTERAMERICANA Vol. VI, No. 4, Winter 1976-77

Comentarios al artículo de Dr. Wigner

Amador Cobas

En su artículo "Our Needs for Energy and Ways to Satisfy Them" el Dr. Eugene P. Wigner plantea el hecho que el problema de energía no es cuestión de la cantidad de energía total en el globo terrestre, ya que ésta es prácticamente ilimitada, si no el hecho de que solamente una pequeñísima fracción de ésta está *disponible* para nuestro uso. Entendiéndose por *disponible* aquella energía que mediante una tecnología apropiada podemos hacer uso de ella. Da el ejemplo de la atmósfera en la cual existe una cantidad enorme de energía que no está disponible. Los combustibles fósiles y nucleares son substancias con un alto contenido de energía disponible y el problema consiste en que la cantidad de estas substancias en el globo terrestre es limitada.

Indica el Dr. Wigner que el cuerpo humano es un sistema el cual, bajo condiciones normales, consume una cantidad de energía equivalente a la que consume una bombilla de 100 vatios siendo esta una cantidad relativamente pequeña. Informa el Dr. Wigner que el consumo de energía per cápita en los Estados Unidos es equivalente al consumido por una máquina de 10,000 vatios, lo cual viene a ser cien veces mayor que el consumido por un cuerpo humano. El consumo de energía per cápita en todos los otros países del mundo es menor que el valor para los Estados Unidos y en algunos países es muchísimo menor.

A pesar de que estas estadísticas lo demuestran, el Dr. Wigner no indica que en los Estados Unidos se derrocha la energía innecesariamente. Stewart Udall en su libro *The Energy Balloon* llama la atención a este derroche dando como ejemplo de esto las muchas familias con dos o más automóviles,

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AMADOR COBAS ha servido como Director Asociado del Puerto Rico Nuclear Center y como Presidente de la Universidad de Puerto Rico. Actualmente retirado, tiene una larga experiencia en el campo de la energia: completó su doctorado en Física en la Universidad de Columbia, trabajó en el Proyecto Manhattan y actualmente es uno de los principales proponentes en Puerto Rico de las fuentes no tradicionales de la energía.

Comentarios al artículo: "Our Needs for Energy and Ways to Satisfy Them" de Eugene P. Wigner .

por Amador Cobas

En su artículo "Our Needs for Energy and Ways to Satisfy Them" el Dr. Eugene P. Wigner plantea el hecho que el problema de energía no es cuestión de la cantidad de energía total en el globo terrestre, ya que ésta es prácticamente ilimitada, si no el hecho de que solamente una pequeñísima fracción de ésta está disponible para nuestro uso. Entendiéndose por disponible aquella energía que mediante una tecnología apropiada podemos hacer uso de ella. Da el ejemplo de la atmósfera en la cual existe una cantidad enorme de energía que no está disponible. Los combustibles fósiles y nucleares son substancias con un alto contenido de energía disponible y el problema consiste en que la cantidad de estas substancias en el globo terrestre es limitada.

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A pesar de que estas estadísticas lo demuestran, el Dr. Wigner no indica que en los Estados Unidos se derrocha la energía innecesariamente. Stewart Udall en su libro "The Energy Baloon" llama la atención a este derroche dando como ejemplo de esto las muchas familias con dos o más automóviles, motores de automóviles de enorme potencia y con una eficiencia de 20%, linternas ornamentales quemando gas natural 24 horas al día, rascacielos herméticamente cerrados que requieren control de temperatura artificial continuamente, edificios que requieren para su funcionamiento más energía que la requerida por un pueblo de 150,000 habitantes y toda una clase de megaestructuras tales como superaeropuertos, enormes palacios de deportes, enormes centros comerciales, etc. Se estima que el consumo de energía per cápita en los Estados Unidos equivale a proveerle 200 sirvientes a cada ciudadano.

El Dr. Wigner considera que es muy difícil saber si es o no posible disminuir el consumo de energía por las industrias. Sin embargo, en el documento "Potential for Effective Use of Fuel in Industry" publicado por la Thermo Electron Corporation y auspiciado por el Ford Foundation Energy Project se indica que con la tecnología

es posible reducir en un 33% el consumo de energía en un segmento de la industria. Se indica además en ese documento, que economías mayores podrán lograrse usando procesos industriales que están ya en el horizonte tecnológico.

