

The understanding of antiferromagnetism and ferrimagnetism introduced by Néel has led to a wide variety of technological applications and has given impetus to the synthesis of new ferrite materials, which revolutionized microwave electronics. Ferrites are fundamental to core memories for computers, modern magnetic tapes and the new bubble domain memories. The rare-earth iron garnets, extensively studied at Néel's institute, became a field of intense worldwide research in physics and engineering, a field largely generated by Néel's fundamental ideas.

Néel is also known for his contributions to understanding magnetic after-effects, to degaussing of ships for protection against magnetic mines, and to the "magnetic memory" of bricks, basalts and lavas, which can be used for magnetic dating. The school of Néel is internationally known as one of the leading centers of magnetism research.

He was born in 1904 in Lyons, France and received his doctorate from the Ecole Normale Supérieure in 1928. He then went to the University of Strasbourg where he succeeded to the chair

of Pierre Weiss in 1937. Néel became professor at the University of Grenoble in 1945 and is director of the Center for Nuclear Studies in Grenoble, director of

the Laboratory for Electrostatics and the Physics of Metals in Grenoble, and director of the Polytechnic Institute in Grenoble. —GBL

in brief

The Joint Institute for Laboratory Astrophysics, University of Colorado, is soliciting applications for visiting fellowships and postdoctoral research associateships for 1971-72. About ten stipends are available for each category. The deadline for a fellowship is 15 Jan. and for an associateship, 15 Feb. Contact D. G. Hummer, Secretary, Visiting Scientists Program, JILA.

A Boris A. Bakhmeteff Research Fellowship in fluid mechanics in an amount up to \$3600 is available in 1971-72. Deadline is 15 February 1971. Contact is James R. Steven, Department of Civil Engineering, City College, CUNY, New York, N.Y. 10031.

The Institute of International Educa-

tion is accepting applications for grants for graduate study or research for the 1971-72 academic year. Applications are for US Government awards under the Fulbright-Hays Act and for grants offered by various foreign governments and universities. Contact IIE, 809 United Nations Plaza, New York, N.Y. 10017.

The American Astronomical Society has completed a roster of members who are willing to serve as consultants to academic and industrial institutions. Consultants expect to be reimbursed for expenses and most expect some compensation for services. For further information contact H. M. Gurin, AAS, 211 FitzRandolph Road, Princeton, N. J. 08540.

Japan builds first GeV-class synchrotron in Asia

After 15 years of frustration, Japanese high-energy physicists are at last getting an experimental facility on their home soil. This is the time that it has taken to win support from the Government to build Japan's first high-energy proton accelerator, an 8-GeV machine to be situated 45 miles northeast of Tokyo. Until now, despite Japan's strong theoretical contributions to the field (Hideki Yukawa and Sin-Itiro Tomonaga both won their Nobel prizes for work on elementary particles), experimentalists have had practically no equipment to work with. The highest-energy accelerator presently is a 1.3-GeV electron machine built in 1961 at the Institute for Nuclear Study, Tokyo University. One result of the meager experimental opportunities has been that the number of theorists working in high energy has exceeded the number of experimentalists by a factor of 3-4 or just the reverse of the ratio in other countries.

Even so, the new 8-GeV machine represents a severe compromise. Originally the physicists had asked for a 30-GeV machine costing \$80 million, but finally a total of \$20 million was all that could be obtained. At first Japanese physicists were not certain that the 8-GeV accelerator that this amount could buy would be a worthwhile investment at a time when other facilities,

such as Batavia with 60 times this energy, are under construction. The conclusion was finally reached however that a high-intensity accelerator (10^{13} particles/pulse) at this energy would still make a useful contribution. This is especially clear if one thinks of the machine as a K-meson factory, a role that also looks promising for the future program of the 30-GeV AGS at Brookhaven National Laboratory (PHYSICS TODAY, October, page 20).

The newly appointed director of the laboratory, Shigeki Suwa, explained to PHYSICS TODAY that the accelerator design is very similar to that of Batavia's, with a linac injector, booster synchrotron and separated-function magnets in the main ring (105 meters in diameter). Startup time will be in 1974.

An additional problem imposed by the shoe-string budget is that the funds for experimental facilities in support of the new machine will be very tight. A smallish 75-cm hydrogen bubble chamber just put into operation at the Institute for Nuclear Study will be available at the new site. The budget also includes funds for a computer of the next-to-last-generation size. Another part of the compromise is that the location of the laboratory (to be called the "National Institute for High-Energy Physics") in the Tsukuba region has been chosen by the Government to help

in its plan to develop a "science city" in this isolated, poor-farming area—a Novosibirsk kind of situation for the staff of the new laboratory.

Even with its reduced budget the NLHEP will be the most expensive basic research facility yet to be built in Japan and is the only one of 24 such laboratories, proposed by the Science Council for various disciplines, to be approved by the Government. These facts point out the continuing financial starvation that confronts basic research generally in Japan. Although the country's rapidly growing industrial economy is presently the world's third largest and promises to be either second or third in the world by the end of the century, the support available to scientists has not experienced a comparable growth. In terms of research funds per capita, Japan ranks below nations, such as Israel or the Netherlands, that have much smaller economies. In absolute amounts, the high-energy budget in Japan for 1966 was less than one hundredth that of the US budget and one tenth of the budget available in Italy.

