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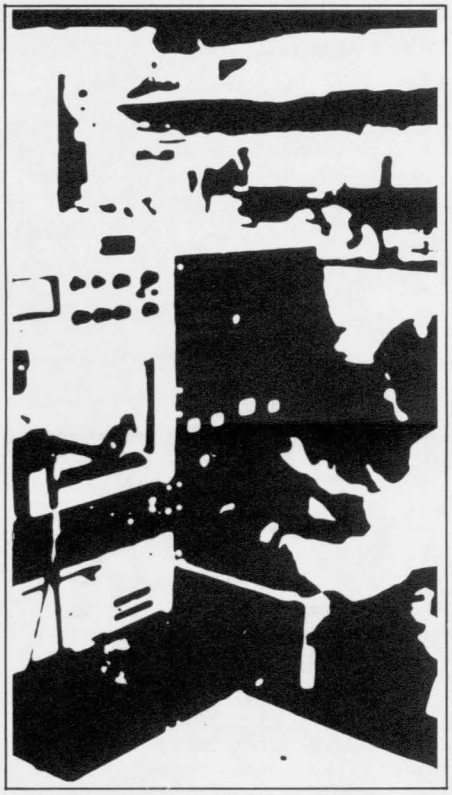
Minneapolis, Minn. 55455



ITEMS

Volume 3, Number 3
Spring, 1977

HISTORY OF NUCLEAR PHYSICS SYMPOSIUM TO HEAR DISTINGUISHED LECTURERS

A four-day Symposium to be held May 18-21, 1977, will bring eight distinguished scientists to the University of Minnesota campus for the purpose of exploring key aspects of the history of nuclear physics, primarily in the decades of the 1930's and 1940's. The event will provide the local scientific community, as well as the general public, with the opportunity to hear from physicists who were among the major contributors to the development of nuclear physics.

Four of the speakers, Hans A. Bethe, Cornell University, Eugene P. Wigner, Princeton University, Edwin M. McMillan, University of California-Berkeley and Emilio G. Segrè are Nobel Laureates and have received many honors as have the other distinguished speakers, Otto R. Frisch, University of Cambridge, Maurice Goldhaber, Brookhaven National Laboratory, Sir Rudolf E. Peierls, Oxford University, and John A. Wheeler, Princeton University and the University of Texas.

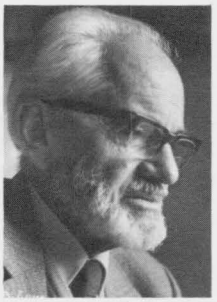
Alfred O. Nier, Regent's Professor of Physics, University of Minnesota, will preside at the opening of the event on the evening of Wednesday, May 18th. C. Peter Magrath, President of the University of Minnesota and Henry Koffler, Vice-President for Academic Affairs, will offer welcoming remarks. Hans A. Bethe will present the opening lecture.

Thursday, May 19th, William Fowler of the California Institute of Technology will preside at the sessions that will hear Emilio G. Segrè at 9:00 a.m. and Otto R. Frisch at 11:00 a.m. On the afternoon of the same day Herman Feshback of the Massachusetts Institute of Technology will chair the session at which Maurice Goldhaber will lecture at 2:15 p.m.

Eugene P. Wigner

Edwin M. McMillan

Emilio G. Segrè



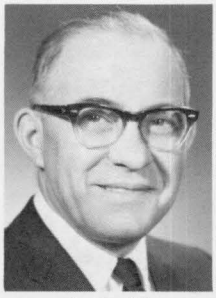
Otto R. Frisch

H. H. Barschall of the University of Wisconsin will preside Friday morning when Edwin M. McMillan and Eugene P. Wigner are presented at 9:00 a.m. and 11:00 a.m., respectively. In the afternoon, Robert Serber, Columbia University, will preside at the 2:15 p.m. session at which Sir Rudolf E. Peierls appears and the concluding session Saturday morning at 9:00 a.m. will hear John A. Wheeler with R. R. Wilson of the Fermi National Accelerator Laboratory presiding. Discussions will follow all lectures.