Dice el Dr. Wigner que todo parece indicar que en los Estados Unidos sería difícil disminuir el consumo de energía y mantener al mismo tiempo el ritmo de producción industrial. Sin embargo, en el informe "A Time to Choose- America's Energy Future" publicado por Energy Policy Project of the Ford Foundation, se informa sobre un análisis hecho sobre la relación entre el consumo de energía y el Producto Bruto Nacional usando un modelo econométrico diseñado por Data Resources,,Inc. en el cual se llegó a la conclusión que la disminución gradual en el consumo de energía tendría un efecto sorprendentemente pequeño. Este no es el caso cuando ocurre una interrupción repentina e inesperada en el suministro de combustibles como ocurrió en el caso del embargo del petróleo por los Arabes.

En relación al consumo de energía en el sector residencial el Dr. Wigner se pregunta cuanta energía podemos economizar sin cambiar el modo de vida en los Estados Unidos. Me parece que ante la rapidez con que vamos consumiendo los combustibles fósiles que fueron producidos hace millones de años y que no hay modo de reponerlos, la pregunta no debe ser cuanto podemos economizar sin cambiar nuestro modo de vida si no que cambios debemos hacer en nuestro modo de vida para no agotar los combustibles fósiles que son patrimonio de toda la humanidad y que no hay justificación alguna para que generaciones del ayer inmediato, del presente y del futuro inmediato los consuman olvidándose del derecho que las generaciones futuras tienen del disfrute de estos.

El Dr. Wigner luego llega a la conclusión de que en el sector residencial estamos llegando a un ritmo de consumo de energía estable pero no provee datos convincentes para sostener su tésis. Concluye inexplicablemente el Dr. Wigner que la búsqueda de más energía ~~será (will subside)~~ disminuirá.

En su artículo el Dr. Wigner enumera los recursos energéticos con que cuentan los habitantes de los Estados Unidos e informa que de éstos el petróleo provee el 60%, el carbón el 25%, el gas natural el 5%, los reactores nucleares el 4% y el resto los generadores hidroeléctricos y otros. Presenta además los siguientes estimados de los años que durarán los abastos de estos recursos: petróleo 13 años (lo considero muy bajo), carbón de 100 a 1000 años (considero estos valores extremos), gas 5 años (lo considero muy bajo).Llama la atención el Dr. Wigner al hecho que la explotación de las minas de carbón causa graves daños ecológicos y que la quema de carbón produce grandes cantidades de bióxido de azufre, un contaminante muy dañino. Indica además que la quema de los combustibles fósiles aumenta el contenido de bióxido de carbóno en la atmósfera con graves consecuencias para la ecología.

Ante esta grave situación el Dr. Wigner presenta el uso de la energía nuclear como la solución ideal para el problema de energía. De acuerdo a su análisis el uso de la energía nuclear resulta más barato y menos peligroso ecológicamente que la quema de combustibles fósiles. Indica el Dr. Wigner además que haciendo uso del reactor nuclear autorregenerador (breeder reactor) los abastos de uranio se convierten en una fuente ilimitada de energía. En su entusiasmo por la energía nuclear el Dr. Wigner expresa lo siguiente: (a) que debido a su contenido de uranio una tonelada de cualquier tipo de roca contiene diez veces más energía que una tonelada de carbón, lo cual es cierto pero al presente tecnológicamente imposible de aprovecharse; (b) que la energía eléctrica producida por generadores nucleares resulta más barata que la producida por generadores que queman combustibles fósiles, lo cual es cierto; (c) que hay reactores nucleares autorregeneradores funcionando en Francia, Inglaterra y Rusia y que el expedienteo (red tape) no ha permitido la instalación de estos en los Estados Unidos; (d) que las objeciones al uso de estos generadores nucleares no están justificadas.

Es curioso que el Dr. Wigner haga gran énfasis sobre la contaminación producida por la quema de combustibles fósiles y sin embargo le da muy poca importancia a la contaminación radiactiva producida por los reactores nucleares y al peligro de accidentes catastróficos que estos representan. Al mismo tiempo el Dr. Wigner admite que no está satisfecho con los esfuerzos que se hacen para evitar el sabotaje en instalaciones nucleares y que es posible entrar ilegalmente a áreas supuestamente "protegidas". En cuanto a los desperdicios de los reactores nucleares, los cuales envuelven gravísimos peligros para la humanidad por períodos que exceden los mil años, el Dr. Wigner considera que esto se resolverá cuando estos puedan lanzarse al espacio mediante el uso de cohetes. Al presente no se hace esto porque los cohetes actuales no ofrecen suficiente seguridad para esto.