The harsh financial situation, however, has not discouraged dreams of the Japanese high-energy experimentalists for the future beyond the 8-GeV machine. Tetsuji Nishikawa, Chief of the Accelerator Division at

NLHEP, points out that with modest additional funds the machine can be stretched to 12 GeV and that an investment in superconducting magnets for the main ring could make possible energies of 30-40 GeV. And, because the 105-meter ring of the 8-GeV machine occupies only a small fraction of the new 500-acre site, the high-energy

planners are already letting their imaginations play with a 600-meter superconducting ring capable of several hundred GeV.

In a parallel development having significance for the high-energy field in Japan, Masatoshi Koshiba has been assured of the funds for a three-year program to engage in a joint project with

Soviet physicists at Novosibirsk. The group will construct general-purpose experimental facilities to take advantage of the 25-GeV proton-antiproton colliding beams soon to become available at Novosibirsk. This project will represent Japan's first formal international exchange in the high-energy field. —HLD

the physics community

AIP plans expanded consultants program

The consultants program, formerly handled by the Commission on College Physics, is beginning new and expanded activities under the aegis of the American Institute of Physics education and manpower division (see *PHYSICS TODAY*, April, page 63). Peter Kahn, associate professor at the State University of New York, Stony Brook, was recently named to head this program and the visiting scientist program; he is working for AIP on a part-time basis.

The program is available to all colleges, including two-year colleges, and will provide both campus visits by consultants, as was done by CCP, and also advice by letter and telephone. Besides the general consultants, AIP will have consultants who are specialists in different educational areas: building design, laboratory and lecture demonstration apparatus, library resources, audiovisual aids, pedagogical application of the computer, summer institutes and continuing education, undergraduate curriculum for science majors and nonscience majors, career opportunities for physics majors and education objectives, testing and evaluation. CCP is presently supporting the program through an NSF grant; AIP has submitted a proposal to NSF that is expected to be accepted before CCP ends in August.

AIP is also establishing a pool of information about physics instruction that would be helpful to teachers even if a consultant does not visit the campus. Two types of information would be available in the pool—reprints of journal articles and other short written documents and one-page sheets describing books, apparatus, films and other teaching aids. In creating the pool, AIP will cooperate with CCP and the American Association of Physics Teachers.

SPS creates associate chapters for two- and four-year colleges

The Society of Physics Students is opening its membership to two and four-year colleges that do not offer a physics major. Associate chapters at these schools,

explained Dion W. J. Shea, SPS Director, are designed "to channel student interest in physics and to promote better contact between faculty and student."

Some associate chapters have already been established, and SPS has begun a concerted effort to establish more associate chapters, especially in two-year colleges where students are planning to transfer to four-year colleges that do offer a physics major.

Weiner gets Guggenheim; will study history of nuclear physics

Charles Weiner, director of the Center for History and Philosophy of Physics at the American Institute of Physics, has been awarded a Guggenheim Fellowship. He will spend a year, based at the Niels Bohr Institute in Copenhagen, conducting comparative historical research on the development of nuclear physics in various countries during the 1930's.

During Weiner's stay in Europe, which begins this month, Henry Small will serve as acting director. Small, also an historian of science, has been at the center as a research associate since 1969 and has been working with Weiner and with Beverly Porter, a sociologist, on a study of the emergence and growth of nuclear physics as a research field. This study has recently received a second grant from the National Science Foundation for completion in 1971.

Meinel of Arizona University becomes OSA president-elect

The Optical Society of America has chosen Aden B. Meinel as president-elect for 1971. He is director of the Optical Sciences Center and professor of astronomy and optical sciences at the University of Arizona and will succeed Bruce H. Billings, who will become president. Billings is presently special assistant to the US Ambassador for Science and Technology, Taiwan.

Meinel was director of Kitt Peak National Observatory from 1956 until 1960, when he became astronomy pro-



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fessor at the University of Arizona. He was later appointed department chairman and director of the Steward Observatory. In 1966 Meinel began programs that led to the establishment of the Optical Sciences Center, of which he is now director.

The OSA has also appointed Patricia R. Wakeling to its new post of managing editor, effective next month. She is currently president of WINC, a Washington based corporation that specializes in the production of technical periodicals. WINC will now handle all the editorial mechanics for *Applied Optics*, which was formerly split between WINC and the American Institute of Physics.

Schwarzschild of Princeton new AAS president; Bok is V.P.

Martin Schwarzschild has succeeded A. E. Whitford of the Lick Observatory as president of the American Astronomical Society, and he will serve a two-year term. Professor at Princeton University, Schwarzschild has been president-elect for the past year; a new president-elect will not be named until the 1971 summer meeting. Bart J. Bok of the Steward Observatory was elected vice-president to replace W. W. Morgan of Yerkes Observatory. David S. Heeschen will continue his term for another year as senior vice-president. □