Topics for all the speakers have not yet been firmed. The information

Sir Rudolf E. Peierls

John A Wheeler



A. O. Nier

Roger H. Stuewer

Everett Dale, President, Alumni Association

will be available in the near future from Roger H. Stuewer, School of Physics and Astronomy, 116 Church St., SE, University of Minnesota, Minneapolis 55455.

Members of the Organizing committee in addition to Goldhaber, McMillan and Stuewer are Morton Hamermesh, University of Minnesota, Alfred O. Nier, University of Minnesota and Spencer R. Weart, Center for History of Physics, American Institute of Physics.

All events are scheduled to be held in the Mayo Memorial Auditorium on the University of Minnesota's Minneapolis campus. The organizers of the Symposium will do their best to accommodate everyone. In the event of a capacity audience the spacious lobby of the Mayo Memorial Auditorium will serve the overflow, utilizing TV monitors.

Admission is by free ticket only. The tickets are obtainable, in advance, from Joe Kroll, Department of Conferences, Nolte Center for Continuing Education, 315 Pillsbury Drive, University of Minnesota, Minneapolis, MN 55455, (612) 373-3685.

ITEMS

ITems is a quarterly publication of the Institute of Technology at the University of Minnesota, with special support from the I.T. Alumni Association. Material from this publication may be reproduced without cost, but credit to ITems will be appreciated. Requests to be placed on the mailing list or other inquiries may be directed to Clarence A. Berg, at the above address. Phone (612) 373-4838.

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Assistant Dean, Industry and Professional Relations .. *Arnold A. Cohen*
Assistant Dean, Student Affairs ..... *Paul A. Cartwright*
Director, Continuing Education in Engineering and Science ... *M. E. Nicholson*
Assistant to the Dean and Director of Special Programs ..... *Clarence A. Berg*
I. T. Alumni President ..... *Everett Dale*
Editor ..... *Lew Reeve*

A MESSAGE FROM THE IT ALUMNI PRESIDENT

On the afternoon of Feb. 3, I, and other members of the IT advisory Council, had the opportunity of taking an inspection tour of selected IT facilities which concentrated on four IT items appearing in the University capital request to the legislature.

A brief summary of the firsthand knowledge of the inadequacy of the IT plant should prove helpful to us as alumni in interacting with the legislature. Professor Gassman in his briefing, described the acute remodeling needs of Chemistry. Much of the Smith Hall (old chemistry) space is obsolete, and unsafe by today's standards. Some space remains unused for this reason. Recent legislative sessions have granted amounts which are so small as to permit only piecemeal building improvements.

Professor Rapson briefed the group with a slide presentation prior to a walkthrough of Architecture. The building is too small for the present program, making it necessary to rent additional studio space at off-campus sites. The present building is designed to accommodate a third floor, and the University is requesting working drawing funds at this time.

Professor Lee provided the pre-walk briefing on Electrical Engineering needs. A schematic architectural design was developed with preliminary planning funds appropriated in 1971. Working drawing funds for this buliding carry the No. 1 priority in this category.

Professor Fairhurst led the group on a walk through those portions of Experimental Engineering used by Civil and Mineral Engineering and he conducted a summary briefing. Planning money is now requested. This item has the No. 1 priority in the planning category. Underground construction is favored at this time, with inclusion of a pilot test and demonstration of the "zero annual energy cost" concept for heating and cooling. If state money is appropriated (in the first term of the biennium), prospects are good for federal support of the demonstration project.

A legislative information package has been prepared that we alumni can use in writing a few letters to key legislators or to our own representatives. Even as few as four letters received on a particular issue have been taken seriously enough to sway a committee decision.

The package consists of A) Senate Finance Committee, showing Education Subcommittee, B) House Appropriations Committee, showing Education Division and University Subcommittee, C) Members of the Senate, D) Members of the House, E) District map, Twin Cities Metro, F) Twin Cities Metro Central Area.

For a copy just drop me a line—President, IT Alumni Association, Alumni Center, 2610 University Ave., St. Paul, MN, 55114.

OUTSTANDING ACHIEVEMENT AWARD TO JOHNSON

The Outstanding Achievement Award of the University of Minnesota was presented to Edgar F. Johnson, Chairman, E. F. Johnson Co., Waseca, MN, at a program held on April 26th in the Coffman Memorial Union Theater on the Minneapolis campus. The award is presented to graduates of the University who have attained unusual distinction in their chosen fields. Mr. Johnson is a 1921 graduate of the University with a BS in Electrical Engineering.

