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Jesuit Educational Quarterly

JANUARY 1960

A PRIMER ON EDUCATIONAL TELEVISION

CHALLENGES IN SCIENCE AND MATHEMATICS

ANNUAL ENROLLMENT STATISTICS

AMERICAN EDUCATION IN THE COLD WAR ERA

JESUIT SCHOLARLY PUBLICATIONS

NEWS FROM THE FIELD

Vol. XXII, No. 3

(FOR PRIVATE CIRCULATION)

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The JEQ is grateful to FATHER JULIAN L. MALINE and his committee of Province Prefects for the collection and collation of the scholarly writings.

Jesuit Educational Quarterly

January 1960

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THE JESUIT EDUCATIONAL QUARTERLY, published in June, October, January, and March by the Jesuit Educational Association, represents the Jesuit secondary schools, colleges, seminaries, and universities of the United States, and those conducted by American Jesuits in foreign lands.

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49 East 84th Street, New York 28, N.Y.

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JESUIT EDUCATIONAL QUARTERLY

A Primer on Educational Television

JOHN CULKIN, S.J.

"We paternally exhort Catholics well-qualified by their learning, sound doctrine and knowledge of the arts—and in particular clerics, and members of religious orders and congregations—to turn their attention to this new art and give their active cooperation, so that whatever benefits the past and true progress have contributed to the mind's development may also be employed in full measure to the advantage of television."

POPE PIUS XII: *Miranda Prorsus*

A dozen years ago it was difficult to watch television unless you drank. Most of the few thousand TV sets were perched behind the counters of the thirst emporia of America. Today, even teetotalers can share the benefits of television because of the more than 50 million sets in the country. America is "at home" with television in more ways than one.

The word "television" evokes a myriad of phantasms and reactions from different people. For many the medium is identified with the steady and predictable round of westerns, wrestling, old movies, and loud commercials. For others it is a front row seat for the world of sports, comedy and music. Some use it as a window on world events, others as a wall against reality. There are those who advertise their power to think for themselves by stating that they wouldn't have "the thing" in their home.

If the reactions to "television" are varied, at least they are clear. The phrase "educational television" touches more remote and mysterious shores. It is a terrain often clouded by nebulous notions like "Ding Dong School", Sunday afternoon TV, lectures at 5 o'clock in the morning, and hazy ideas about experiments in using television in education. The variety and obscurity of popular thinking about educational television is often traceable to the highly analogous nature of the concept, the geographical limits of many experiments, and the distracting volume of regular commercial broadcasting. And yet in the shadow of the TV industry, educational television has been growing with an intelligent balance and sense of direction which can make it the modern age's most powerful educational force. This year more than a half million American

students will be taking part of their formal credit courses by television. And over four million students will be reached by some form of in-school use of television.

Television Is Neutral

The phantasmagoria of commercial television can obscure the essential nature of television. The much-used word *medium* can perhaps underscore the essentially neutral character of television. It is a *means* of communication, a channel, a transmitter, not a transformer. If television is viewed under this essential formality, it follows that the relation of television to education fits rather under the analogy of a weapon being added to an arsenal, than of an enemy being added to an alliance. Like writing and printing, television is an indifferent instrument whose efficiency is determined by the intelligence, imagination and skill of those who use it. It can carry good or bad teaching with equal voltage and equal clarity.

But, as with many things modern, actual mediocrity or imagined abuse is easier to detect than is potential excellence. It is said that some Egyptians objected to the introduction of writing because they thought it would dull the memories of men. Centuries later opposition to the printing press and the wider dissemination of books was based on a fear that the function and authority of the teacher would be undermined. Today the elders of the educational tribe face the challenges and decisions occasioned by a new medium of communication. Those who know the past and apply its lessons will avoid the censure history is again preparing for those educational reactionaries who are destined to repeat the errors of the past.

Perhaps the most salutary atmosphere for a consideration of educational television would be achieved by projecting oneself back into the decision-making moments occasioned by Gutenberg's invention of moveable type. Many of the educational opportunities and problems will be remarkably similar. Another helpful device would be an educational meditation before a blank TV screen, with the deepening realization that this medium is intrinsically capable of bringing the best of the world's cultural and educational resources to life—at the touch of *my* hand and in response to *my* demand.

Limits of This Treatment

As the title of this article advertises, the intention is to present a phenomenology and not a philosophy of educational television. To date

there have been enough varied experiments around the country to provide a matrix for educational planning on all levels of schooling. Both the implications and future applications of ETV are built right into the experiments. Most of the projects mentioned deserve a more thorough treatment and will suffer both from the limited description and the lack of needed qualifications, but this is the occupational hazard shared also by the writers of telephone books.

It is hoped that this paper can bring into a single locus most of what is relevant in the current ETV literature. Much of the matter will be old hat to those who are in contact with the field, but the general intention will be to assemble the data pertinent for those facing decisions in this area. Although there have been significant Jesuit contributions to educational broadcasting, they will not be highlighted here unless they lend special emphasis to some area of the subject. A questionnaire is being prepared to get an overview of the American Jesuit cooperation in educational television.

One fact should be of special interest and encouragement to Jesuit educators. Dr. Franklin Dunham, Chief of Radio and Television for the U. S. Office of Education and former educational director for NBC, has been in the field of ETV since he first did preliminary experimentation as early as 1935. Writing in *America* in 1956, he pays the following tribute to one of our fellow Jesuits:

So far as the writer can discover, the man who pioneered the whole field of educational television is Rev. Roswell C. Williams, S.J., of The Creighton University, Omaha, Neb. . . . Father Williams came along in 1945, when television was finally revived toward the end of World War II. Over experimental station WOW-TV, Omaha, he produced the first programs linking television with the teaching of biology (and later dentistry) as a practical subject for young doctors in training, and for even more doctors in practice who wished to keep abreast of new developments in their profession.

A few general and obvious qualifications before we leave the launching pad. Television is not going to supplant education as we know it, nor is it going to solve all of education's problems. The book didn't accomplish either of these things and neither will the screen, but the image of the blank page and the blank screen should provide a sane and balanced framework for judging the educational role of television. We have put both St. Paul and Mickey Spillane on the blank page. The blank screen will be just as docile to our decisions.

The Holy See has been very quick to encourage positive cooperation in this field, as the introductory quote from Pope Pius XII indicates. His encyclical, *Miranda Prorsus*, which treats of motion pictures, radio and

television, is much more than a set of negative norms for moral watchdogs; it opens all the stops in its analysis of the power of TV and encourages the fullest and most intelligent cooperation possible. No professional television writer could have hoped for a fuller or more balanced treatment. In February, 1959 Pope John added momentum to this encyclical by establishing the Pontifical Commission for Motion Pictures, Radio and Television.

After a brief look at some of education's problem areas, there will be a survey of current educational television, a summary of the function and limitations of TV, and a critique of television's implications for future education.

Educational Problem Areas

Without becoming oracular, apocalyptic or simplistic, it is possible to underscore several areas which complicate and challenge current educational planning. Although these complications bounce off different educational institutions with varying resonances, no single school can ignore their existence, importance or immediacy.

a) *Enrollments*. Population growth and the goal of full and universal education combine to create challenges of Himalayan proportions. Taking 1957 statistics as a point of departure and estimated 1965 enrollments as a terminal point, the enrollment explosion lines up as follows:

	1957	1965
<i>Elementary</i>	29,000,000	36,000,000
<i>Secondary</i>	8,000,000	12,000,000
<i>College</i>	3,000,000	4,500,000

The educational implications of these statistics have forced educational thinking into new categories since these goals cannot be reasonably achieved through conventional means. These geometric progressions press with added urgency on Catholic educational agencies which at present are educating only 60% of the Catholic elementary age group, 35% of the Catholic high school age group and about 30% of the college and university Catholic students. Including all levels of education, Catholic schools enroll about one half of all Catholic students.

b) *Teacher Shortage*. To meet this 1965 enrollment, the schools would need 350,000 more teachers than they have now. All present or planned recruiting and training programs are unlikely to produce more than 100,000 teachers by that date and this number would leave a shortage of a quarter of a million teachers. These quantitative norms prescind to a

great degree from the qualitative demands of today's complex and highly specialized curriculum. By 1970 the college and university enrollments will have doubled and, at the same time, the standards and competition for trained teachers will have risen sharply.

c) *The Curriculum*. The past 25 years have witnessed a lightning growth in the number and complexity of subjects in the curriculum. Many curricular areas call for specialists with long training. Constant research and rapid dissemination of knowledge create quick turnover and adjustment in texts and course content. Teachers must be continually learning and adapting themselves to these advances. The recent shift in the high school math curriculum exemplifies the pattern of change and adaptation.

d) *Physical Facilities*. To solve present inadequacies and to meet future needs, it would be necessary to build 500 new classrooms every day in America. Increased emphasis on science demands modern and expensive laboratories and equipment.

e) *Special Education*. Because of the rapid growth of learning and the daily advances being made in every field, few people can afford to finish their education after college. This need, added to the leisure of our automated culture, has triggered the demand for adult education programs to keep pace with modern challenges. This is proportionately the fastest growing educational need and program in a country which depends on such large numbers of adults for its decisions and leadership.

At this point of the action, the stage directions should call for "alarums and trumpets", since the man is about to tell us that only the bright and penetrating eye of television can illumine such stygian darkness. Not so. But one thing is certain. Problems of the proportion cannot be solved through conventional means. We will never be able to assemble teachers enough or bricks enough to multiply educational facilities to meet student demands. Television however, can multiply a faculty without hiring a teacher. It can duplicate buildings without laying a brick. What is needed now is a theory of limits to determine the relative and instrumental function it can fill in the total educational picture.

It is obvious that TV can play both a direct and a supplementary role in education. Each television agency will contribute to both in varying degrees. For reasons of exposition the field will be divided into four general areas: commercial networks, commercial stations, non-commercial ETV stations, and closed-circuit systems. The last two areas command the most serious consideration from educators since they are the areas within which administrative decisions will usually be made. The

section on commercial broadcasting is included to point out some of the supplementary programming which is available and to reinforce the conviction that education should be offering leadership and cooperation to commercial efforts at cultural and educational broadcasting. Those who are more interested in the completely educational function of TV can bypass the sections on commercial TV and concentrate on the non-commercial ETV stations and the closed-circuit systems. The electronic and political facts are included in the interest of completeness and of liberal education.

An Electronic Interlude

There are physical and political determinants which limit the uses of television for both commercial and educational purposes. Present allocations of the Federal Communications Commission provide 12 VHF (very high frequency) channels and 70 UHF (ultra high frequency) channels for television. For reception purposes, the VHF-UHF distinction roughly equivalates the AM-FM distinction in radio broadcasting—special equipment is needed to receive the UHF or FM frequencies. At present only about 10% of the television sets in the country are equipped to receive UHF channels. The VHF channels run from 2 to 13 on the TV dial. The UHF channels run from 14 to 83.

Channel availability is also limited by elements intrinsic to the broadcasting media. The present VHF channels are divided into three non-contiguous segments: channels 2-3-4; channels 5 and 6; channels 7 through 13. Within a limited geographical area, it is possible to utilize contiguous channels from the same segment. Therefore, maximum channel usage in a given city would be limited to channels 2, 4, 5 or 6, 7, 9, 11, and 13. This seven channel maximum is reached in New York and in the Baltimore-Washington area. The nearness of New York to Philadelphia (about 90 miles) precludes the use of these seven channels in Philadelphia, so the Philadelphia VHF channel allocations are for channels 3, 6 and 10.

The UHF channels run from 14 to 83 and within a given city individual stations must be separated from each other by at least six channels. In Fort Wayne, for instance, the UHF allocations are for channels 15, 21, 27, and 33.