En octubre 1° del corriente año se publicó en el New York Times la noticia de la decisión del Atomic Safety and Licensing Appeals Board de detener indefinidamente la construcción de una central nuclear de mil seiscientos millones de dolares en Seabrook, New Hampshire debido a preguntas no contestadas satisfactoriamente sobre la disposición de los desperdicios nucleares. En octubre 9 del corriente año en ese mismo rotativo se publicó la noticia del estudiante de cuarto año de Física de la Universidad de Princeton que diseñó una bomba atómica cuyo costo sería de aproximadamente $2,000. El estudiante indicó que cualquier estudiante del programa de bachillerato de Física que preste atención a las explicaciones de sus profesores puede diseñar y fabricar una bomba atómica si obtiene los materiales necesarios. La bomba diseñada por este estudiante es de una potencia igual a un tercio de la potencia de la bomba que se explotó en Hiroshima al final de la Segunda Guerra Mundial.

En ese mismo rotativo se publicó el día 8 de octubre del corriente año una noticia dada por el Stockholm International Peace Research Institute en la cual se indicaba que dentro de nueve años 35 naciones estarían en condiciones de hacer bombas nucleares. Hasta ahora sólo seis naciones han explotado bombas atómicas siendo estas Estados Unidos, Unión Soviética, Inglaterra, Francia, China e India. En mayo de 1974 India explotó una bomba atómica la cual fué construida con materiales y equipo provistos para fines pacíficos por Estados Unidos y Canadá.

El Dr. Wigner termina su artículo discutiendo muy brevemente otras fuentes de energía. Comienza mencionando la energía obtenible del proceso de fusión e indica que es ésta la más abundante de todas las que se perfilan actualmente y que su viabilidad se demostrará en un futuro cercano. Creo que el Dr. Wigner es muy optimista. Luego menciona la energía geotérmica, la energía obtenible mediante la conversión de la energía térmica del mar y finalmente la energía solar a la cual sólo le dedica un cuarto de una página. El Dr.Wigner se olvida de que la energía térmica del mar se origina en el sol. Es inexplicable que el Dr. Wigner le dé tan poca importancia a la energía solar considerando que ésta es la fuente de energía más abundante que tenemos y que es además prácticamente inagotable. Para dar una idea de lo enormemente abundante que es la energía que nos llega del sol basta con decir que la energía solar que cae sobre la superficie de Puerto Rico en SOLO UN DIA es equivalente a CINCO VECES la cantidad de energía que la Autoridad de las Fuentes Fluviales genera en UN AÑO. Esto quiere decir que si pudieramos convertir en energía eléctrica cinco centésimas de un por ciento de la energía que recibimos del sol tendríamos una cantidad de energía eléctrica igual a la que la Autoridad de las Fuentes Fluviales genera. Esto no es tecnológiacmente factible a este momento pero nos indica que la utilización de una pequeñísima fracción de la energía solar nos permitiría disminuir la importación de petróleo por varios millones de barriles al año.

En el Volumen 55, Núm. 1 (octubre 1976) de la revista Foreign Affairs el Dr. Amory B. Lovins, Físico Consultor y Representante por Inglaterra en Friends of the Earth INC. publica un artículo intitulado: Energy Strategy: The Road Not Taken? en el cual esboza y contrasta dos posibles caminos que podríamos seguir para tratar de resolver el problema de la energía. El primero de estos es seguir a lo largo de una extrapolación del pasado reciente haciendo uso de tecnologías avanzadas centralizadas y de aumentar los abastos de energía. El segundo camino combina un firme compromiso con el uso eficiente de la energía; un rápido desarrollo de fuentes de energía renovables asegurándose de que la cantidad y la calidad de la energía se ajuste adecuadamente a las necesidades; y una tecnología transitoria que haga uso de los combustibles fósiles. Estos dos caminos son mutuamente exclusivos, ya que al comprometernos con uno se imposibilita el seguir por el otro. De acuerdo al Dr. Lovins tenemos que hacer la decisión pronto.