The E.F. Johnson Company, with the leadership provided by Mr. Johnson, has been a major manufacturer of amateur radio equipment since he founded the firm in 1923. Recently the company has been the leading U.S. manufacturer of Citizen's Band equipment.

This award was made on the same evening that Dr. Elmer W. Engstrom, past chief executive officer of the RCA corporation, gave a talk about progress in radio communications during his lifetime. Dr. Engstrom is also a graduate of the University of Minnesota with a BS in Electrical Engineering (1923), and was an Outstanding Achievement Award winner in 1950.

The lecture and award ceremony was sponsored by the Institute of Technology, the Department of Electrical Engineering, University of Minnesota, and the Institute of Technology Alumni Association, and was open to the public. For more information, please call the IT Alumni Association Office Douglas Currance (373-2955) or President, IT Alumni Association, Everett H. Dale (932-3216).

UNIVERSITY PRESIDENT'S ADDRESS

C. Peter Magrath

As mentioned in the last issue of this newsletter, a brief commentary on President C. Peter Magrath's address at the Annual Science & Technology Day would be published. His subject was "The University, Technological Progress and Industrial Survival" (The complete text is available upon request to the IT Alumni Association).

Research and advanced learning play central and integral roles in our national and state lives. The work of scientists, technologists, and scholars is absolutely fundamental. Research and the work of our major universities —like the University of Minnesota—are intertwined not only with technological progress, but also with the vitality of our economy and the quality of our lives. For all the riches, comforts, insights, and life sustaining advances that disciplined study has provided us, research—and researchers—still need all the help they can get. Funding for research bounces between insufficient and inconsistent, and public understanding is often spotty. Almost annually, the media carry mini-exposés about the persuance of a research project that critics have deemed trivial, if not nonsensical. Research is critical, not only for economic reasons, but also because there is much more that we critically need to know about ourselves and our environments.

Research and development, paraphrasing a recent report of the National Science Board, is increasingly the basis and impetus for technological innovation in industry, with the results of innovation being new and improved products, processes and services. These are the elements of technological progress through which many of the advances in the Nation's productivity, economic status, and standard of living take place. Senator Edward Brooke of Massachusetts recently said: ..."the list of problems facing this nation is as profound as it is lengthy . . . the solutions to these problems are not obvious nor will they be easy to come by. However, there is one element of the solution that is doubtless true—we will need even better trained managers, engineers, scientists, and technologists to lead us into our third century as a nation. And the nation's superb and extensive network of graduate schools is the best mechanism available to develop the training programs for the leaders and scholars on whom we must rely to solve our identified problems and to identify our unseen problems."

I have been working for more than a year with a small group of presidents of other major universities investigating how we can best mobilize support, both in government and the private sector, for these institutions. Comments like those by Senator Brooke give us encouragement. I will continue making this effort, as I think it is one of the most valuable ways I can spend my time.

The University of Minnesota and the Institute of Technology are vitally interested in contributing to the quality of life and economic vitality of our State. We can continue to do this if, in working together with colleagues in industry, we can better develop an atmosphere and capability of innovation and creativity in Minnesota. We will be able to further conbribute to our State if we can aggressively continue searching for new truths and new and better ways of doing things. We will be able to further contribute if we are permitted to continue providing our students with the kind of training they have come to expect of us. And we will be able to further contribute if we are in a position to continue serving as a rich resource, not only for our students, but for the entire State.

Needless to say, we will be able to do these things only if the support we receive is commensurate with the great tasks to be done. For this, we will need the aid and understanding of groups such as the IT Alumni Association and the IT Advisory Council. I know your support will continue to be strong, and I look forward to working with you.

ALUMNI PROGRAM EVALUATION COMMITTEE

As indicated in the last issue of ITEMS, I'm reporting to you on the plans and progress of this long range planning committee which is under the leadership of M. Elizabeth Craig, M.D. Your IT Alumni Association President is privileged to be a member of this group.