Even at this early stage in television, the competition for VHF channels and the current limitations on UHF broadcasting have forced the FCC to re-examine the entire allocation system. Solution will demand either a) a re-allocation of the VHF and UHF channels or b) the mandatory manufacture of all-channel receivers.

1. Commercial Networks

Most of the more than 500 commercial television stations in the United States are affiliated with one or more of the three national networks—American Broadcasting Company, Columbia Broadcasting System, National Broadcasting Company. Because of the multiple ownership restrictions established by the Federal Communications Commission, no network or broadcasting company may own more than five individual stations. The local owners affiliate themselves through contract with the national networks and usually receive about 50–60% of their programming from the network. In this way, they can program high-budget shows at rates proportioned to the advertising market reached by their station. A glance at the advertising rate cards of four stations affiliated with the same network shows that same hour-long program shown during the evening hours would cost \$9200 in New York, \$4500 in Chicago, \$750 in Wichita and \$400 in Plattsburg. Stations not affiliated with networks must depend heavily on local programming, filmed series, and motion pictures.

As a handy rubric for describing and evaluating the educational contribution and potential of the television networks, their offerings can be divided into A) their direct, continuous and formal educational programs (televised instruction) and B) their general cultural and informational programs.

Televised Instruction. This term is meant to describe programs which center on direct, continuous and structured teaching of a subject in a process analogous to that of a regular course. It is clear that the high budgets and keen competition of network broadcasting will seriously limit the reasonable possibilities for televised instruction.

“Continental Classroom” practically has the field to itself. This NBC network program was the first to present a full college course to a national audience. Dr. Harvey White of the University of California taught a course in Modern Physics which was aimed at improving the teaching of high school science. Preliminary statistics indicate that an average daily audience of more than 270,000 viewers watched the program which was broadcast each weekday from 6:30 – 7:00 A.M. Despite rather late notification, 241 colleges offered credit for the course. Of the 3,000 students who registered for credit 70% completed the course satisfactorily, 5% failed, and 25% dropped out. The University of California topped the list of enrollments with 215 students of whom 40% were teachers.

This year Dr. White’s course is being repeated from 6:00 – 6:30 A.M. and a course in Modern Chemistry is being taught from 6:30–7:00 A.M.

by Dr. John Baxter of the University of Florida. Special texts have been written to accompany this course. Three hundred colleges are offering credit for this 160 lecture course which is in color.

Cultural Programming. This rather general term is meant to describe the wide range of network programs which supplement or reinforce educational objectives. The volume of programs on television is so great, the opportunity for viewing so brief, and the possibility of advance judgments so slight, that it is easy to miss or underestimate the number of high quality productions which enrich the educational experiences of the audience. In a hasty overview, most of these programs can be catalogued under the familiar categories of the humanities, the natural sciences, and the social sciences.

a) *Humanities.* Because of television, motion pictures and the stage, the drama has become perhaps the most influential literary form of our age. We have to return to Greece to find such a constant use of dramatic form for presenting and working out philosophical and social ideas. This should logically encourage teachers of the drama to highlight criteria for the intelligent evaluation of the analogous use of dramatic form in stage plays, television plays and motion pictures.

Within the past eight years, the networks have presented fifteen of Shakespeare's plays and they were seen by an aggregate audience far outnumbering those who had attended Shakespearean plays in the 360 years since they were written. Series such as "Playhouse 90", "Studio One", "Kraft", "Goodyear-Alcoa", "U.S. Steel", "Hallmark Hall of Fame" and "Producer's Showcase" have consistently maintained a high standard of programming and have, on occasion, touched highwater marks in dramatic achievement. Television has also fostered original dramatic creativity through writers like Paddy Chayefsky and Gore Vidal.

Television as also helped to crumble some of the artificial walls which have separated classical music, ballet and the plastic arts from the majority of people. If it is true that good taste is best cultivated by tasting good things, then more people have had the opportunity through television to acquire good taste than was ever before possible. The dynamic and instructive performances of Leonard Bernstein and the New York Philharmonic have stimulated a new appreciation of serious music throughout the country. Opera has been opened to a whole new audience and the traditionally select audience for ballet grew to 32 million viewers for the performance of Tchaikovsky's "Nutcracker Suite" by the New York City Ballet. On another occasion 30 million watched the Moiseyev Dancers and 37 million watched the rebroadcast of the same program.

Programs like "Omnibus", "Wisdom", and "Camera 3" consistently treat of cultural topics in a highly professional way.

b) *Natural Sciences*. The Bell Telephone series "Science on TV" was a scientific spectacular. With Dr. Frank Baxter of Shakespearean TV fame as narrator, the series presented four very expensive and very educational programs on the sun, the blood, the weather, and cosmic rays. "Mr. Wizard" presents weekly scientific demonstrations to stimulate interest among budding scientists. Other programs like "Odyssey" and "Adventure" treat of scientific topics and "Disneyland" has occasionally worked its magic on subjects like the atom and space travel. "Johns Hopkins File" has been another steady contributor in this area.

c) *Social Sciences*. Americans have become eyewitnesses to history rather than readers of it. The immediacy and urgency of current events throb in the television newsreels and documentaries on the Hungarian Revolution, the political conventions, the rise of Hitler and Stalin. Politics becomes everybody's business because of programs like "Meet the Press" and "Face the Nation". Television has given intelligent and sympathetic treatment to social questions like alcoholism, mental health, dope addiction, juvenile delinquency and race. "See It Now" and "Twentieth Century" have a fine record of significant programming which has lent meaning and understanding to current events and problems. "You Are There" and "Heritage" have brought to life important historical events of the past.

In addition to these three types of programming, the networks have produced series like Bishop Sheen's "Life is Worth Living" and Dr. Frank Baxter's lectures on Shakespeare. The FCC has stipulated that the networks must assign a certain amount of time for public service broadcasting. This puts the facilities of a large network at the disposal of educational, civic, and religious groups for professional programming and has been responsible for such quality religious programs as the Catholic Hour's "Rome Eternal" and the "Lamp Unto My Feet" series.

Critique of Network Broadcasting. The above selection is not intended as whitewash for any electronic sepulchers. It is obvious that competition for the mass market and the advertising dollar must influence much of the network's programming policy. The high priority given to entertainment programs is related to general listener reaction and, although the networks can and often do endeavor to improve public taste, their economics of survival demands a sensitivity to current viewer preferences. In his book, "The Image Industries," Father William Lynch, S.J. offers a balanced analysis of this reciprocal process, as well as a penetrating insight into the pitfalls and potential of the mass media.

Despite its economic, electronic and geographical difficulties, network television has already done more to realize its educational potential and responsibility than radio or the movies have done. It will never be able to offer prime time for habitual educational programming, but of its nature it is capable of the grand gesture and can continue to rise to great occasions with high-budget programs which would be beyond the reach of local stations. As time goes on it will continue to build up a backlog of films, kinescopes and tapes of programs which can serve educational needs. We can expect a greater degree of cooperation between the networks and the schools as each grows in an awareness of the problems and potential of the other. At present the schools can encourage positive and intelligent televising habits by recommending programs of the type previewed in the *Listenables and Lookables* section of *Scholastic Teacher*. The networks can continue their fine Sunday programming schedule and also attempt to present cultural programs for in-school viewing. A weekly program on Friday afternoons with Leonard Bernstein teaching music appreciation would neatly solve that curricular area for many schools.

2. Commercial Stations

Although individual stations do not have the resources to produce educational programs of network caliber, they can be more sensitive and adaptable to local educational needs. Stations with network affiliations can offer most of the aforementioned network programs as well as home-grown productions. Stations owned by broadcasting companies like Westinghouse, Storer and Fetzer have the added advantage of sharing the talent and resources of the five stations linked by this multiple ownership. Since most of this type of programming reaches only a local audience, the following list of projects is meant to be suggestive rather than exhaustive.

- *Modern Language*. More than 30 commercial stations have presented courses in modern language within the past two years. They have included French, Spanish, German, English (for the foreign-born), and Russian.
- *Sunrise Semester*. More than 100,000 New Yorkers daily turned out at the godly hour of 6:30 A.M. for Professor Floyd Zulli's half hour lectures on Comparative Literature. Local book stores sold out the titles he was discussing and last year the tapes of the program were shown in Baltimore and other cities. N.Y.U. repeated the series last year with courses in Physics, Sociology, History and Literature. This year's courses are on the history of western civilization and on the history of art.

- *New York Regents.* For the past two years the New York State Board of Regents has leased 25 hours of time per week from the commercial channel WPIX in New York City. Seventeen and a half hours of programs are broadcast for in-school, direct teaching and the remaining seven and a half hours are used for special programs and the in-service training of teachers.
- *Science.* In the fall of 1958, the Greater Washington Educational Television Association produced a series of Science programs for the daily in-school instruction of 40,000 students in the fifth and sixth grades. The series is continuing this year too.
- *Combined Station.* Central Michigan will have the nation's first combined educational-commercial station when Channel 10 in Onondaga opens on a shared time basis. Michigan State will broadcast a total of 38 and a half hours weekly and the TV Corporation of Michigan will broadcast commercially for the remaining time. The station will reach four million viewers.
- *Westinghouse.* Donald McGannon, President of the Westinghouse Broadcasting Company, has set new standards of excellence in commercial educational broadcasting through the three seminars on Public Service Broadcasting which he has sponsored for the television industry. Westinghouse stations have also produced educational series on Education, "Adventures in Number and Space," "Lamp of Knowledge," and "The American Civil War." Westinghouse often presents educational and other public service programs during the evening "prime" hours and recently gave \$250,000 worth of TV equipment to the educational television station in Pittsburgh where Westinghouse operates a commercial station.
- *Teacher Education.* Eighteen commercial TV stations in Texas broadcast a teacher education series entitled, "Texas Curriculum Studies." More than 10,000 teachers and laymen are registered for the course with which 47 colleges are cooperating.
- *Public Service.* Because of the time they set aside for public service broadcasting, the commercial stations are eager to have educational groups provide material for this time. In 1955-56 more than 1000 programs were presented in this way by 268 educational groups and the Educational Television and Radio Center.
- *Extended Services.* The Educational Television and Radio Center has made its educational series available even to cities which do not have their own ETV station. Any school may obtain series of educational programs through the Extended Services program, if it can arrange to have them televised by the local commercial station. There is a minimal charge (about 30 dollars per half hour) for the service and the school may accept grants from

commercial or industrial firms in support of the programs. The organization sponsoring the series is credited at the beginning and end of each program.

The catalogue of educational programs available through this program is really exciting. There are programs on every aspect of art, music, science, history, current events, and the other fields of education. Many of them would answer in-school needs for specialized teaching in music and art appreciation courses. If the cooperation of a local commercial station can be obtained, this would be one of the finest and most direct ways for a school to exert leadership in this field, to serve the interests and needs of the community, and to keep its concern for education before the public eye. Further information and a list of programs can be obtained by contacting:

*Development Division
Educational Television and Radio Center
2320 Washtenaw Avenue
Ann Arbor, Michigan*

Critique of Commercial Stations. Although there have been notable accomplishments and although there is indefinite room for future cooperation with educational agencies, the commercial station will always serve education in a limited fashion because of network and advertising commitments and the reservation of prime viewing hours for its own programs. It isn't easy to learn Chinese at six o'clock in the morning!

3. Non-Commercial Educational Stations

The Federal Communications Commission has allocated 259 channels for exclusive use in non-commercial educational broadcasting. Of these channels 87 are in the VHF (very high frequency) band and can be received on the ordinary television set. The remaining 172 channels are in the UHF (ultra high frequency) band and require a UHF converter for reception on the ordinary television set. (These UHF adapters cost about \$30). At the present time there are 44 educational stations on the air—34 on the VHF frequencies and 10 on the UHF frequencies. The first non-commercial educational station, KUHT in Houston, began operation in May 1953 and reached an audience of 800,000 people. The present 44 ETV stations reach more than 60 million viewers. These stations are usually licensed to individual schools or school districts, or to community organizations representing the educational and cultural groups of the area.