El primer camino requiere una rápida expansión en tres sectores: carbón (principalmente por explotación a cielo abierto); petróleo y gas(mayormente de pozos en el Artico y costa afuera); y fisión nuclear (eventualmente en reactores autorregeneradores). En este camino la conservación de la energía se produce más por los precios que por una política, esto es, una prioridad más retórica que real. La producción de energía no-convencional se relega a un rol sin importancia y su contribución se pospone hasta el año 2000. Se considera que se puede mantener este camino a largo plazo mediante una combinación de autorregeneradores de fisión y autorregeneradores de fusión. De acuerdo a los estudios hechos este camino requeriría en los próximos diez años lo siguiente: 900 pozos de petróleo adicionales en costa afuera, 170 minas adicionales de carbón a cielo abierto que extraerían 320 millones de toneladas al año. Los reactores nucleares requerirían 100 minas de uranio adicionales, una unidad adicional para enriquecimiento de uranio 235, 40 fábricas adicionales para la fabricación de los elementos combustibles para los reactores y tres instalaciones para reprocesamiento. El sistema eléctrico requerido para esto tendría 180 centrales eléctricas de 800 megavatios operadas con carbón, 140 reactores nucleares de 1000megavatios, 160 centrales hidroeléctricas y 350 turbinas de gas. Para la construcción de estas unidades se requerirían 100,000 ingenieros, 420,000 artesanos y 140,000 obreros no diestros. Para el año 2000, en este camino habría de 450 a 800 reactores (incluyendo 80 autorregeneradores con 2.5 toneladas métricas de plutonio cada uno), de 500 a 800 centrales eléctricas operadas con carbón, de 1,000 a 1,600 minas de carbón adicionales y 15 millones de automóviles eléctricos. La electrificación masiva produciría una cantidad de calor desechado que aumentaría de 34 a 49°Farenheit la temperatura de los ríos de los 50 estados excluyendo a Hawaii y Alaska. Se duplicaría la cantidad de bióxido de carbono en la atmósfera lo cual produciría cambios sustanciales e irreversibles en el clima del planeta Tierra.

El segundo camino envuelve modificaciones técnicas a los modos de usar la energía. En primer lugar se utilizarían tecnologías ahorrativas que nos permitirían producir la misma cantidad de productos y servicios que producimos ahora gastando mucho menos energía. Estas técnicas envuelven lo siguiente: aislación térmica, motores más eficientes, disminución en la iluminación y ventilación excesiva en edificios comerciales y uso de recuperadores de calor desechado en procesos industriales. Con estas modificaciones técnicas podría duplicarse la eficiencia en el uso de la energía y podríamos mantener el nivel de actividad económica con aproximadamente un consumo de energía primario fijo por las próximas décadas y de este modo extender nuestros abastos presentes en lugar de aumentarlos masivamente. Se sabe que los americanos podrían disminuir considerablemente el consumo de energía si fueran tan eficientes como los suecos.

Algunas de estas modificaciones ya están funcionando. Los automóviles de 1977 tendrán un 27% de mayor millaje por galón de

gasolina que los del 1974. Los utensilios caseros desperdician grandes cantidades de energía. El diseño y construcción de utensilios más eficientes producirían el doble del número de empleos que la construcción de centrales eléctricas la cual requiere la intensidad laboral menor de toda la economía.

Se estima que la inversión de capital para lograr disminuir el consumo de petróleo en un barril al día varía entre cero y $25,000 en comparación con estimados de $100,000 a $300,000 para producir un aumento en la energía generada en un valor equivalente a un barril de petróleo al día en generadores que queman carbón u otros combustibles fósiles.

Otra area de economía de energía en el segundo camino es lo que se llama cogeneración (cogeneration) lo cual consiste en la generación de energía eléctrica como producto secundario (by-product) del vapor de procesamiento en muchas industrias. Se estima que para el 1985 la industria americana podría suplir la mitad de sus necesidades de energía eléctrica haciendo uso de esta técnica. La cogeneración podría economizar de 20,000 a 50,000 millones de dólares en inversión de capital, de 2 a 3 millones de barriles de petróleo al día y eliminaría la necesidad de construir 50 centrales eléctricas nucleares grandes. Al presente la cogeneración provee el 29% de la energía eléctrica generada en Alemania Occidental y sólo el 4% en los Estados Unidos. Estas modificaciones además de ser permanentes costarían menos que lo que costaría aumentar los abastos de energía.

Las barreras al uso más eficiente de la energía no son técnicas ni en buen sentido económicas. Las producen más de 3,000 códigos de construcción conflictivos y obsoletos, una industria de construcción resistente a la innovación, una falta de mecanismos para facilitar la transición de tipos de trabajos que ya no necesitamos a tipos que ahora necesitamos, a modos de fijar honorarios a los ingenieros en los cuales se aplica un por ciento fijo de los costos de los equipos que se instalan, a fragmentación de la responsabilidad gubernamental, etc.