Dr. Craig reported on the current recommendations at the Winter Board Meeting of the Minnesota Alumni Association. First, the Committee studied the Association's merchandising program, which was in need of revision. The Committee will recommend to the Executive Committee that Adhouse Corporation of St. Paul be named as agent to plan and implement the merchandising program under the direction of the Association Staff and Executive Committee. The primary purpose is to provide quality Minnesota merchandise to those who want it at a reasonable price. Identity for the University and service to alumni are the aims of the program.

The next project studied by the Committee was the Association's dues structure. A proposal will be studied by the Executive Committee and a recommendation to the Board will be ready for the Spring meeting. The intent is to reduce the variations of plans and amounts to lessen confusion with alumni, and to simplify internal operations. Chairman Craig announced that the entire Constituent Society program is the next task for intensive study by her Committee.

CAREER DEVELOPMENT

The IT Board has organized a Committee on Career Development for Engineers and Scientists. Under the leadership of Dr. Wayne Schmaedeke, board members include Messrs. Tony Yapel, Sandy Ritter, Bob Bateman and Mark Mund. The staff at the University's Institute of Technology is delighted that your Alumni Association is involved in this very important project. The IT Committee will act as a catalyst and not assume the role of coordinator. Parameters regarding funding, specific goals and other details, are now being defined. Further reports will be provided in future issues of this newsletter.

CEES

Morris E. Nicholson, Director, Continuing Education in Engineering and Science

WASHINGTON AWARD PRESENTED TO ALUMNUS

Inevitably, careers that start well below the bottom of the ladder and continue to the top of a man's chosen profession are compared with the record of the late Horatio Alger. Michael Tenenbaum, president of Inland Steel, and the holder of a University of Minnesota doctoral in metallurgy and physical chemistry, has, at 63, established a record of achievement that could well make the mythical Mr. Alger feel humble, indeed. On Tuesday, February 22, he joined Henry Ford, Herbert Hoover, Orville Wright and Admiral Hyman Rickover, along with others, as the recipient of the prestigious Washington Award, one of the engineering professions' most distinguished honors. As with many successful men his career is a meld of accomplishment, accident and determination. He became a metallurgist because it was the least expensive curriculum at the time he entered school. ($108 annually in the Thirties). His career has been with Inland only because other companies he wanted to work for wouldn't hire him. At Inland he left his mark in research, quality control and manufacturing as he progressed toward the president's office. As a researcher he made discoveries leading to the perfection of the new, widely-used basic oxygen process and two Inland patents bear his name. His entire career has been marked by a willingness to be different and venture into new areas. As the president of a large corporation these traits continue. His involvement in activities not usual for upper echelon corporate officers continues and reveals an active social conscience. Drug abuse, alcoholism, welfare, health and education tend to occupy his time to a larger extent than is usual for men who leave the top corporate office on their way to help others.

Minnesota Expands Continuing Education by Cooperative Programming

During April and May, the University of Minnesota's department of Continuing Education in Engineering and Science, and the department of Conferences will offer two programs for practicing engineers. These program offerings will be some of the first cooperative undertakings with major universities, developed by I.E.E.E. for its members.

The first program will be a two-day conference, April 28 and 29, at the Holiday Inn Downtown, entitled Solid State Power Electronics. It was developed by the Educational Advisory Board (EAB) of the I.E.E.E., under the direction of Dr. Joseph M. Biedenbach, director of Continuing Education at the University of South Carolina. These program offerings are a part of Dr. Biedenbach's significant effort to program I.E.E.E. short courses into universities.

This type of program offering has many advantages. Because of the prestige of I.E.E.E., Mr. Vince Ghiardina, director of their department of Continuing Education, has been able to attract many outstanding instructors to offer these programs now available through I.E.E.E. By repeating these conferences at different locations in the country, instructional materials can be printed in large quantities, effecting a considerable cost savings. With the I.E.E.E. programs available, individual universities will not have to develop some of their own programs, and offering a program regionally has a better chance for a large audience than if it were only offered locally.

Each university will assume responsibility for all publicity, local arrangements and registrations, as well as for administering the program.