Since many of the cities in the United States do not have educational

stations, the following examples highlight some of the varying educational experiments which have taken place in the past six years.

- *Pittsburgh.* Pittsburgh is the first city in the world to have two educational television stations. They are owned and operated by a community organization representing educational, business, cultural and civic institutions. During school hours the channels broadcast programs for in-school use both in the elementary and secondary schools. There have been such courses in Elementary Science, Russian, French and Mathematics. There are credit courses for adults in high school and college subjects. During the summer the stations broadcast make-up work for students who need special help in Math, English, History and Science. WQED offers a complete program in Adult Education and has presented programs such as Creative Writing, "Adventures in the Arts," "Ideas and Ideals," "Arts and the Gods," and "Typing and Shorthand for You." Two years ago Robert Frost read and explained his poetry to the Pittsburgh classes studying American literature, and the station has presented people like Dr. Jonas Salk, Harold Urey, William Foxwell Albright, Henry Steele Commager, Martha Graham, Dame Edith Sitwell and Bruce Catton.

- *Educational Network.* Alabama has the nation's first ETV network with three stations combining to broadcast approximately 66 hours each week. The network reaches 80% of the state's population and more than 250 schools are utilizing the network's televised lessons either for direct teaching or enrichment.

- *Detroit-UHF.* Despite the technical problems involved in UHF broadcasting, Detroit has one of the most successful ETV programs in operation. More than 50,000 sets have been equipped with the UHF converter to pick up WTVS Channel 56 which broadcasts from three separate studios—at the University of Detroit, Wayne University, and the Detroit Public Schools. All Detroit public schools are equipped to receive the 42 live programs which are weekly prepared for the schools. The University of Detroit has offered college credit courses in Theology, History, Psychology, English, and Spanish. Credit students register for the course, purchase the texts and visit the campus regularly for discussion, questions and testing.

- *Programming.* The non-commercial ETV stations are affiliated with the Educational Television and Radio Center whose functions will be described later in this article. Financed by the Fund for the Advancement of Education, the center provides a national program service for the stations. It provides filmed and taped educational series of programs on every possible educational and cultural topic. Most of the films are a half hour in length and they include series like "American Art Today," Father John Bannon's 36 program history of Colonial North America, Dr. Edward Teller's series on the atom, 16 programs on the American Constitution, Dr. Glenn Seaborg on the elements, 52

programs by Mortimer Adler on the Great Ideas, a series in music education called "Master Keys," 13 programs on "Music for Young People," Frank O'Connor discussing the art of the short story, "The Oresteia," "Opera for Today," "Painting," "Psychology One," "Religions of Man," "Sculpture," 8 programs on "The Sense of Poetry" and a series of interviews with "Writers of Today." The advent of television tape will accelerate this type of quality programming.

• *Chicago.* Through the facilities of WTTW in Chicago, it is now possible to get a Junior College diploma by television. Credit students enroll on campus, purchase texts and study guides, watch the TV classes, mail in regular assignments, and return to campus for the mid-term and final examinations. Two years ago the second highest student at graduation was a television student. From the Fall of 1956 to the Spring of 1958, WTTW had offered 26 Junior College courses for credit. Currently there are 1500 students taking at least two courses for credit. There are many more viewers who follow these courses without receiving college credits and the station offers additional programs for the educational and cultural enrichment of the area.

• *Commercial Cooperation.* The New York Regents and the Michigan State experiments show one line of cooperation. NBC and the Educational Television and Radio Center launched the Educational Television Project whereby educational series are cooperatively produced and transmitted to the ETV stations over the regular NBC network facilities. Many stations have received free or low-priced used equipment from the commercial stations.

• *National Program for Public Schools.* The National Program in the Use of Television in the Public Schools is a nation-wide project involving nearly 40,000 students in more than 100 public school systems.

• *Nebraska and Oklahoma.* In these states open-circuit television is being utilized to bring college preparatory courses to small rural high schools which do not have enough qualified teachers.

• *Finances.* The average ETV station has cost about \$350,000 for studio and transmission equipment. Annual budgets run between \$100,000 and \$150,000, although some of the larger stations spend considerably more than this amount. Thus far the Ford Foundation has given matching grants of at least \$100,000 in equipment to the ETV stations in the National ETV network. Recently the Foundation allocated over two million dollars to equip each of the stations with videotape recorders each of which cost about \$47,000. Foundations and community groups have been generous in their contributions and the multiple ownership of a station by several educational and cultural groups eases the individual burden. A contribution of one dollar from each student

benefitting from the ETV station in any city would practically solve any station's financial problems. In the early days of operation a station can economize by taking advantage of the filmed and taped programs available for use.

● *Low Power TV.* In smaller communities and medium-sized cities low power television stations can provide quality service at relatively low rates. A low power station can be fully equipped for as little as \$50,000 and can operate at an annual budget of about \$30,000. Quality of transmission and costs both depend on antenna height and the nature of the terrain. In Oregon four colleges and universities cooperated in a low power network which makes the outstanding teachers in each school available to the students in all four schools. These four schools (U. of Oregon, Oregon State, Oregon College of Education, and Willamette University) have also used open-circuit TV for this program.

Advanced Placement. In both San Francisco and Detroit gifted high school students can take college level courses by television for advanced standing.

Literacy. Station WKNO-TV in Memphis has broadcast a literacy series to teach the estimated 50,000 illiterates in the area. It is estimated that there are 700 million illiterate people in the world. Father José Salcedo of Columbia runs one of the most extensive educational ventures in the world through his radio network in Columbia which broadcasts 6 hours a day to an estimated 1,000,000 pupils.

4. Closed-Circuit Television

Closed-circuit television is designed for viewing by a selected audience. Although this selectivity may be achieved in several mechanical ways, it is usually done by means of coaxial cable connections. Broadcast TV works on the principle of the radio, while closed-circuit TV works on the principle of the telephone or public address system. At present there are 119 educational institutions using closed-circuit television in this country. The FCC has no control over these systems and no permission is needed to install CCTV. Because of the expense involved in stringing cable over long distances, most CCTV installations operate on a single campus or within a single building. The number of programs which can be televised at one time depends on the number of wires connecting the outlets. Hagerstown, for instance, can televise six programs simultaneously, whereas the ordinary ETV station can only broadcast one program at a time.

CCTV serves both the direct and supplementary goals of televised

instruction. The following experiments highlight the major closed-circuit programs in the country.

● *Hagerstown, Maryland.* This experiment links the 48 elementary and secondary schools of Washington County and reaches 18,000 students. Although almost every curricular subject has been taught by television, the average student sees about one hour of televised instruction daily. The teachers work in teams, lesson previews are distributed, and the classroom teacher follows up the half hour TV lesson with a 45 minute period of discussion, questioning and explanation. Preliminary test results point to a marked superiority in the achievement of the TV students over the control groups studying under ordinary classroom conditions.

● *Chelsea Project.* In New York City, a closed-circuit system links the local schools, a community center and a housing project. In this predominantly Spanish-speaking neighborhood the parents see what their children are being taught in class and have the opportunity to learn English in the process.

● *Medicine and Dentistry.* The Armed Forces Institute of Pathology at Walter Reed Hospital has a complete CCTV system which televises experiments and operations to its medical students. The American Dental Association reports that closed-circuit TV extends demonstrations, formerly limited to five or six students, to groups of 90 or 100 students, thereby saving as much as three weeks' time for one instructor.

● *Penn State.* Within the past four years more than 30,000 students at Penn State have taken regular college courses on campus via CCTV. In experiments involving every type of classroom setup and a variety of subjects, research revealed no significant differences in achievement between the TV classes and the control groups. The University has in one year saved as much as \$40,000 in instruction costs for four subjects. New York University and the University of Miami (Ohio) have also done extensive programming and research in this area.

● *Costs.* A minimal closed-circuit system with 15 classroom outlets can be installed for approximately \$18,000. "Operation Shoestring" built a TV installation for \$3000 in Schenectady and a fully professional system with equipment for films can be installed for \$30,000. There are cameras that sell for \$595 and simple systems for teacher training and observation can be rented for less than \$50 per month.

● *Cooperative Project in Texas.* Ten colleges in the vicinity of Austin, Texas are planning to hook up in a closed-circuit network to make courses available to each other. Both coaxial cable and micro-wave transmission will be used to link the schools, four of which are Catholic colleges.

What ETV Can Do

Today the question is no longer *whether* television can play an important role in education. Those who would pose the question in the either-or categories of the *todo y nada* school have missed either the fact or the implications of the pioneer projects which have already taken place. Education does not want to legislate either for total use or total abstinence, but it is anxious to explore the *degree* to which television can actualize educational objectives.

Prescinding from commercial broadcasting, we can see that the variety and seriousness of the experiments with ETV stations and closed-circuit systems define the major lines of television potential. A quick survey of some of television's essential qualities will suggest the elements common to most of these programs and will level the ground for future applications and extensions of the medium. The value and efficiency of televised instruction will obviously shift as it moves across the spectrum of educational groups and needs.

Characteristics of Television

"A look at the inherent characteristics of the medium of television tells us that it possesses:

- 1) the value of immediacy;
- 2) low per capita cost of audience coverage;
- 3) advantage of a front seat at demonstrations or at any event;
- 4) ease and economy of film reproduction;
- 5) ability to induce mental participation;
- 6) photographic extension of the visual sense;
- 7) the virtue of intimate contact with the minds, methods, and personality of the most competent living teachers;
- 8) the advantage of using *one* set of apparatus in a laboratory, thus saving duplication of materials;
- 9) close relation to texts, following meticulously courses of study already available in schools or obtainable for home use;
- 10) the power of a visual blackboard where maps, symbols, models, or moving objects may be displayed with aural illustrated exposition for identification"¹

¹ Dunham, Franklin, Lowdermilk, Ronald, and Broderick, Gertrude. *Television in Education*. U.S. Dept. of Health, Education, and Welfare, Office of Education. Washington: U.S. Gov. Printing Office, 1958, pg. 21.

Talking about the teaching potential of television on paper is somewhat like trying to explain the use of the hula hoop without a hula hoop. There is no substitute for simply giving it a whirl. Televised teaching is more than just the televising of an ordinary classroom lecture. Just as the motion picture is much more than merely "canned theater," so too television encourages and highlights new skills and techniques to take full advantage of the potential of the medium. To get the full impact of what this means, you have to see a professional TV teacher in action. You can! Live dangerously and brush the morning dew from the high lawns by watching Dr. John Baxter teach Chemistry on Continental Classroom at 6:30 A.M. Television's power of achieving concentration and immediacy is evident in the telling use of graphs, scientific equipment, and camera angles. *Solvitur videndo!*

This partial list of television's characteristics encourages thinking on the possible harnessing of TV to actual educational services and demands. The framework will be that of a local ETV station or of a closed-circuit system within a school.

ETV Stations

Many of the suggestions listed here have already been actualized on one or more of the 44 ETV stations now in operation. The city-wide coverage and adaptable time schedule of the ETV station give it great freedom and scope in adapting itself to local needs for in-school and home programming.

- *Adult Education.* Mature and highly-motivated students can derive optimum advantage from television. Colleges will never be able to keep pace with this growing demand through a multiplication of existing facilities and agencies. The Fund for Adult Education has already spent more than 10 million dollars experimenting in this field.