A las tecnologías requeridas por el primer camino se les llama tecnologías duras (hard technologies) y a las tecnologías requeridas por el segundo camino se les llama tecnologías blandas (soft technologies). Las características de las tecnologías blandas son las siguientes:

1. Dependen de flujos de energía renovables que estarán siempre disponibles, usémoslas o no, tales como la energía del sol, del viento y de la vegetación. Envuelve usar ingresos enérgéticos que durarán indefinidamente en lugar de usar capital energético agotable.
2. Son de una gran variedad de modo tal que el suministro de energía es el agregado de muchas pequeñas contribuciones individuales aunque modestas en magnitud.
3. Son flexibles y envuelven una tecnología simple de usar sin necesidad de destrezas esotéricas.
4. Se ajustan en escala y distribución geográfica a las necesidades de su uso final.
5. Se ajustan en la calidad de la energía a las necesidades de su uso final.

El pueblo no desea electricidad ni petróleo como tal, el pueblo desea viviendas confortables, luz, vehículos, alimentos y otras cosas reales y palpables. En los Estados Unidos el 58% de la energía se requiere en su punto final de uso en forma de calor, dividido esto en aproximadamente partes iguales en calor a temperaturas bajo o sobre la temperatura de ebullición del agua. En adición, aproximadamente el 38% provee movimiento mecánico: 31% en vehículos, 3% en tuberías y 4% en motores industriales. El 4% restante se usa para iluminación, equipos electrónicos, telecomunicaciones, electrometalurgia, electroquímica, soldaduras de arco y motores eléctricos en utensilios caseros. De todo esto se deduce que usamos combustible de alta calidad y electricidad para muchos usos en los cuales su calidad de alta energía es superflua. Donde necesitamos producir temperaturas de decenas de grados debemos usar fuentes de energía cuyo potencial sea decenas o centenas de grados pero no una flama cuya temperatura sea de miles de grados o una temperatura nuclear de millones de grados. Esto es como cortar mantequilla con una sierra mecánica.

Las tecnologías blandas pueden producir economías en las siguientes formas:

1. Pueden reducir los gastos generales (overhead). Aproximadamente la mitad de los cargos que usted paga por la energía eléctrica que usted consume se deben a gastos generales tales como: líneas de transmisión, transformadores, cables, contadores y la gente que se necesita para leerlos, planificadores, computadoras, etc.
2. Eliminan las pérdidas debido a los sistemas de distribución.
3. Eliminan la necesidad de grandes unidades en reserva para suplir requerimientos de energía repentinos.
4. Eliminan los costos de errores en el estimado de la demanda energética.
5. Permiten la construcción en masa de pequeñas unidades con la consecuente economía en el costo de producción.

El uso de la energía de fusión envuelve los siguientes peligros:

1. Los neutrones podrían usarse para producir materiales para la fabricación de bombas nucleares.
2. Si resultaa ser una tecnología "sucia" como muchos expertos opinan, la usaríamos de todos modos, y si resulta ser "limpia" la cantidad de calor que habría que desechar alteraría la temperatura del globo terrestre a niveles peligrosos.
3. Usar una tecnología complicada, costosa y centralizada para producir electricidad que va en la dirección contraria a la que deberíamos seguir.

Las tecnologías duras o las tecnologías blandas nos llevarán a a la era post-petróleo y post-gas. Las tecnologías blándas dependen de tecnologías simples, de poco costo y carentes de sofisticación. Las tecnologías duras dependen de altísimos costos y de una gran sofisticación. Los costos de inversión de la tecnología blanda son pequeños

y los proveeel usuario individualmente, los costos de la tecnología dura son enormes y los tiene que proveer el gobierno. La diferencia en los riesgos es consecuentemente mayor para la tecnología dura. La tecnología dura depende de unas pocas tecnologías altamente complicadas, la tecnolgía blanda depende de una gran variedad de tecnologías simples.

