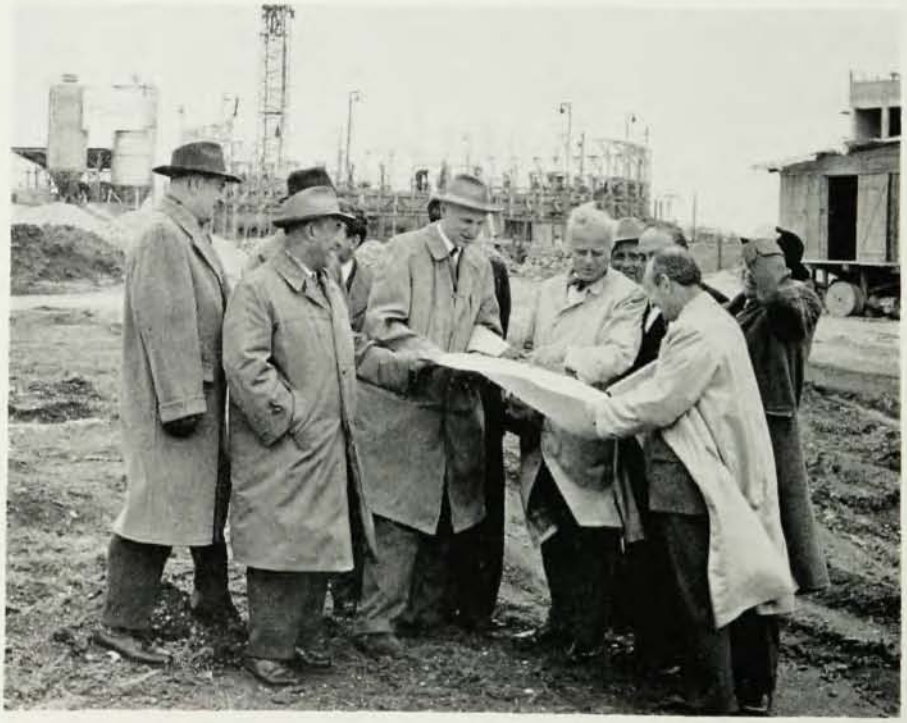
Miscellany

The IAEA Laboratory

When it was established by the United Nations three years ago, the International Atomic Energy Agency was heralded as the world's chief instrument for encouraging and assisting atomic energy research and development for peaceful purposes. IAEA was also to serve as a central clearing house for the distribution (under appropriate safeguards) of nuclear materials and the tools of research among its member states. Through little fault of the Agency itself, actual accomplishments to date have fallen far short of the original goals, but those responsible for its programs are nevertheless understood to be optimistic about the future. Much of that optimism springs from the fact that the IAEA's own laboratory building is finally under construction at Seibersdorf, 19 miles east of Vienna, on a site that has been leased from the Austrian atomic energy research association known as SGAE (Österreichische Studiengesellschaft für Atomenergie GmbH). Other grounds for hope have been provided by the generally constructive nature of the Agency's third general conference, which was concluded peacefully in Vienna early last month, and by the talks in Washington between John A. McCone, chairman of the US Atomic Energy Commission, and Vasily S. Yemelyanov, director of the Main Administration for Peaceful Uses of Atomic Energy of the USSR, followed by their statement calling for increased cooperation in peaceful atomic development under the auspices of the IAEA. It is also anticipated that progress will be made during the coming year in arriving at a mutually acceptable system of safeguards to prevent any nonpeaceful use of nuclear materials obtained through the agency. The lack of agreement on such a system has until now prevented the Agency from fulfilling one of its primary functions—that of being an international clearing house in transactions involving the transfer of nuclear fuels and other materials between nations.

The new laboratory at Seibersdorf will have facilities for chemistry, electronics, and health and safety. It will be concerned with such activities as standardization of radioactive sources, the establishment and study of international standards for measurement techniques, the calibration of equipment and its adaptation for use in various countries, and measurement analyses in connection with health and safety and the developing of safeguards. The building is expected to be ready for occupancy late next year. Construction costs are estimated at $420 000 and the cost of equipment at $180 000. The United States has given $600 000 toward the cost of building and equipping the laboratory, and other governments have contributed scientific equipment. Under the Agency's arrangement with SGAE, close cooperation will be possible between scientists on the IAEA staff and those of the Austrian atomic energy laboratories so that work of the two organizations can be carried on without duplication of effort. The area



Site of proposed laboratory of the International Atomic Energy Agency at Seibersdorf in Austria where construction was started on September 28. Shown in light coats are Sterling Cole, director general of IAEA, and Henry Seligman, the Agency's deputy director general for research and isotopes, as they discuss construction plans with Agency delegates and Austrian officials. In background are laboratories and reactor of SGAE, the Austrian atomic energy research organization.