- *Teacher Training.* Teachers can keep in step with developments in their field through periodic reviews televised by experts. If the top teachers of the country constantly appear on TV, they will be keeping an image and standard of excellence before the eyes of the profession. Rapid curricular adjustments cannot wait out the educational lag which has been characteristic in the past. Even the heroic efforts of the National Science Foundation and the colleges will only prepare a small segment of the nation's math teachers to handle the new math programs. Teachers (and this would include many nuns and brothers) who are forced to use evenings and Saturdays during the school year to take basic educational courses, could take advantage of televised credit courses.

- *Career Guidance.* Current educational practice sends professional people and college representatives scurrying to all points of the map for career talks and college days. On TV the best representatives of each profession could explain career opportunities to the students of the entire city. A televised college day from campus could include shots of campus facilities, interviews with teachers and students, and details on tuition, scholarships and entrance requirements. It would also serve the public relations function of giving the school an opportunity to present its program and progress to the local audience.

- *Educational Cooperation.* *Per se*, a community ETV station opens the way to fruitful cooperation and understanding among the colleges, museums and libraries of a city. Students have access to the most expensive laboratory equipment and to the treasures of every type of museum and cultural agency.

- *Parents.* Programs that are available for both students and their parents give the family a common educational experience which may help to bring the parents back into an active role in the education of their children. The concept of the school and teacher as "baby-sitters" could be erased if the home also became a locus for common reading, viewing and discussion.

- *Pool of Teaching Talent.* If it is the function of education to keep alive the vision of greatness, then great minds and great teachers will be able to reach more students through television in one year than they could have done in their entire teaching career. Soon there will be filmed or taped courses and in every subject by the best teachers in that subject. Because the TV teacher has more time and resources at his disposal he can prepare a more muscular and better illustrated presentation of most topics. And for supplementary teaching, there is the prospect of living authors reading and explaining their own works, scientific leaders explaining their discoveries and projects, political and industrial leaders analyzing current problems and outlining the principles and conditions which will structure their decisions.

These are just a few lines of TV application. Other uses could serve the needs of the aged, the hospitalized and the sick. It seems clear that the organization controlling the ETV station in each city will be one of the most powerful influences in the community since it will have easy access to every home.

Closed-Circuit TV

Within fifteen years every college and most high schools will have a closed-circuit television system. Without a student leaving the classroom, the school can duplicate most of the advantages of an assembly without

invoking the assistance of the riot squad. Many of the general observations on TV usage will also apply to closed-circuit television, but a few items deserve special mention.

- *The Teaching Team.* The team approach to teaching can utilize the particular skills and competencies of the teaching staff in both the planning and presentation of courses. Teachers in a department could each give extended time to the preparation of one segment of the course, each performing in his specialty.
- *Special Courses.* The academic desirability of many courses is frustrated by the administrative impossibility of hiring specialists for these limited areas. Courses in music, art, typing, and similar subjects could be easily and efficiently handled by television. A single teacher could even serve the needs of several schools.
- *Routine Tasks.* Recurring needs like the filling out of forms, career guidance, student council campaigns, movies, presentation of awards, etc. lend themselves to easy presentation by closed-circuit television.

What TV Can't Do

Like the book, television cannot engage in a debate or answer a direct question. Like the window, it can't beautify the faces or facts of those who look and speak through it. In keeping with its essentially instrumental character, it must be judged by its own standards and nature. To complicate the picture a bit, television is still in the earliest stages of its quest for self-identity, and, although the lines of personality and mature traits are discernible, the lad is still in his adolescence—a wee bit unpredictable but worthy of the patience and guidance needed to fulfill the promise of his manhood.

One of the most frequently quoted objections against educational television is that it will destroy the personal relation between teacher and student by limiting class participation through questions and discussion. Since this is such a constant objection and since it touches so close to the marrow of the question, the following rather extensive quotation is included since it contains so many balancing elements.

During the televising of a lecture-demonstration, class participation and student-teacher interaction are severely reduced. Television places a barrier between teacher and student.

All this is true. But typically, in both schools and universities, televised instruction flows immediately into class discussion where there is ample opportunity to question and debate. Moreover, wide use of television in instruc-

tion will free much time of many teachers and scholars for closer, more personal contact with individual students and for research.

The frame of reference in which this question is argued is, further, likely to be misleading. It contains the implicit assumption that, were it not for television, students in our schools and universities would be taught in small, cozy seminar-type groups. Nothing, of course, could be farther from the truth. As I pointed out earlier, much of university instruction already takes place in large lecture halls. More will. The size of classes in our schools is large, and is rising.

After 30 years of experience with university teaching of large lecture groups, I can assure you it is easy to overestimate greatly the amount of student-teacher interaction that typically occurs in them. As Professor Buckler, one of New York University's television lecturers, remarked: "Is not the student closer to his teacher as a personality as he sits in a group of thirty watching and listening to him on the television screen than he would be in a group of several hundred in a large auditorium?" No one is suggesting that television be substituted for small seminars and personal contact between student and teacher. To the contrary, many educators believe that with swelling enrollments, only wide use of television, making possible more effective use of teaching staffs, offers a reasonable chance of preserving them.²

To these remarks must be added the realization that television will never be used exclusively, or for all subjects or for all levels of learning. It will help to speed the advance to certain plateaus of learning and to free the intelligence of the student for reflection, research and reading. The whole concept of learning as a growth in responsibility, initiative, self-exercise, and free-will response to value can be fostered through a judicious use of television at each level of the learning process.

In judging the degree of validity of the objection about teacher-student contact, it helps to make the situation realistic and personal. Recall the finest teacher you have ever had. Recall one of the poorer teachers you have had. Would you choose to have the same course in a classroom situation with the poor teacher, or by television with the excellent teacher? One of the acknowledged clichés of the ETV world is that the small class provides the poor teacher an opportunity to transmit his mediocrity in an intimate environment. The choice will often be between having Robert Frost or T. S. Eliot read and explain their poetry or having some teacher attempt to do the same. When the World Series is on television, the neighborhood stickball games somehow lose their attraction.

Research is still probing many aspects of the new teaching medium—optimum class size, best television subjects, relation of the television and class teachers, the whole concept of teaching by television (as contrasted

² Zorbaugh, Harvey. "Television-Technological Revolution in Education?" *Journal of the Society of Motion Picture and Television Engineers*, Nov. 1957, pg. 675.

with in-person, radio or film techniques), the opportunity for follow-up discussion, the concept of team-teaching, student achievement, and every other possible educational variable. Nearly all the studies which have been so far conducted indicate that television students do just as well as the conventional classroom groups. As of 1958, out of the 50 studies which had been made at various educational levels, only one found a definite superiority for the "live" classroom group.

The Future of ETV

Educational television has been blessed in its early leaders. With a rare blend of vision and balance, they have arrived years ahead of schedule at a stage of intelligent synthesis, without the violent intermediary periods characteristic of the Hegelian triad. They have respected education's objectives. Their goals have been high, but their statements not extravagant. They have been careful in their research and balanced in their interpretation of research findings. The schoolmen and not the gadgeteers have been the policy makers. And the lunatic element, which usually comes down from the trees to ally itself with new movements, has been kept at musket-length, consciously and consistently. This leadership will mean much more to the future of ETV than any technical or political advantages.

Technology, however will continue to supply the educational arsenal with more efficient and less expensive weapons. Wide use of color television, large screens and video-tape is just a matter of time. Once the video-tape recorders come into a reasonable price bracket (present cost \$47,000) it will be possible to record lectures and courses on tape which can be easily shipped and erased for re-use. This saving in expense and time over film processes should clear the lot for some interesting co-operative programs between schools and faculties.

Latest addition to the technological armada is the flying TV classroom which will transmit educational television programs over a 125,000 square mile area. A DC-7 is being equipped with two television transmitters to relay programs to schools scattered across a six state mid-western area. In effect, it provides an antenna 22,000 feet high to beam television waves whose line of sight path would otherwise be limited to about 50 miles. The plane will cruise for about six hours daily in 10 mile wide circles at a level of 22,000 feet. The project will reach 13,000 schools and bring ETV to an additional 2 million students.

The political and financial horizons should brighten even further as the public realizes the value and the need for educational television. It is not unreasonable to surmise that there will be a non-commercial edu-

cational television station in almost every city in America. The national and state legislatures will be taking an increasingly larger part in the financing of ETV projects. Title VII of the National Defense Education Act has set one precedent in this regard and there has been increasing awareness and discussion of the problem in Congress. Most of the heavy expenses of the early stages have been borne by private foundations and corporations. Of the more than 60 million dollars given to ETV, the Ford Foundation has contributed 25 million.

According to the deathless words of Sgt. Ernie Bilko: "Money is not the question, it's the answer!" Although the financial aspect of ETV is liable to be distracting to many harassed administrators now, this very reason may paradoxically supersede many intrinsic educational reasons as the prime motive for adopting educational television. In the long run, it will save money, at least in some of its applications. Even today, the financial facet of the problem often gets out of focus because the expense for ETV would be considered not as something integral to the school's program, like teachers' salaries or construction costs, but would rather be viewed as something "extra," like a student lounge, new uniforms for the football team, or a new parking lot. There are ETV stations on the air today, covering cities with more than a million people, which cost less than \$250,000 to construct. In terms of proportionate influence and educational good, what can any school construct on its campus for that amount of money?

There is also a time dimension to the problem. Every month new ETV stations are going on the air. The political and social truth of the matter is that leadership will fall only to those who cooperate and share the responsibilities of the pioneer days. It is based on the educational principle that graduation is only for those who attend the classes and pass the tests. In some cities it may already be too late and some schools will find that they have unwittingly built themselves an electronic ghetto where they meet with groups of 50 or 100, while others are reaching the thousands. Even closed-circuit installations call for immediate attention, since every new classroom building that is built is implicitly taking a stand on the issue. As Winston Churchill has said: "We shape our buildings, and thereafter they shape us."

The path of educational tutorism is well-defined and well-traveled. Its myopic voyagers begin by either opposing or ignoring new movements and by fastening on some single distracting aspect of the movement to base their unexamined case. As the new movement proves its educational worth, they become more guarded in their statements. And finally, when they are outnumbered and surrounded, they announce that the values of the movement were always implicit in their ideals and

objectives, and they document this discovery with liberal quotations from their charter, the writings of the Popes, or the *Ratio Studiorum*, as the case may be. The distractions may be there, but we have never considered legislation for deviates as a sound administrative principle. The needs and challenges of Catholic education in America certainly deserve and demand courageous and intelligent leadership of the type that the Church has come to expect of the Society. Leadership may be difficult to analyze and define, but there is one thing it is not—it is not followership.

Epilogue

A re-reading of this opus forces me to a re-evaluation of the literary genre of the piece. What started out as a scientific treatment with the clarity and objectivity of a Thomistic thesis has ended up, in many places, with a "call to arms" theme more characteristic of the Pauline epistle. So be it. The narrow, mechanical channels of exposition occasionally proved too inhibiting for the importance, urgency and immediacy of the content.

Because the article was aimed at the general information of a wide audience, many of the facts and observations presented will inevitably be familiar tunes for many readers. And despite the description of the magic isles reserved for those who sign aboard the good ship ETV, there has been no intention of oversimplifying the difficulties involved. Neither has the occasionally hortatory tone meant to imply all Jesuits have been hiding in the haustus room while the sons of iniquity have been running away with the field. There has been significant Jesuit contribution and cooperation. St. Louis University and the University of Detroit, for example, have been outstanding, but in an enterprise of such moment for education, we can afford to have no bystanders.

Television will be as effective as its leaders. If not us, who? If not now, when?

Educational Television Organizations

1) *American Council on Education, Committee on Television*

1785 Massachusetts Avenue NW, Washington 6, D. C.

Mrs. Dorothy R. Smith, Secretary

Function: Sponsors conferences, publishes books, reports and a newsletter, supplies information to member organizations.