Todo lo expresado en estos comentarios con refetencia a los Estados Unidos es aplicable a Puerto Rico con el agravante de que Puerto Rico no cuenta con recursos energéticos propios. Casi el 100% de la energía consumida en Puerto Rico se obtiene del petróleo importado. Las posibilidades de obtener petróleo de yacimientos que se dice existen en las costas de Puerto Rico son muy remotas. En contraste con esta incertidumbre tenemos el hecho firme y seguro de la enorme cantidad de energía solar que nos llega diariamente y que no utilizamos. La tarea es clara y simple: NUESTRO FUTURO ESTA EN LA UTILIZACION DE LA ENERGIA SOLAR.

LSU
LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE, LOUISIANA 70803

College of Arts and Sciences
Department of Botany

July 24, 1978

The Sound and The Fury
Esquire Magazine
488 Madison Avenue
New York, NY 10022

Gentlemen:

The article in ESQUIRE for August 1, 1978 entitled "How I designed an A-Bomb my Junior year at Princeton" by J.A.Phillips and D. Michaelis, describes a feat soon to be celebrated in song and story, will surely be thought nothing short of sensational by most of your readers, and I share a certain enthusiasm for the authors' ingenuity, but this is tempered by information probably unknown to your readers and no doubt to the editors as well.

After quoting at length from Feiveson's Princeton seminar which underscored the destructiveness of the relatively small (by present standards) twenty kiloton bombs that annihilated Hiroshima and Nagasaki, the authors outline the genesis of their idea to produce a bomb of their own - and apparently succeeded. But here's the rub. The bomb designed would not have exploded! This verdict comes from one who should know, Dr. Eugene Wigner, the "eminent Nobel-Prize physicist" quoted in the story.

In an article on energy needs written at my invitation by Dr. Wigner for the REVIEW/REVISTA INTERAMERICANA(1976-1977), he refers to the bomb designed by "a Princeton University student," and comments: "I thought it showed considerable skill and understanding and it was therefore recommended for acceptance. Nonetheless I must emphasize that the equipment designed by that student would never have exploded."

So in the opinion of Dr. Wigner who was instrumental in bringing the Manhattan Project to fruition, Phillips' bomb would have been a dud - without even the bang of a firecracker. What a finale for Hollywood. May all terrorists copy the Phillips design! Anyway, should Wigner's opinion be withheld from your readers?

I have enclosed reprints of the articles by Wigner (and Cobas) and have marked the pertinent passages on pages 507 and 513(Wigner's assessment).

Sincerely yours,

B. Levy

Bernard Levy
Professor of Botany
Louisiana State University
and
Consulting Editor
REVISTA/REVIEW INTERAMERICANA

[not published]
BL

ASLAN y EZCURRA
ARQUITECTOS

MONTEVIDEO 690
T. E. 40-1881 y 1481
BUENOS AIRES

Lunes 12 de marzo / 79

Queridos Lowy

Estoy muy contento con la comunicación, con sus saludos a la septuagenaria, y con haber percibido rápidamente que el jueves 26 de Abril podríamos dar Uds un abrazo. Mi plan es el siguiente: 1° Vía Baton Rouge vía Nueva Orleans; frotarnos las narices ½ jueves, viernes, sabado y ½ Domingo y volver a Nueva Orleans por un día o medio día para ver el famoso Superdome. Luego New York, para buscar un alojamiento adecuado - 2 días. Boston 2 días o tres en Doris Como cicerona y alojarme en el HYATT que es el super mal gusto de la clase capitalista, para que ella lo pueda criticar a su gusto. Seguiríamos a Canada - Quebec. Montreal. Toronto - New York para quedarnos unos 20 días y vuelta a casa.

Lo que no sé, y esta es mi pregunta, que me conviene más, (no del punto de vista económico) para conocer algo del famoso MAINE, que forma tengo para hacerlo - Si es prisible - no alquilar un auto - no Tengo ganas de conducir por lugares tan concurridos. ni perderme por la ciudad.

Saben Uds si existe algun Tour que permita hacer ese circuito? pueden Uds conseguir

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me información para poder contratar esto aquí, o allí en Boston - etc - mi mapa de USA es solo un enorme plano del Geographic Magazine!

Ahora me doy cuenta que nos empeñé diciendo. adjunto copia Xerox de la muy atenta del 26 de febrero de Doris. linda carta a todo color.

Espero una notita de Uds con instrucciones - Hasta la vista. Trataremos de ser lo menos pesados posibles; y desde ya decir Bernard tendremos el correspondiente Simposio sobre el tema - quién m..... nos puso en el camino di nostra vita, a las hermanas Jaroslavskiska

Abrazos. Ese papel es viejo pero de buena marca.

José