and counting circuits. Prof. Christie G. Enke of the Department of Chemistry will direct the course. More information can be obtained from Parker L. Coddington, 307 Nassau Hall, Princeton University, Princeton, N. J.

Research Participation

Washington State University, Oregon State University, and the University of Washington, through the Inter-University Committee of these three institutions, have announced two new programs of financial support for research which is related to nuclear science and engineering and is to be performed at the AEC's Hanford Laboratories, Richland, Wash.

The Richland Faculty Appointment Program provides support for faculty members during the summer. or at other times for periods up to one year, at the appointee's monthly academic salary level plus travel and relocation allowances. The Richland Graduate Fellowship Program is designed to assist graduate students of advanced standing in the performance of their thesis research. Graduate fellows receive a basic annual stipend of \$3000 plus tuition, fees, and travel and dependent allowances. Graduate fellowship appointments are renewable.

These two programs are to be administered through the Center for Graduate Study at Hanford, a joint undertaking of the three universities, located in Richland. Applicants are asked to write to the Director of the Center for Graduate Study, 1112 Lee Boulevard, Richland, Wash, 99352.

Departmental Programs

The Catholic University of America has organized a new Department of Space Science and Applied Physics offering courses leading to the master's and doctor's degrees in space science, fluid mechanics and heat transfer, aerospace engineering, and applied physics. The Department's aim is to educate the "engineer-scientist", and its program will balance instruction in science with training in the skills of experimentation and inventive technology. Research in the Department includes work on plasma behavior in geophysics and space physics, basic problems of blood flow and non-Newtonian fluid mechanics, and radiation heat transfer. Fellowships and scholarships are available. Further information can be obtained from Dr. C. C. Chang, Department of Space Science and Applied Physics, The Catholic University of America, Washington, D.C. 20017.

The College of William and Mary, in Williamsburg, Va., has announced that graduate work in the Department of Physics will henceforth include a doctoral program.

The University of Vermont has established a PhD program in physics. Active research programs of the Department of Physics include physical acoustics, biological physics, surface physics, statistical mechanics, and quantum field theory. The doctoral program plans to emphasize preparation for academic positions. Further information is available from Prof. A. D. Crowell, Department of Physics, Williams Science Hall, University of Vermont, Burlington, Vt.

A new graduate program in applied science leading to the master's and PhD degrees has been introduced by the University of California with the establishment of a Department of Applied Science under the chairmanship of Edward Teller, associate director of the Lawrence Radiation Laboratory. Instruction will be carried out at Livermore and the University's campus at Davis, Calif. The program is designed to produce specialists capable of bridging the gap between basic and applied nuclear sciences.

The Department of Mathematical Physics of the University of Edinburgh has announced that it will institute a one-year diploma course (graduate level) in elementary-particle physics, starting in the fall of this year. The course will include lectures on quantum mechanics, special relativity, descriptive particle physics, scattering theory, quantum field theory, dispersion relations and analyticity properties, symmetries and electromagnetic and weak interactions, together with relevant mathematical topics. Lectures on numerical methods



trics, properties of insulators and outputs of ion chambers. The 610A is line-operated and comes in bench or rack models. Brief specifications:

- 9 voltage ranges from 0.01 to 100 volts fs with 2% accuracy on all ranges
- input impedance selectable in decade steps from 1 ohm to 1014 ohms
- 28 current ranges from 3 amperes to 10-12 ampere fs
- 27 resistance ranges from 10 to 1014 ohms fs with provision for guarding
- constant current source from 1 milli-ampere to 10-12 ampere in decade steps
- gains to 1000 as a preamplifier, dc to 500 cps bandwidth, 10 volt and 1 milliampere outputs
- price \$565

Other ELECTROMETERS

31 ranges, bat.-operated, Model 620. Model 621, 37 ranges, line-operated, Model 600A, 54 ranges, bat.-operated, 50 kc bandwidth amplifier,

\$390 \$395 \$750

\$280

Send for latest catalog



KEITHLEY INSTRUMENTS

12415 Euclid Avenue . Cleveland 6, Ohio

CAPACITORS

Low-inductance High-Q High-voltage Long-life

A somewhat unusual policy -

for a commercial enterprise — is the one we have adopted and are pursuing in our research and development in the field of energy-storage capacitors.

Recognizing

that there are many projects in physics and engineering, whose progress is limited by the technological problems associated with producing rapid rates of current-rise at high voltage and low inductance, with long life and high reliability, low internal-resistance or high Q, a wide range of self-resonant frequencies, and operation at low and high temperatures and high repetition rates —

We pledge ourselves

to cooperate in serving your requirements in special capacitor applications. Your inquiries will guide us in applying our efforts to the development of capacitors to suit *your* future needs.

The design principle

on which our capacitors are built has been proved in private and government laboratories and we are in production on standard units that may well meet your present need.

Here are their specifications

	Voltage to 25 kilovolts	for greater capacity at low in- ductance)
	Inductanceless than 1 nanohenry (includes a practically realizable termination)	Operating temperatureto 200 C.
	Self-resonant frequency to 15	Operates in high vacuum
	mc (depending on capacitance	Repetition ratesto 1000 pps
	rating)	Discharge-lifemany
	Q self-resonantto 350	millions of cycles (depending on service)
	Energyto 500 joules (units can be parallel-connected	Terminationscoaxial or parallel-plate transmission line

We can supply other units in capacities up to 6000 joules and voltages up to 120 kv, with self-inductance of 30 nanohenries.

Your inquiries are invited

on standard or special capacitors for any energystorage-and-discharge service.

TOBE DEUTSCHMANN
LABORATORIES
2391 Washington St., Canton, Massachusetts

and programming will be available in the University Computer Unit. A selection from these topics will be made for each student admitted; although the majority of students will presumably be intending to go on to theoretical work, a suitably chosen course will also provide background for those whose subsequent research is experimental. Arrangements have been made to allow students to visit the Rutherford Laboratory for short periods.

The diploma will be awarded partly by examination and partly on a short dissertation to be prepared by the student during the year. Students who do well in the course may be admitted to a subsequent two-year (minimum) PhD course in mathematical physics. Inquiries and provisional applications should be addressed to D. J. Candlin, P. W. Higgs, or E. J. Squires at the Tait Institute of Mathematical Physics, 1 Roxburgh St., Edinburgh 8, Scotland.

ORNL Scientists To Teach

The University of Tennessee has received a Ford Foundation grant of \$750 000 which will enable the University to employ scientists and engineers from Oak Ridge National Laboratory as regular members of its graduate faculty. The Atomic Energy Commission has agreed that the selected Oak Ridge scientists will be relieved of twenty percent of their research duties in order to do the teaching. The Ford grant will underwrite the portion of their salaries for the time spent at the University.

Part of the total sum (\$200 000) will support operation of the program for the next two years, and it is expected that additional amounts will be given over a period of eight to ten years. Initially the money will be used for work in physics, chemistry, mathematics, and chemical and metallurgical engineering, and plans are being made to extend the program to other departments.

Among the first Oak Ridge scientists to receive concurrent appointments to the Tennessee faculty are five who will join the Department of Physics. They are Ted Welton, Harold Schweinler, Louis D. Roberts, G. S. Hurst, and Harvey B. Willard.