2) *Joint Council on Educational Television*

1785 Massachusetts Avenue NW, Washington 6, D. C.

Ralph Steetle, Executive Director

Function: Represents educational television before the Federal Communications Commission, Congressional committees and other government agencies. Gives legal and technical information and advice for those interested in planning stations. Publishes regular reports on stations and projects.

3) *National Association of Educational Broadcasters*

14 Gregory Hall, U. of Illinois, Urbana, Illinois
Dr. Harry J. Skornia, Executive Director

Function: Conducts research, publishes reports of research, publishes a monthly *Newsletter* and *Journal*, provides consultation on legal and technical aspects of ETV, conducts workshops and conventions to encourage the exchange of information.

4) *National Educational Television and Radio Center*

10 Columbus Circle, New York 19, New York
John F. White, President

Function: Serves as headquarters for the National Educational Television network of noncommercial educational television stations. Counsels new stations. Provides information on ETV developments.

5) *Office of Education*

U.S. Department of Health, Education and Welfare
Washington 25, D. C.
Dr. Franklin Dunham, Chief of Radio-Television

Function: Provides educators with information and consultation on all aspects of ETV. Conducts seminars and publishes reports on the field.

A Brief and Basic List of Current Publications

Closed Circuit Television Installations in Educational Institutions

Source: Joint Council on Educational Television (Free)

Educational Television Today, A Status Report

Source: Joint Council on Education Television (Free)

Schools for Tomorrow: An Educator's Blueprint

Source: Fund for the Advancement of Education (Free)
655 Madison Ave. New York 21, N. Y.

Teaching by Television

Source: Ford Foundation (Free)
477 Madison Ave. New York 22, N. Y.

Television in Education

Source: U.S. Government Printing Office (65 cents)
Washington 25, D. C.

Challenges in Science and Mathematics for Secondary School Students and Teachers

EUGENE A. ZIMPFER, S.J.

Because publicity and detailed administration of the 106 National Science Foundation sponsored Summer and Academic Year Institutes and Research Participation Programs for Secondary School Students is in the hands of the individual directors of each of these programs, many high schools are not aware of the large number of these programs open to their students. The purpose of this article is to detail general information which will remedy this situation and to point to several other opportunities available on a national scale to high school students and teachers interested in developing their scientific talents.

The basic sources of general information on all NSF programs, which are the booklets put out by the NSF for each group of programs are available on request from the National Science Foundation, Washington 25, D.C. Those of interest to high school teachers and students are listed at the end of this article along with the less detailed booklet, "NSF Programs for Education in the Sciences," which includes brief descriptions of each group of NSF programs. A detailed list of 1960 institutes for secondary school students, their directors, addresses and subjects to be treated will be available in late February.

Programs For Secondary School Students

Summer Programs

Among the official policies of the NSF Summer Programs for secondary school students which are not widely appreciated is the policy that participation in a given local program may not be limited to students from only one state. This is especially true for programs involving special subjects such as Oceanography, Meteorology, Marine Sciences and the like, where additional funds can, of policy, be applied to cover a student's travel expenses beyond the ordinary limit of \$80. at 4 cents per mile for the more common Math, Physics, Chemistry and Biology programs. (e.g. this past summer, travel expenses were paid for a student from St.

Ignatius in San Francisco to attend a program in Atmospheric Science at Windsor, Conn.) The ordinary geographical range of a program takes in students from within a 300 mile radius from the program center. Further increase in number of participants and range of coverage will be had in 1960 because participants' overall expenses will not be paid in full to all participants (as in 1959), but according to need (0 to 100%) with the aim of averaging 50% support of participants.

Other limitations may be found in individual program center policies. Although most program centers provide campus residence, boarding, recreation and library facilities, last year, because of the nature of their facilities, about 30 programs were limited to commuting students only. This however should not stifle the interest of an eager student, especially in one of the special fields mentioned above, since an attempt can be made for him to be considered for the program if off-campus residence can be arranged with relatives or close friends.

The majority of programs are for those who have completed the 11th grade or have equivalent science or mathematical background. There are however a considerable number of varied opportunities open to 10th grade students and some to 12th, 9th and even 8th grade students. Unfortunately the NSF list does not give this information in detail and inquiry must be made to individual program brochures, which may be obtained from the director of each program center.

Prime consideration, even to the exclusion of other factors, is of course given to academic merit. The ordinary evaluative tools used by directors are school transcripts, recommendations from principals and/or teachers, and occasionally various types of psychological or aptitude tests. A weighty factor, where it can be brought in, is the student's record in science fairs, science clubs and private reading or research. A measure of the student's interest in science is also obtained from his own description of it on the application form. In cases where a student participated in the program in previous years, the quality of his past performance may help or hinder his application.

At some colleges (e.g. Cornell) advanced placement credit in freshman college Chemistry or the like may be obtained and this fact is normally mentioned in the individual program brochure. In all cases, however, except where the program is run to remedy lacks in regional high school curricula, the subject matter and treatment go beyond or at least more deeply into subjects taught in high school. The research participation programs among these are unique in giving talented students a part in the work of professional or college research projects. And since in 1960 the NSF will insist that the majority of the staff of any one center

be regular college or professional personnel, the opportunities for professional contact, career appraisal and growth and personal experience are rich in any of the 106 programs.

Planned Effort by the School

As is clear from the above facts, the participation and benefits to be achieved by any one high school in these programs will depend on an organized effort by a faculty member at the school to orientate, stimulate and guide the students. It would be good for him to have on hand the booklets listed at the end of this article and to write for the detailed announcement in late February. From these he can tabulate the programs according to subjects, requirements and geographical distances: he can use it to develop a short exhortation—introduction to give to classes or to assemblies of interested or talented prospects. Information about these programs if well presented can stimulate all the students who hear it to better performance in their ordinary school work, since, for example, a transcript of *all* grades is requested by some directors, the principal's recommendation is valued highly and so on.

Planned effort is also necessary because the early-April deadlines follow closely on the issuance of individual program brochures in February or March.

Since there were only 6 Catholic College centers for these programs, 4 of which were limited to commuting students and the other two to boys only and girls only respectively, the problem of exposing students to dangerous philosophical reading or personal contacts must in some cases be considered. While one midwestern college made a point of assuring Catholic applicants that there was a Catholic church across the street from the program center, two boys in New York City dropped out of a 1958-59 academic year program partly because courses in psychology were introduced once the course was under way. However, the fact that at least 11 other students from Jesuit schools* have participated in programs at non-Catholic schools without complaint seems to indicate that advising participants to keep close contact with a local priest or a Jesuit friend would be a sufficient safeguard in this respect, once the course offerings as described in the program brochure have been carefully considered. In fact, this was done by three boys from another school in New York City who attended another 1958-59 academic year program at the

* There were 26 winners from 24 Jesuit high schools who answered the author's questionnaire about their part in the 1958-59 program.

same place as the two boys mentioned above, and they completed the course without encountering such difficulty.

Other NSF Programs For Secondary School Students

The NSF also supports a Visiting Scientist Program, several hundred Travelling Science Libraries, a Travelling Science Demonstration Lecture Program, Science Clubs, Student Science Projects and Career Information Publication.

The Visiting Scientist Program is administered by the various professional scientific societies and inquiries as well as requests for visits by outstanding scientists should be addressed to the Visiting Scientist Program of the following societies:

American Institute of Biological Sciences
2000 P St., N.W., Washington 6, D. C.

American Chemical Society
Dept. of Chemistry, Fisk University
Nashville, Tennessee

Mathematical Association of America
American Association for the Advancement of Science
1515 Massachusetts Ave., N.W., Washington, D. C.

American Institute of Physics
335 East 45th St., New York 17, New York

During 1959 some visiting scientists made as many as 200 visits per man to secondary schools.

The Travelling Science Demonstration Lecture Program will provide 140 specially selected and trained secondary school teachers to visit each of the selected schools for approximately one week, giving lecture demonstrations to science classes on topics selected by the school, discussing ideas and consulting with faculty members, and sharing their work on inexpensive do-it-yourself demonstration apparatus with students and teachers, making available a booklet containing descriptions of the experiments and diagrams of the apparatus. Application to receive such a visit should be made to the Travelling Science Demonstration Lecture Program at the appropriate regional center:

<i>States in Region</i>	<i>Center</i>
Idaho, Montana, Oregon, Utah, Washington, Wyoming	University of Oregon Eugene, Oregon

Arkansas, Colorado, Kansas,
Louisiana, Montana, New Mexico,
Oklahoma, Texas

Oklahoma State University
Stillwater, Oklahoma

Alabama, Georgia, Florida,
Kentucky, Mississippi, North
Carolina, South Carolina,
Tennessee, Virginia, West Virginia

Oak Ridge Institute of Nuclear Studies
Box 117
Oak Ridge, Tennessee

Illinois, Indiana, Iowa, Michigan,
Minnesota, Ohio, Wisconsin

Michigan State University
East Lansing, Michigan

The Travelling Science Library Program is administered for the NSF by the American Association for the Advancement of Science, 1515 Massachusetts Ave., N.W., Washington 5, D.C. Applications must be submitted by principals for participation in this program which consists in receiving 200 books (8 display units of 25 each) 50 at a time 2 units for each period of 2 months) during the school year. About 1700 schools are expected to participate in 1959-60. A great many of these books on science and mathematics do not require understanding beyond elementary algebra or plane geometry and the broad range of subject matter is aimed at developing an acquaintance with the major disciplines of science as well as practical applications to research, industry and the professions. A booklet containing detailed information on the books and brief descriptions of the content of each is available from the AAAS. This and other book lists available from the AAAS are listed at the end of this article.

NSF support of Science Clubs and Student Science Projects is limited to national organizations for youth, such as the Science Clubs of America. Science career information sponsorship is extended to the professional and engineering societies and other non-profit agencies which handle distribution of such information.

Some 14 State Academies of Science are being supported in their attempts to improve science instruction by collaboration between professional scientists and high school teachers, and in their attempts to provide science experience for pre-college students.

The Joe Berg Foundation

Besides the NSF programs, a noteworthy effort is being made by the Joe Berg Foundation, 1712 South Michigan Ave., Chicago 16, Illinois, to help interested groups in setting up Science Seminars for talented students in their community or general area. The foundation provides

free consultation with their representatives, detailed operational guides for setting up such seminars and a continuing program of information between seminars throughout the country as well as recognition for achievements by the students. The plan calls for a 2½ hour weekly seminar, staffed by invitation from the community's qualified scientific personnel (a \$1-a-year arrangement), which will cover topics such as the nature and detailed parts of scientific inquiry, aimed at giving the student the understandings needed to settle upon a hypothesis to be tested in a research project of his choosing. Local seminars are autonomous and self-directed, although groups may arrange to have a foundation representative visit them to explain the plan, its operation and objectives, and, if so desired, to assist in testing and selecting students and in starting the seminar. Some of the printed material available from this organization is listed below.

NSF Programs for Teachers

The NSF in 1959-60 is also supporting over 300 Summer Institutes, 20 Summer Conferences, 32 Academic Year Institutes and over 85 In-Service Institutes for Secondary School Teachers of Science and Mathematics. A new program of Summer Fellowships (with generous stipends) supporting individual teachers' *personally designed* plans for self improvement as teachers of science and mathematics is also now in operation. Other NSF Special Projects include 60 Summer Research Participation programs, various Specialized Short Conferences, Work Conferences, Group Study and Home Study programs for secondary school teachers. Information on these programs is included in the general booklet and in special booklets available on request from the NSF.

Jesuit Scholastics may be interested in the fact that several of their number participated in NSF programs last summer.