ENGINEERS

What we mean by INTEGRATED RESEARCH

at the G.E. Electronics Laboratory

...and why this concept is so fruitful in valuable findings and individual achievement

Any problem – chosen from the entire field of electronics – that becomes of interest to the Laboratory is studied simultaneously from all relevant technical angles, by specialized professional groups. The men in these groups maintain direct contact with each other, exchanging information on all phases of a program.

Current instances of this stimulating professional interaction at the Laboratory are the programs for developing radically new radar techniques including the application of electronically scanned antennas and parametric and maser type low noise amplifiers. Scientists and engineers of many Laboratory groups from the materials, devices, circuits, equipments, and systems points of view will make important contributions to these efforts. Such programs will lead to the development of significant improvements of the data handling capacities of complex radar systems.

Significant progress in these and other programs is regularly covered in formal and informal conferences and in technical reports circulated to all groups. Representative report titles listed below indicate how far-reaching are the interacting investigations involved:

Ferrite Materials for Microwave Frequencies *by J. B. Linker and H. C. Rothenberg*	Fundamental Limitations of External Noise *by H. H. Grimm*	Radar Sensors for Reconnaissance Satellites *by F. R. Dickey, Jr.*
Parametric Converters and Amplifiers *by C. S. Kim*	MASER work in the Electronics Laboratory *by G. K. Wessel*	Binary Asynchronous Multiplex Systems *by F. A. Reibert*
Multiple Frequency Parametric Devices *by H. Hsu*	On a Theory of Boolean Functions *by S. B. Akers*	An Electro-Optical Shift Register *by T. E. Bray*

Laboratory-wide integration of varied talents is credited by scientists and engineers here with contributing significantly to their professional accomplishments and personal development. It is also valued as a prime ingredient in the continuing intellectual appeal the Professional Staff finds in the Laboratory's diverse R & D undertakings.

PROFESSIONAL OPPORTUNITIES AT ELECTRONICS LAB

The Electronics Laboratory engages in applied research and advance development covering the entire field of electronics. More than 70 percent of the Professional Staff have advanced degrees. Openings for PhD's and experienced MS men exist in the following areas:

Solid State Materials • Solid State Devices • Network Synthesis • Advanced Circuitry • Electron Devices • Communication Theory • Recording Devices • Display Techniques • Light Optics • Electron Optics • Radar Techniques • Antennas • Microwave Devices

For further information about current openings in any of the above areas, contact Mr. Robert F. Mason, Dept. 51-MK

ELECTRONICS LABORATORY Located at Electronics Park

GENERAL ELECTRIC

Syracuse, New York

leased to the Agency covers approximately 14 acres. In addition, the SGAE has granted the Agency an option on adjoining land in case of a possible future expansion of the IAEA laboratory.

On October 6th, the newly constituted Board of Governors of IAEA met in Vienna and elected D. B. Sole of the Union of South Africa as its chairman. Karel Petrzelka of Czechoslovakia and Ismail Fahmy of the United Arab Republic were elected as vice chairmen. The Board consists of representatives of 23 nations selected by the General Conference under a formula calling for the inclusion of states having advanced nuclear technology, of states that are producers of source materials and suppliers of technical assistance, and of states chosen on the basis of geographical distribution. Membership of the Board for 1959 comprises Australia, Brazil, Bulgaria, Canada, Ceylon, Czechoslovakia, France, India, Indonesia, Japan, Mexico, the Netherlands, Norway, Peru, the Philippines, Portugal, Spain, the Union of South Africa, the USSR, the United Arab Republic, the United Kingdom, the US, and Venezuela.

Plasmas

Grants of $500 000 to the Massachusetts Institute of Technology and $300 000 to Harvard University have been made by the National Science Foundation for basic research programs involving studies of the behavior of ionized gases. The two programs will be staffed by a combined total of nearly one hundred people and, according to a joint statement issued by the two schools, will establish Cambridge as one of the world's leading centers for research in the field. Emphasis will be on the developing of fundamental knowledge, and neither Harvard nor MIT plans to construct elaborate apparatus of the type required in attempts to produce controlled fusion reactions.

MIT's research on electrical plasmas will be carried out as part of the Plasma Dynamics Program headed by William P. Allis, professor of physics, and work under the new grant will be an extension of studies which have been supported for several years by grants from other agencies, including $250 000 from the AEC under Project Sherwood, $100 000 from Wright Field Aeronautical Center for research in energy conversion, $25 000 from the Air Force Cambridge Research Center for the study of high-energy shock waves, and $100 000 under a joint service contract with the Research Laboratory of Electronics for research in electronics. In addition to studies concerned with the ionosphere and its influence on radio communication and on the re-entry of missile nose cones, the MIT program will investigate the production of plasma by microwaves as well as the emission of microwaves from plasmas. Also planned is a study of the plasma produced in carbon arcs operating in a very high vacuum, in which the plasma consists of highly ionized carbon atoms.

Harvard's research on the behavior of gases at high