The second cooperative program is entitled Product Safety Seminar and will be held May 23 and 24 at the Radisson Hotel in Plymouth. This program has been very popular at the University of Wisconsin-Madison, and has been developed over a period of years, making it more educationally effective. By offering the program in the Twin Cities instead of Milwaukee or Madison, the engineers normally serviced by the University of Minnesota save the transportation and lodging costs involved otherwise, in traveling to Wisconsin. We believe that this kind of cooperative programming will, in the future, provide a wider number of course offerings at a more reasonable cost, for the audience normally served by the University of Minnesota.

Coming Programs . . .

CONTINUING EDUCATION FOR ENGINEERS

SOLID STATE POWER ELECTRONICS
Holiday Inn Downtown
April 28-29

A tutorial short course providing a broad introduction to electric power converters and controls for such functions as ac or dc regulation, ac to dc or dc to ac conversion, ac frequency conversion, power factor correction. Since the analysis of repetitively switched power circuits and the resulting waveforms is unfamiliar to most power or electronics engineers, the course builds a basic understanding of converters with natural or forced computation from well-known fundamentals. A large portion of the course is devoted to power circuit analysis of solid-state power devices because of its crucial importance in long service designing life and reliability.

SYMPOSIUM ON NUCLEAR PHYSICS HISTORY
New Theater—
Coffman Memorial Union
May 18-21

This symposium explores various aspects of the history of nuclear physics, primarily in the Thirties and Forties. Lectures by major participants in the events of the time will be followed by discussion with other speakers and invited participants.

PRODUCT SAFETY SEMINAR

Radisson Inn
May 23-24

A presentation of accident prevention programs and methods for manufacturers to achieve maximum safety for their products at lower cost. Includes presentations, examples, and discussions of legal aspects, program

management and engineering for product safety. Means of providing safer products at no added cost will be discussed. Although technical information will form a major portion of the seminar, the material presented will generally be at a level suitable for anyone involved with modern consumer products. The course may be of particular use to companies whose size or type of product does not justify the creation of a full-time safety staff.

Information of these, and all, Science and Technology Conferences and Institutes may be obtained from Tom Richards. His telephone; 373-3157. His address; 222 Nolte Center for Continuing Education, 315 Pillsbury Dr., S.E., Minneapolis, MN 55455.

Videotape Instruction Proves Effective

Two years ago, the Institute of Technology initiated a program of making videotapes of the UNITE (University Industry Television for Education) courses offered for industry in the Twin Cities available to companies beyond the broadcast range of the UNITE System. At the time this program of instruction was undertaken, there were some reservations. It was thought that the inability of remote students viewing videotapes to be able to interact with the professor, might be detrimental to student learning. During the same period, a similar kind of videotape instruction emerged at Stanford University which was called "Tutored Videotape Instruction."

Videotapes of regular classroom courses are made at the time the courses are broadcast via the Stanford Instructional Television Network. This method of production is considerably more inexpensive than studio-produced videotapes. The instruction is unrehearsed and unedited. The tutorial mode of instruction developed somewhat spontaneously. Initially it was essentially peer group learning of 3-5 persons. It soon became evident that it is desirable to have an on-site tutor or mentor, one who has a professional expertise in the subject.

The instructional arrangement has now become quite well standardized. The videotapes are used for the instruction of a small group of students (normally 3-6 persons) who are assisted by paraprofessional tutors at the location as they watch the tapes. In this situation, experience has shown over the last three years, students learn best when videotape lectures are stopped frequently. Lectures may be stopped as often as every five to ten minutes for periods of three to five minutes for class discussion. Sometimes the tapes are also stopped, and the tutor raises a question for discussion.

Interactions of such frequency and duration are, of course, impractical in a conventional classroom. However, when the instructor at a remote location permits frequent stopping of the tapes, students feel free to ask questions both of the tutor and each other, and make spontaneous comments about points of interest. This peer group learning with a tutor seems to have created an intellectually stimulating environment, the lectures providing depth and continuity in the subject matter while the tutorial discussions afford a means of making lectures respond to individual needs and differences, and thus enhancing learning and creating a positive attitude toward the subject.