Acknowledgements

The author is grateful for the cooperation of Dr. C. A. Swanson of the NSF and the Jesuit Principals who furnished material for this article.

SOME PERTINENT MATERIAL AVAILABLE

from the National Science Foundation

Washington, 25, D. C.

NSF Programs for Education in the Sciences, March 1959. General information about all NSF programs for teachers and students. Of interest to those

who wish to participate or conduct them. Describes Course Content Improvement and Scientific Manpower Study programs as well as those mentioned in the above article.

Announcement of Summer Science Training Program for High Ability Secondary School Students, 1960. (Available in late February 1960) A list of the 106 organizations conducting Summer Institutes and Research Participation Programs, giving fields covered, dates, names and addresses of directors and type (e.g. commuters only) of each program.

Summer Institutes for Science and Mathematics Teachers, 1960. A similar list for college and high school teachers arranged by subjects.

Academic Year Institutes for Science and Mathematics Teachers, 1960. A similar list for high school teachers.

from the American Association for the Advancement of Science
1515 Massachusetts Ave., N.W., Washington 5, D. C.

An Inexpensive Science Library, 1958. A selected list (over 300 titles) of paperbound books, according to subjects, titles, authors, publishers. The majority will appeal to senior high school and junior college students; many to non-specialist adult readers and many to junior high school students.
\$.25

The Travelling High School Science Library, 1959. A description of the NSF program which will supply 200 books to 1700 high schools and a list of the books by titles, authors, and publishers, with short descriptions of each book.
\$.25

The AAAS Science Book List. 800 titles recommended by scientists, educators and librarians, screened by academically talented young people.

from the Joe Berg Foundation
1712 S. Michigan Ave., Chicago 16, Illinois

Maisel, Albert Q., *Opportunity for the Brilliant Science Student*, a Reader's Digest reprint. The story of how the Berg Foundation began.

The Berg Plan for the Advancement of Science. The general brochure outlining the work of the Foundation.

Guide to Preliminary Steps in Organization of Science Seminars, 5 pages. A 4 page log of events leading up to the establishment of a Science Seminar at Holland, Michigan, is attached.

Science Seminars, An Operational Guide, 96 pages. A detailed exposition of general information and suggested procedures with ample samples of let-

ters, forms, bulletins, press releases, committee structure, schedules and lesson plans. Bound and indexed.

Patterns, April 1959, June 1959, August 1959 et seq. A gold mine of detailed reports from individual seminars about procedures, practices, programs, topics, student projects and sources of printed material useful to students and teachers of high school science.

Suggestions for Science Seminar Research Projects, June 1958.

“INTOXICATING, IRRESISTIBLE, MOST COMPLETELY SATISFYING”

“If we could somehow get over to all students (as we do get over to 10 to 15 percent of them) that learning is the finest entertainment in the world—the most absorbing, the most enduring, the most intoxicating, the most irresistible, the most completing (sic) satisfying—we should have very little worrying to do about these ‘grim times.’ The Athenians were, for a while, able to see learning as entertainment, and during that time accomplished what has echoed through twenty-five centuries. Some Italians, Frenchmen, and Englishmen accomplished it during the Renaissance. ‘In my study,’ says one of those men of the Renaissance, Machiavelli, ‘I feel no weariness, I forget every trouble, poverty does not dismay me, death does not terrify me.’ And many a scientist and scholar these days (even the ones who tell their students that learning is hard work, painful duty, and rigorous self-discipline, not ‘mere entertainment’) find infinite delight in learning. Their wives will be the first to testify that even the lure of meals, of social intercourse, of theatre or stadium, will not draw them, except reluctantly, from the delight of their books, their library, or their laboratory.” George Williams, *Some of My Best Friends Are Professors*, quoted in *Improving College and University Teaching*, Summer 1959.

**Jesuit Educational Association
College and University Enrollment, 1959-1960**

	Commerce		Dentistry	Education Univ. College	Engineering	Graduate	Law		Medicine	Nursing	Pharmacy	Social Work.	Miscellaneous	Totals		Extension Low Tuition	Grand Total	Veterans	Summer			
	Day	Night					Day	Night						Full-Time	Part-Time				Graduate	Undergrad.		
Boston College	1,375	404	..	617	..	886	310	205	..	885	..	146	302	6,063	1,583	7,646	400	8,046	967	1,136	1,062	
Canisius College	280	251	..	..	..	472	..	..	..	..	..	..	153	1,131	1,006	2,137	28	2,165	205	259	406
Creighton University	357	53	175	..	187	138	..	..	270	276	89	..	..	2,193	712	2,905	5	2,910	336	413	465
Fairfield University .....	..	..	..	2,366	..	547	..	..	..	..	..	..	..	1,176	541	1,717	..	1,717	104	329	201
Fordham University	984	536	..	..	..	1,654	407	308	..	..	400	330	..	5,655	3,200	8,855	1,188	10,043	1,291	1,124	2,086
Georgetown University	278	164	341	..	..	865	466	637	402	220	..	..	1,301	4,155	1,862	6,017	..	6,017	675	290	..
Gonzaga University	175	..	..	180	259	18	..	116	..	275	..	..	133	1,433	415	1,848	..	1,848	123	192	749
College of the Holy Cross ..	..	..	..	..	..	10	..	..	..	..	..	..	7	1,833	..	1,833	..	1,833	15	..	..
John Carroll University	141	598	..	..	403	..	..	..	..	..	..	..	..	1,997	1,899	3,896	..	3,896	230	266	1,200
Le Moyne College .....	..	..	..	..	..	..	..	..	..	..	..	..	..	1,171	95	1,266	304	1,570	59	..	481
Loyola College .....	..	..	..	..	..	..	..	..	..	..	..	..	..	710	806	1,516	14	1,530	635	136	419
Loyola Univ., Chicago	726	2,136	362	..	..	1,026	115	133	327	625	..	153	407	4,275	3,704	7,979	1,585	9,564	504	941	3,745
Loyola Univ., Los Angeles ..	210	..	..	..	305	145	192	202	..	..	..	..	..	1,228	354	1,582	585	2,167	217	279	371
Loyola Univ., New Orleans ..	298	490	218	..	..	129	105	163	..	..	56	..	83	1,523	1,050	2,573	477	3,050	225	136	755
Marquette University	900	1,042	452	..	1,744	857	208	..	395	514	..	..	..	6,521	3,622	10,143	603	10,746	886	1,033	1,423
Regis College .....	..	..	..	..	..	..	..	..	..	..	..	..	246	709	263	972	9	981	..	..	209
Rockhurst College	259	956	..	..	..	..	..	..	..	..	..	..	..	691	980	1,671	..	1,671	630	..	312
St. Joseph's College .....	..	..	..	..	..	85	..	..	..	..	..	..	..	1,503	2,057	3,560	200	3,760	554	..	958
St. Louis University	593	640	194	..	972	1,798	95	110	240	462	..	97	194	5,611	1,969	7,580	1,360	8,940	1,850	1,740	2,218	
St. Peter's College	538	533	..	..	..	..	..	..	..	..	..	..	..	1,703	229	1,932	311	2,243	277	..	476
Seattle University	321	113	..	418	488	366	..	..	..	166	..	..	..	2,135	1,101	3,236	63	3,299	394	348	1,090
Spring Hill College .....	..	..	..	..	1,437	9	..	..	..	..	..	..	..	987	454	1,441	..	1,441	97	..	595
University of Detroit	803	1,547	313	..	..	1,048	91	5	..	..	..	..	..	5,627	5,182	10,809	2,779	13,588	1,036	738	2,599
University of San Francisco ..	415	910	..	216	..	73	102	137	..	187	..	..	1,552	1,973	2,166	4,139	150	4,289	789	235	2,029
University of Santa Clara ..	313	283	..	..	277	206	111	..	..	..	..	..	..	1,257	532	1,789	..	1,789	408	18	297
University of Scranton	337	277	..	..	70	190	..	..	..	..	..	..	..	1,338	746	2,084	..	2,084	492	203	590
Wheeling College .....	..	..	..	..	..	..	..	..	..	..	..	..	..	381	4	385	..	385	20	..	..
Xavier University	687	592	..	..	..	1,303	..	..	..	..	..	..	673	1,708	2,516	4,224	..	4,224	681	783	778
Totals 1959-1960	39,472	9,990	11,525	3,797	6,140	11,825	2,202	2,016	1,634	3,580	545	726	5,051	66,687	39,048	105,735	10,061	115,796	13,700	10,599	25,514	
Totals 1958-1959	39,114	10,626	8,956	5,712	6,191	10,072	2,335	2,081	1,892	3,383	568	626	5,501	64,719	35,164	99,883	11,051	110,934	17,967	7,941	25,672	
Increase or Decrease	+358	-636	+2,569	-72	-1,915	-51	+1,753	-133	-65	-258	+197	-23	+100	-450	+1,968	+3,884	+5,852	-990	+4,862	-4,267	+2,658	-158

Jesuit Educational Association

High School Enrollment 1959-1960

	Freshmen	Sophomores	Juniors	Seniors	Specials	Total 1959-1960	Total 1958-1959	Increase or Decrease
Bellarmino College Preparatory, San Jose	260	214	198	155	..	827	822	+ 5
Bellarmino High School, Tacoma	114	86	71	65	..	336	307	+ 29
Boston College High School, Boston	392	325	324	297	..	1,338	1,377	- 39
Brooklyn Preparatory School, Brooklyn	381	293	147	274	..	1,095	1,024	+ 71
Brophy College Preparatory, Phoenix	141	115	97	81	..	434	395	+ 39
Campion Jesuit High School, Prairie du Chien ..	168	140	128	140	..	576	560	+ 16
Canisius High School, Buffalo	241	235	205	211	..	892	929	- 37
Chaplain Kapaun Memorial High School, Wichita	199	145	145	134	..	623	581	+ 42
Cheverus High School, Portland, Me.	130	92	103	79	..	404	398	+ 6
Cranwell Preparatory School, Lenox	58	50	52	45	27	232	231	+ 1
Creighton Preparatory School, Omaha	231	183	179	142	..	735	657	+ 78
Fairfield College Preparatory School, Fairfield ..	223	198	193	196	3	813	831	- 18
Fordham Preparatory School, New York	218	232	188	198	..	836	819	+ 17
Georgetown Preparatory School, Garrett Park ..	59	55	51	46	51	262	255	+ 7
Gonzaga Preparatory School, Spokane	220	190	174	163	..	747	690	+ 57
Gonzaga High School, Washington, D. C.	190	182	169	140	..	681	668	+ 13
Jesuit High School, Dallas	190	166	134	121	..	611	588	+ 23
Jesuit High School, El Paso	78	..	..	..	..	78	..	+ 78
Jesuit High School, New Orleans	240	195	234	223	105	997	967	+ 30
Jesuit High School, Portland, Ore.	121	97	83	81	1	383	270	+113
Jesuit High School, Tampa	100	90	69	67	..	326	303	+ 23
Loyola High School, Los Angeles	245	240	235	210	..	930	909	+ 21
Loyola High School, Missoula	44	27	35	28	..	134	109	+ 25
Loyola School, New York	42	28	35	19	17	141	136	+ 5
Loyola High School, Towson	211	198	193	175	..	777	758	+ 19
Loyola Academy, Wilmette	357	299	244	193	..	1,093	925	+168
Marquette University High School, Milwaukee ..	260	255	233	232	..	980	960	+ 20
Marquette High School, Yakima	58	39	55	62	..	214	217	- 3
McQuaid Jesuit High School, Rochester	235	221	214	243	..	913	956	- 43
Regis High School, Denver	137	127	111	102	..	477	473	+ 4
Regis High School, New York	170	185	170	120	..	645	614	+ 31
Rockhurst High School, Kansas City	161	145	115	129	..	550	539	+ 11
St. Ignatius High School, Chicago	353	179	234	252	..	1,018	994	+ 24
St. Ignatius High School, Cleveland	312	315	251	267	..	1,145	1,136	+ 9
St. Ignatius High School, San Francisco	281	252	266	268	..	1,067	1,022	+ 45
St. John's High School, Shreveport	81	73	44	28	58	284	259	+ 25
St. Joseph's College High School, Philadelphia ..	216	226	205	216	..	863	896	- 33
St. Louis University High School, St. Louis	230	217	210	211	..	868	854	+ 14
St. Peter's Preparatory School, Jersey City	280	249	233	222	..	984	1,004	- 20
St. Xavier High School, Cincinnati	278	273	242	229	..	1,022	980	+ 42
Scranton Preparatory School, Scranton	98	85	79	76	..	338	338	0
Seattle Preparatory School, Seattle	129	122	114	87	..	452	448	+ 4
University of Detroit High School, Detroit	318	262	219	240	..	1,039	1,026	+ 13
Xavier High School, New York	331	281	227	209	..	1,048	1,052	- 4
TOTAL 1959-1960	8,781	7,581	6,908	6,676	262	30,208	29,277	+931
TOTAL 1958-1959	8,404	7,429	7,220	5,980	244			
INCREASE OR DECREASE	+377	+152	-312	+696	+18			

