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Educational Services Incorporated of Watertown, Mass., a non-profit educational research organization which originated as the Physical Science Study Committee under the auspices of the Massachusetts Institute of Technology in 1956, has been awarded a grant of \$1,000,000 by the Ford Foundation for the general support of its operations. The announcement was made jointly by Dr. Carroll V. Newsom, President of Educational Services Incorporated, and by the Ford Foundation in New York.

Responding to the need for improving curricula in American schools, Educational Services Incorporated has initiated course content improvement projects in many disciplines; it also participates in various educational programs overseas, including the new Indian Institute of Technology, at Kanpur, and in transitional nations in tropical Africa.

Curriculum reform programs are now being conducted in the teaching of science in the elementary grades, in developing a social studies and humanities curriculum applicable at all grade levels. In addition to these and other programs in the primary and secondary schools, Educational Services Incorporated is assisting in the development of new techniques and methods of teaching science and engineering in the universities. The organization also offers administrative support to the National Commission on Engineering Education.

In making the announcement, Dr. Newsom said, "The Ford Foundation grant recognizes ESI's need for substantial capital reserves with which to pursue its educational programs both in the United States and abroad. Educational Services Incorporated can now

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2. Educational Services Inc. Grant -- M.I.T.

accept with confidence its opportunities for service in the future."

Educational Services Incorporated was founded in 1958 to handle the expanding PSSC program and to provide administrative guidance and support for other course content improvement projects. The Physical Science Study Committee course, formed in 1956 by Professor Jerrold R. Zacharias, Professor of Physics at M.I.T., and the late Professor Francis L. Friedman, also a Professor of Physics at M.I.T., has revolutionized the teaching of high school physics. The PSSC course is now being taught to approximately 135,000 students in the United States, or approximately 30% of those taking high school physics in this country.

Physicists and educators at many universities contributed to the PSSC, including groups from the University of Illinois, Cornell University, Bryn Mawr College, Educational Testing Service of Princeton, New Jersey, Harvard University, the Massachusetts Institute of Technology, and other schools.

PSSC materials have been translated into Swedish, Norwegian, Italian, Japanese, Hebrew, Spanish and Portuguese. It has also been translated into French for use in Canada. PSSC translations are now being prepared in Danish and Turkish.

The PSSC course is notable not just for the textbook which stresses basic concepts of physics and carries high school students into modern physics, but also because of the coherence and variety of the accompanying teaching aids -- including films, examinations, laboratory apparatus and laboratory experiments. Thus far fifty-three PSSC films have been produced by ESI with many of the nation's leading physicists serving in principal roles in demonstrating some of the basic concepts of physics. Some of the PSSC films are now being adapted for college use.

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The Science Study Series, published by Doubleday Anchor Books with the editorial counsel of ESI, provides collateral reading for science students. This series of paperbacks includes biographies of famous scientists and their roles in the development of fundamental physical concepts.

ESI has organized teacher-training institutes for high school physics teachers in the United States and in many nations overseas.

In addition to the PSSC, ESI is now developing programs in the following areas:

*Elementary Science Study. Physicists, chemists, biologists, mathematicians and scientists from other disciplines are participating in the preparation of material for the elementary grades. This material includes text, films, the development of experiments for classroom use, and the inauguration of teacher-training programs to introduce a study of science in the elementary school curriculum. Some of the topics being studied this year in experimental classes at selected schools in New Jersey, Pennsylvania, Delaware, Oregon, New York and the District of Columbia, include microecology, plant growth, elementary physics, and laboratory science. More than one hundred scientists and educators in the United States and overseas are associated in the preparation of preliminary material.

*Kanpur Indo-American Program. The Indian Institute of Technology at Kanpur, about two hundred miles southeast of New Delhi, is being developed by the government of India into a major center for education and research in engineering and science. Now in its second year of operation, the Institute offers undergraduate programs in physics, chemistry, mathematics and civil, electrical, chemical, mechanical and metallurgical engineering. It is expected that graduate courses will be given in the next few years.

(more)

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At the request of the government of India, nine leading American universities are assisting in the development of the Indian Institute. Because the resources of a single American university would be severely overtaxed if it were to furnish the sustained effort required to carry out the United States commitment at the Institute, a consortium of universities was formed in April, 1962. ESI administers the project contract which is financed by the United States Agency for International Development (AID).

The participating universities are California Institute of Technology, Carnegie Institute of Technology, Princeton University, the University of Michigan, the University of California, Purdue University, Ohio State University, Case Institute of Technology, and the Massachusetts Institute of Technology. Twelve American staff members are now teaching at the Institute. It is expected that this number will be increased to twenty-four by the fall of 1963.

Indian plans for the Institute, which now has a faculty of 40 and approximately 200 undergraduates, provide for 1,600 undergraduates, 400 graduate students, and a faculty of about 250.

*African Education Study. Educational Services Incorporated, following two major conferences in Africa at Accra, Ghana, in 1961, and at Entebbe, Uganda, in 1962, is engaged in a broad program designed to help transitional nations in tropical Africa to assess their educational needs in the future in mathematics, in the sciences, in languages, and in the social studies and humanities.

Text material in mathematics, prepared by Educational Services Incorporated, including representatives from the Stanford University Arithmetic Program, is now being

(more)

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used in preliminary trials in many African schools beginning this spring term 1963.