After two quarters of operation, the T.V.I. program was evaluated by comparing the course performances of T.V.I.'s off-campus engineering students working full-time at a Hewitt-Packard (HP) plant, with students on-campus and those HP students taking the course by live-interaction television. Course requirements including tests and homework, were identical for all the students.

The initial results showed that as a group, the grade-point averages of students taking the T.V.I. courses were higher than those of the other two groups. Since that time, an additional study has shown that both student satisfaction and course performance tend to decrease as the delivery method is changed from on-campus lecture, to live TV, to non-tutorial videotape. These clearly indicate that the effect of the tutor is a powerful one.

The tutor's main functions are to initiate and encourage stopping videotape playback for immediate problem resolution, to attempt answering questions unresolved by the class, and to obtain answers and supplementary material from an on-campus instructor when necessary. Tutors are also encouraged to visit the on-campus faculty once or twice during the quarter, to become familiar with the course syllabus and discuss any recurring problems their students may have.

The results at Stanford are extremely encouraging to directors of continuing education. On the basis of these results, it seems reasonable to conclude that, for science and engineering courses, the T.V.I. format is at least as good as the other methods of delivery with which it has been compared. The results suggest that tutored videotape instruction may be the breakthrough that will provide continuing education quality for engineers seeking advanced degrees, as well as for those with no ultimate degree interests.

During 1977-78, we will modify the UNITE videotape offerings so that the students are assured resident tutors who have expertise in the field, although they may not have been involved in any previous instruction. This modification should improve the interest in the UNITE videotape program and further extend continuing education for practicing engineers in Minnesota and neighboring communities.

THE DEAN REPORTS...

Richard A. Swalin

One of the frequent characteristics of a faculty member in engineering, science or architecture in major universities is an interest and a willingness to expend effort and time in national and international disciplinary programs and activities. Often this is accomplished by the faculty member's attendance at national or international disciplinary meetings. What is happening currently within the discipline is usually learned best in the halls of a large conference or meeting. Disciplinary organizations both on a national and international scale also draw on faculty for leadership and expert advice. The faculty in the Institute of Technology possess interests in this area similar to other faculty at large research universities. Among these interests and activities are membership on the National

Academy of Engineering and the National Academy of Science, editorships of disciplinary journals, appointments as officers and memberships on boards and commissions in national and international organizations, as well as providing efforts in the arrangement of disciplinary conferences and meetings.

The efforts of two IT faculty members in the organization of disciplinary conferences are at this time particularly noteworthy. The first of these is Professor Roger Stuewer who holds the appointment Professor, History of Science and Technology in the School of Physics and Astronomy. Professor Stuewer has been instrumental in arranging a meeting with the title "Symposium on the History of Nuclear Physics" which will be held during the period May 18 to May 21, 1977. The symposium will ". . . explore key aspects of the history of nuclear physics, primarily in the 1930's and 1940's." Speakers include well known contributors to the development of nuclear physics from both United States and foreign laboratories. The symposium has generated a high level of interest not only within this country but also from several foreign countries. Holding a conference of this stature on the University of Minnesota campus certainly adds to the reputation of the University's recently organized program in the History of Science and Technology.

The second faculty member who is arranging a significant conference is Professor Woods Halley, also of the School of Physics and Astronomy. Professor Halley has worked as chairman of an organizing committee with international membership to plan a NATO School which will be held during the period August 22 to September 2, 1977.

The North Atlantic Treaty Organization sponsors and funds each year a number of high level scientific schools for member nation scientists. Very few of these schools have been held in the United States and certainly this is the first ever to be held in Minnesota. The NATO School will involve topics in the physics of condensed matter and will bring experts in that field of physics from around the world to Minnesota. Because of the specialized character of the topic, the organizing committee will select from submitted applications the 54 advanced post-doctoral students who will be invited to attend. The twelve lecturers at the School come from Holland, Germany, England and the United States. The School will be held at the Spring Hill Center where the students and lecturers will also be housed.

These programs illustrate only two of a large number of activities which enhance the visibility and reputation of the University and the Institute of Technology across the nation and around the world. All of the activities contribute to maintaining a healthy science and technology climate which aids not only the University but also the whole science and technology establishment in the region. It is one small part of the regional development of science and technology with which we are all concerned.

–Richard A. Swalin

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