Jesuit Educational Association

Freshmen 1958-1959, 1959-1960

	Liberal Arts		Engineering		Commerce		Total		Increase or Decrease
	1958-1959	1959-1960	1958-1959	1959-1960	1958-1959	1959-1960	1958-1959	1959-1960	
Boston College	540	621	..	..	491	437	1,031	1,058	+ 27
Canisius College	239	222	..	..	85	68	324	290	- 34
Creighton University	418	447	..	..	93	101	511	548	+ 37
Fairfield University	311	341	..	..	..	..	311	341	+ 30
Fordham University	453	543	..	..	349	367	802	910	+108
Georgetown University	367	480	..	..	136	161	503	641	+138
Gonzaga University	164	214	64	70	36	41	264	325	+ 61
College of the Holy Cross	522	548	..	..	..	..	522	548	+ 26
John Carroll University	607	655	..	..	..	..	607	655	+ 48
Le Moyne College	387	413	..	..	..	..	387	413	+ 26
Loyola College	199	247	..	..	..	..	199	247	+ 48
Loyola University, Chicago	539	698	..	..	171	213	710	911	+201
Loyola University, Los Angeles .	139	157	96	64	49	48	284	269	+ 15
Loyola University, New Orleans	216	298	..	..	54	88	270	386	+116
Marquette University	814	729	340	270	209	169	1,363	1,168	-195
Regis College	289	270	..	..	..	..	289	270	- 19
Rockhurst College	152	198	..	..	87	82	239	280	+ 19
St. Joseph's College	384	374	..	..	..	..	384	374	- 10
St. Louis University	621	687	292	296	347	407	1,260	1,390	+130
St. Peter's College	254	257	..	..	252	270	506	527	+ 21
Seattle University	421	346	156	97	136	102	713	545	-168
Spring Hill College	318	408	..	..	..	..	318	408	+ 90
University of Detroit	513	568	403	334	201	205	1,117	1,107	- 10
University of San Francisco	237	246	..	..	91	104	328	350	+ 22
University of Santa Clara	170	202	85	85	73	65	328	352	+ 24
University of Scranton	293	286	55	42	118	94	466	422	+ 44
Wheeling College	134	143	..	..	..	..	134	143	+ 9
Xavier University	366	375	23	16	306	314	695	705	+ 10
Totals	10,067	10,973	1,514	1,274	3,284	3,336	14,865	15,583	
Increase or Decrease		+906		-240		+52		+718	

Enrollment Statistics: 1959-1960

EUGENE F. MANGOLD, S.J.

HIGH SCHOOL STATISTICS

This year the enrollment statistics on Jesuit high schools are drawn from 44 high schools. The new high school is Jesuit High of El Paso, Texas. Strictly speaking two other new schools, Colegio San Ignacio of Puerto Rico and Colegio San Mateo of Chile, should be added to our list. Both of these schools are listed in the current JEA Directory as American schools. Neither of these two Colegios appear in our current statistics. Colegio San Ignacio will appear in our listings next year for the first time. Colegio San Mateo presents a special problem and it has not yet been decided how to solve it. The Chilean school year does not begin until December 15 and, consequently, their statistics would reach our office too late to make the printer dateline for the January issue of the JEQ. The probable solution would be to use the enrollment figures of the previous year. In this case the enrollment statistics of Colegio San Mateo would not appear until 1961. This year Jesuit High of Portland added the senior year and consequently, with the exception of our newest school, Jesuit High School of El Paso, all 44 of the Jesuit high schools are now reporting on the basis of enrollment for the entire four years.

Enrollment figures run from a high of 1338 for Boston College High to 134 for Loyola High of Missoula. Oddly enough the two smallest schools making their appearance in the statistics come from the most widely separated population areas. Loyola of Missoula with its 134 students nestles in the wide open spaces of the far west while the second smallest school, Loyola of New York, with 141, is right in the heart of the heavily populated Manhattan area.

The schools with enrollment over one thousand are: Boston College High with 1338; St. Ignatius, Cleveland with 1145; Brooklyn Prep with 1095; Loyola, Chicago with 1093; St. Ignatius, San Francisco with 1067; Xavier, New York with 1048; University of Detroit with 1039; St. Xavier High, Cincinnati with 1022; and St. Ignatius, Chicago with 1018.

The high schools showing the most notable increase for the school year of 1959-1960 on an overall enrollment basis are: Loyola, Chicago with 168; Jesuit High, Portland with 113; Creighton Prep with 78; Brooklyn Prep with 71; and Gonzaga Prep of Spokane with 57. It should be noted that the first three schools listed, namely: Loyola, Chicago;

Portland and Omaha are in new locations and new buildings with consequent reason for the increase in enrollment.

The most notable decreases, again on an overall basis of four year enrollment, are: McQuaid, Rochester with 43; Boston College High with 39; Canisius, Buffalo with 37; and St. Joseph's Philadelphia with 33. With regard to special students, practically all the schools listed in this column, namely: Cranwell, Georgetown Prep, New Orleans, Loyola, New York; and Shreveport have students in the primary grades.

Of the 44 schools listed in this years enrollment survey, 34 of the schools show an increase in all-over enrollment and 8 show a decrease in all-over enrollment and 2, El Paso, which is starting its first year, and Scranton remain constant. The eight schools showing an all-over decrease in enrollment are: Boston College High, Canisius, Buffalo; Fairfield Prep, Marquette, Yakima; McQuaid, Rochester; St. Joseph's Philadelphia; St. Peter's, Jersey City; and Xavier, New York.

With regard to September 1959 freshmen enrollment the following figures might be of interest. With regard to decreases in this present freshman class we have Bellarmine of San Jose with 3; Canisius, Buffalo, 21; Fordham Prep with 32; Gonzaga of Washington, D.C. with 1; Jesuit High of New Orleans with 7, Loyola of Los Angeles with 2; Marquette, Milwaukee with 1, Regis of Denver with 7; Regis of New York with 37; St. Ignatius, Cleveland with 26; St. John's of Shreveport with 12, St. Joseph's of Philadelphia with 29, St. Xavier of Cincinnati with 16; Seattle Prep with 5; and Xavier of New York with 6.

Increases in the freshman class for the current year were noted in the following schools: Bellarmine, Tacoma with 13; Boston College High with 9; Brooklyn Prep with 32; Brophy Prep with 12; Campion with 7; Wichita with 26; Cheverus with 8; Cranwell with 3; Creighton with 39. Fairfield started the year with an increase of 7, Georgetown with 1, Spokane with 11. Dallas has an increase of 1, Portland, 20 and Tacoma, 4.

Loyola of Chicago, still listed as Chicago but actually in their new building at Wilmette, is second highest in the increase of number of new freshmen with the number of 50. Incidentally the school with the highest increase in number of freshmen is Loyola's companion school in Chicago, St. Ignatius with a high of 113. Loyola of Towson has 6. Loyola of Missoula, as noted above, our smallest school, has made a proportionally large jump with an increase of 20.

Jesuit High of New Orleans showed an increase of 10 and Marquette of Yakima 15 and McQuaid of Rochester has an increase of 3. Rockhurst has an increase of 7. Ignatius of San Francisco 15, St. Louis University

High 2, and Jersey City 7. Scranton Prep had an increase of 8 and Detroit had an increase of 34.

COLLEGE AND UNIVERSITY STATISTICS

Readers of the JEQ who have been reading our annual statistics for enrollment in Jesuit schools will notice that our statistical table on colleges and universities now consists of 23 schools. Heretofore there was a list of 28 institutions inasmuch as Jesuit theologates for Ours were always included in this list. However, it would seem that a clearer presentation of our actual enrollment could be had if the theologates were given their own place in the survey. The only real difference this will make in reading the statistics correctly is in the full-time totals and in the grand totals. The Divinity section has been removed entirely from the table.

The 23 colleges of liberal arts have an increased enrollment of 358 students or slightly less than 1 per cent. In the 1959-1960 Walters report, the expansion in enrollment in the liberal arts sections was an increase of 6.9 per cent. However, both in the liberal arts area as well as in the other related areas it should be noted that the male enrollment for this year on a national scale increased only 1.4 per cent whereas the female increase was nearly 10 per cent. Inasmuch as the greater majority of our colleges and universities do not have a proportionately large female enrollment, this enrollment statistic will show proportionately in our compared rate of increase.

Surprisingly enough the enrollment in Day Commerce on an overall basis had a loss of 636 students or a loss of 6 per cent. The Walters report shows an increase of 3 per cent. The trend of our colleges seems towards an increase in enrollment in the Evening Division of the business courses where an increase of 23 per cent is noted for this year. In Engineering the Jesuit schools evidenced the same trend as noted last year in both the Jesuit enrollments and in the national enrollment namely a decrease in the number of students. The decrease this year is 51 students or a loss of 1 per cent. The national drop in Engineering as evidenced in the Walters report this year is a drop of 4.7. However, notice the sharp decrease to be noted in the paragraph on exclusive freshmen enrollment.

Medicine and Dentistry both show drops in the Jesuit schools this year. Medicine had a drop of 14 per cent or 258 students and Dentistry with a 4 per cent drop of 72 students. Law shows a drop in this year's enrollment both in the day and night courses. Day Law shows a drop of 133

or 6 per cent and night courses show a drop of 65 or 4 per cent. Nursing reverses the trend and shows an increase of 6 per cent or 197 students.

The schools of Social Service show a healthy increase of 14 per cent or 100 students. Graduate work shows an increase of 15 per cent or an increase of 1,753 students.

Full-time enrollment in all departments of all the Jesuit colleges and universities listed shows an increase of 1,968 or 3 per cent; Part-time shows an increase of 3,884 or 10 per cent. Full and Part-time enrollments in these 23 colleges and universities shows an increase of 6 per cent or 5,852 students.

FRESHMEN COLLEGE AND UNIVERSITY ENROLLMENT

If we are to follow Dr. Walters' survey of American colleges and universities populations, enrollment in freshmen in the liberal arts curriculum in Jesuit colleges and universities is ahead of national trends. Our increases show a 9 per cent rise or 906 additional freshmen. National figures are 6.9. In the Engineering field, taking entering freshmen students only, our figures show a larger drop with a decrease of 240 students or 15 per cent decrease. National figures show a 4.7 decrease. With regard to Commerce, the loss figures shown in the overall four year totals is out of focus when we consider the freshmen entering classes in Commerce where we show an increase of 2 per cent or a total of 52 students. National figures are a rise of .3 per cent. The all-over picture with regard to entering freshmen this year in the schools of liberal arts, engineering, and commerce shows a gain of 718 students or a 5 per cent increase. National figures show a 3.6 per cent increase.