ESI's summer conferences in the Social Studies and Humanities Program and in the Elementary Science Program have included during the past summers participants from African nations. It is expected that these projects of ESI will in the future be expanded to include an African program to fit their special needs. Among the African nations now participating in ESI's program are Ghana and Uganda. Representatives from Africa will participate in the ESI summer conferences in 1963 in the United States.

The African Education Program is developing as a partnership between the African educators and those from the United States and the United Kingdom. In this endeavor Educational Services offers especially the organization's experience with course content improvement programs.

*Commission on Engineering Education. Members of this Commission include many leading representatives from industry, government, and education. The Commission was formed at a meeting at Boulder, Colorado in 1961.

The headquarters of the Commission in Washington function as a point of coordination for the members. The Commission is developing educational resources of particular relevance to fundamental fields of engineering, including all types of educational resources and procedures which involve both students and faculty in the areas of design, data processing and decision making.

The Commission is initially concerned with the enhancement of engineering faculties and with the production and distribution of educational materials. It will undertake

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studies which will aid in the organization of appropriate new projects of concern in engineering instruction.

*Semiconductor Electronics Education Committee. The teaching program of this Committee -- now being used for the first time, in its preliminary form, at eleven universities in the United States and Great Britain -- demonstrates introductory semiconductor physics, the principles of semiconductor devices, and the most important features of electronic circuit design and construction which use semiconductor devices. It is intended that the final material produced by the Committee will be used in either the junior or senior year of college.

The Committee's presentation includes text material in the form of a series of six paperback books on the principles and applications of semiconductors; the development of home laboratory experiments; take-home laboratory kits; a series of formal laboratory experiments; and a set of films both complementary and supplementary to the texts.

*National Committee for Fluid Mechanics Films. The films in fluid mechanics produced by this Committee are being used at more than sixty universities and government institutions in improved teaching of aeronautical and astronautical engineering, and in chemical, civil, mechanical and marine engineering. The films are also being used in the instruction of meteorology, applied mathematics, and in medicine. The first two major films produced, The Fluid Mechanics of Drag and Vorticity, are being used at universities in the United States and overseas, in Ghana, Great Britain, Australia, Canada, Israel and Holland.

(more)

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A set of ten four-minute cartridge loops on fluid mechanics phenomena for Technicolor projectors was produced during the past year. Approximately ninety of these sets are being used in American universities.

*Social Studies and Humanities. This program evolved from a conference sponsored by ESI at Dedham, Massachusetts, in the summer of 1962. Participants at the Conference represented the humanities and the social sciences, including literature, history, art, music, Latin and Greek, as well as sociology and psychology. The consideration of the possible revision of the present social studies and humanities curricula is the aim of this program which is not yet fully implemented. Studies are being made of the individual humanistic disciplines with the aim of focussing the major ideas of the past and present into a presentable, coherent framework which may then, using some of the techniques developed by the behavioral scientists, be taught most effectively.

This ESI program, now seeking to achieve a more effective integration of knowledge in the humanities and the social sciences, is intended to assist in the development of a curriculum in which the interrelations between the different fields of study can be projected cogently at all grade levels.

*ESI Film Studio. The ESI film studio has produced fifty-three PSSC films in which many of the nation's leading physicists have participated as principals. The studio is also adapting PSSC films for experimental use in colleges and is producing the fluid mechanics films and the semiconductor electronics films. In addition to its major work on behalf of ESI projects, the studio has been commissioned by other curriculum reform groups in the United States to produce films for their projects.

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In 1962 the first PSSC film was translated into a foreign language. The film studio also conducts research in many aspects of film making.

ESI Trustees are: Dr. Detlev W. Bronk, Trustee of the Rockefeller Institute; Rev. Theodore M. Hesburgh, President of the University of Notre Dame; Dr. Frederick L. Hovde, President of Purdue University; Dr. James R. Killian, Jr., Chairman of the Massachusetts Institute of Technology and Chairman of the Board of Educational Services Incorporated; Dr. Joseph Morris, Vice President of Tulane University; Dr. Alfred C. Neal, President of the Committee for Economic Development; Dr. Carroll V. Newsom, President of Educational Services Incorporated, and Vice President of Prentice-Hall, Incorporated; Gilbert Oakley, Jr., Vice President of Educational Services Incorporated; Dr. Glenn T. Seaborg, Chairman of the Atomic Energy Commission; James E. Webb, Administrator of the National Aeronautics and Space Administration; and Dr. Jerrold R. Zacharias, Physicist at the Massachusetts Institute of Technology.

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FACT SHEETA PARTIAL LIST OF PSSC COURSE USE
IN SECONDARY SCHOOLS IN SOME STATES

California	135	Nebraska	26
Colorado	42	New Jersey	87
Connecticut	50	New York	83
Florida	99	North Carolina	20
Georgia	18	Ohio	88
Illinois	107	Oklahoma	14
Indiana	30	Oregon	29
Iowa	34	Pennsylvania	93
Kansas	29	Texas	49
Maryland	54	Vermont	9
Massachusetts	112	Virginia	18
Michigan	61	Washington	56
Minnesota	41	West Virginia	23
Missouri	33	Wisconsin	41