The colleges showing the largest enrollments are Detroit with 13,588; Marquette with 10,746; Fordham with 10,043; Loyola, Chicago with 9,564; St. Louis with 8,940; and Boston with 8,046.

Inasmuch as we do not show Jesuit Divinity students in our regular statistics table we are including them here: Alma College 103; St. Mary's, Kansas 161; West Baden 190; Weston 197; and Woodstock 249. Jesuit Philosophate students, and Juniors are shown in the statistical tables only insofar as they are regularly enrolled students in the various liberal arts courses.

BREAKDOWN OF STATISTICS ON COLLEGE AND UNIVERSITY ENROLLMENT

The gamut of courses offered by our larger colleges and universities makes it impossible to present the enrollment figures in a compact tabu-

lar form. Consequently, in this section we will present the various enrollment figures which are not included in the tabular presentation.

Under *Nursing*, our schools present both the R.N. and B.S. courses. The breakdown is as follows: Boston College, 885 B.S.; Creighton, 276 R.N.; Georgetown, 220 B.S.; Gonzaga, 15 B.S.; Loyola, Chicago, 625 B.S.; Marquette, 514 B.S.; St. Louis, 462 B.S.; Seattle, 166 R.N.; San Francisco, 187 B.S.

Under *Miscellaneous*, we find the following: Boston College, graduate business administration 302; Canisius, pre-clinical nursing 153; Georgetown, Institute of Languages—day 367, evening 72; foreign service—day 616, evening 246; Gonzaga, music education 8, adult education—evening 84; Holy Cross, special 7; Loyola, Chicago, I.S.I.R. 129, C.P.A. 84, West Baden philosophers 87; Loyola, New Orleans, liberal arts—evening 83; Marquette, speech 149, physical therapy 78; Regis, evening classes 246; Seattle, pre-major 125; Sister formation 107, special undergraduate 193; University of Detroit, dental hygiene 76, general studies 781, evening division 2806; San Francisco, liberal arts—evening 1307, science 245; Xavier, liberal arts—evening 574, Milford Novitiate 99.

The following is the breakdown on figures in the *Part-time* listings in the table:

Boston College: liberal arts 376, commerce—day 6, evening 136, education 1, graduate arts and sciences 591, nursing, B.S. 368, social work 50, graduate business administration 55.

Canisius College: liberal arts 279, commerce—day 15, night 244, graduate 468.

Creighton University: liberal arts 239, commerce—day 29, night 53, graduate 106, law—day 3, medicine 1, nursing, R.N. 276, pharmacy 5.

Fairfield University: liberal arts 7, graduate 534.

Fordham University: commerce—day 7, night 110, education 1644, graduate 1208, social service 161.

Georgetown University: business administration—day 32, night 130, graduate 576, law—night 637, foreign service—day 29, night 217, Institute of Languages—day 174, night 67.

Gonzaga University: liberal arts 20, commerce—day 5, education 3, engineering 4, graduate 11, law—night 20, nursing, R.N. 260, B.S. 8, night school (non-matric.) 84.

John Carroll University: liberal arts 898, commerce—night 598, graduate 403.

Le Moyne College: liberal arts 95.

Loyola College, Baltimore: liberal arts 806.

Loyola University, Chicago: liberal arts 67, commerce—day 44, univer-

sity college, commerce 2127, graduate 811, nursing, B.S. 415, social work 55, I.S.I.R. 101, C.P.A. 84.

Loyola University, Los Angeles: liberal arts 1, commerce—day 7, engineering 16, graduate 127, law—night 203.

Loyola University, New Orleans: liberal arts 225, commerce—day 8, night 429, graduate 127, law—night 163, music 24, liberal arts—night 74.

Marquette University: liberal arts 776, commerce—day 29, night 1042, dentistry 4, engineering 706, graduate 752, law—day 24, medicine 2, nursing, B.S. 271, dental technology 4, journalism 4, medical technology 3, speech 4, physical therapy 1.

Regis College: liberal arts 37, evening classes 226.

Rockhurst College: liberal arts 27, commerce—day 13, night 940

Saint Joseph's College: liberal arts 1992, graduate 65.

Saint Louis University: liberal arts 459, commerce—day 12, night 160, engineering 44, graduate 1158, law—day 2, night 44, nursing and health services, B.S. 65, social service 25.

Saint Peter's College: liberal arts 10, commerce—day 3, night 216.

Seattle University: liberal arts 105, commerce—day 8, night 102, education 63, engineering 221, graduate 339, nursing, R.N. 32, pre-major 17, Sister formation 52, special undergraduate 162.

Spring Hill College: liberal arts 454.

University of Detroit: liberal arts 136, commerce—day 59, night 1532, dentistry 2, engineering 78, graduate 651, dental hygiene 1, general studies 6, evening division (liberal arts and engineering) 2717.

University of San Francisco: liberal arts 8, commerce—day 9, night 688, education 158, science 4, graduate 50, law—night 137, nursing, B.S. 47, liberal arts—evening 1065.

University of Santa Clara: liberal arts 42, commerce—day 1, night 281, engineering 2, graduate 201, law—day 5.

University of Scranton: liberal arts 299, commerce—day 4, night 253, graduate 190.

Wheeling College: liberal arts 4.

Xavier University: liberal arts 38, commerce—day 11, night 579, graduate 1261, Milford Novitiate undergraduate 59, liberal arts—night 568.

American Education in the Cold War Era*

MICHAEL P. WALSH, S.J.

The greatest single, and recurring, demand made upon our educational system in the last few years is that we make sure that we get the most out of our students. There is an increasing recognition, more or less clearly expressed, that our students constitute our greatest single natural resource and that we must make sure to develop them to their utmost. Colleges are reviving or revivifying older programs of homogeneous grouping of students according to ability. The elementary and secondary schools can facilitate this work and provide the colleges with a solid basis upon which to continue to challenge each student according to his ability by starting this ability grouping as early as feasible. Studies have demonstrated that tests administered around the ninth grade level have been most effective in predicting ability and that grouping begun around that time results in a continuing challenge. It is also a time when great care must be exercised in order not to allow a student of real potentiality to bog himself down in the kind of course which would make it impossible for him to gain admission to college. In order to prevent this, early and adequate counselling is necessary. The provisions in the new National Defense Education Act will undoubtedly make it possible to provide the kind of counselling necessary to prevent the loss to the educational process and eventually to the nation of really talented youth.

Another demand which has been voiced with increasing frequency is that the schools do all they can to develop in students a continuing search for excellence. It seems to me that there is a latent danger in the repeated demands for the search for excellence that excellence will be interpreted in terms of grades or scores. There is always a danger that what can be conveniently measured will draw attention away from what is perhaps more important but not so easily measured. The College Entrance Examination Board warns us that scores on the College Entrance Examination alone are not trustworthy guides to college success. Yet since these errors are available and so easy to cite there is a tendency to convert these

* *Excerpted remarks of Very Rev. Michael P. Walsh, S.J., President of Boston College, as participant in a Panel Discussion at the Annual Meeting of Middlesex County Teachers Assn., October 31, 1958.*

into the single indication of ability and quality. Excellence has certain qualitative aspects which are just as important as the quantitative. The qualities of self-motivation, self-activity (and all education is ultimately just that self-activity), interest, emotional maturity are important aspects of excellence. Excellence, in the ultimate sense of accomplishments valuable to self or country, comes at the end of a long race and it is a race which is not always won by the flashy starter. Excellence is the reward of the student with sincere motivation, abiding interests, disciplined abilities, and controlled application, and these qualities we must seek to develop to the utmost as much as, if not more than, sheer retention or grade achievement.

Other members of this panel can speak with more authority about the problems faced by American Education in a Cold War Era in the fields of the natural and social sciences. Perhaps I ought to say just a little about the humanities—taking this word first in the largest of all possible senses to include the subject matter of the old Trivium—the grammar, the rhetoric, the logic of all the languages. Perhaps the problems faced by the teachers of the humanities are not so much problems of covering an increasingly complex subject matter as they are in the sciences. Our problem is not subject matter complexity alone—as I am sure it is not the only problem in the sciences—but a problem of method as well. The humanities must be taught as a training of all the faculties of the mind instead of a particular skill. Training in the language arts must be so tough that it will be no more of a disgrace to flunk English than it now is to flunk mathematics.

. . . What must take place in the classes devoted to the humanities is a lot more insistence upon the discipline of grammar and a lot less tolerance of vague autobiographical reactions to second rate pieces of prose. There must be a reduction of the chit-chat, the substitution of tea table gossip about a particular author for the plain honest hard work of digging out what the author meant—precisely and accurately. It might also be helpful to put a stop to the learning of a series of synonyms for ecstasy which the student dutifully hands out and attaches to various works which he has been assigned to report upon and which he has little understood and not in the least appreciated. More harm has been done to the humanities by the teachers of humanities who have encouraged the kind of endless permissive discussion which rambles on and on giving each student a chance to talk while conveying the impression that the study of the humanities is the study of a lot of different ways of saying very little. The humanities are disciplines . . . and to discipline the mind means just that, to restrain it within bounds, to control it, to

teach it to hit its mark precisely. We must teach the student to seek the precision and accuracy of a rifle bullet, not that of a ripe tomato aimed at the barn door.

A more rigorous teaching of the humanities does not mean more of the same but a more disciplined presentation of the humanities. More of the same might mean a greater insistence upon the acquisition of more and more facts, in which the visiting Russian students thought our students compared to their own regular doctoral products. The teaching of more and more facts, the imparting of information, might be compared to a study of the pedigree of our cultures or elements of these cultures, learning when, what, and who contributed what and where to the family horde. The emphasis upon facts and their imparting through the lecture method seems to me to have been an attempt on the part of the humanities to parallel the preoccupation of the sciences with facts. The result amounted to a betrayal of the humanities which were implicitly declaring, in their concern with the same elements, though in different areas, as the sciences, that the sciences were the leaders and the humanities the followers. A generation or more of this concern with fact has produced a greater respect for facts which is good; but it has also generated a tendency to remain satisfied with facts, which is bad. The expert in facts who knows the annual rainfall of Tasmania or the earned run average of all National League pitchers may be diverting entertainment on the video tube but he can rarely escape the past, the already accomplished. We need those who know facts as the controlling limits on human possibilities but not those whose respect for facts results in a conception of progress as the addition of two inches of chrome fore and four inches of tail fin aft. We need those who have been taught the humanities as means of disciplining the mind to a recognition of problems—individual problems, social problems, cultural problems—and of the methods available for the possible resolution of these problems.

The humanities must be taught as adventures in ideas without encouraging the students to confuse romantic self-indulgence with rigorous and methodical considerations of methods and principles. Students must be taught how Plato came to see a problem, how he approached its solution, what were the results, instead of being taught that in such and such a year Plato held this opinion. Good teaching has always followed the first way; memory training has always followed the second. Perhaps we have had too much training of the memory and too little development, simultaneously, of the imagination and the reason. Students must be disciplined in all their faculties not just a selected few. Particularly they must be disciplined to a respect for the works of the mind and for

the methods of the mind, and must come to respect a rigorous application of these methods.

There is another function of the humanities which can continue to make a contribution to our culture, and that is a persistence in emphasizing the values of the abstract and the theoretical. Much of the knowledge explored and preserved by the humanities has no practical application. It is knowledge whose search and preservation can only be justified on the grounds that all men desire to know and that knowledge in itself is so inherently valuable that it needs no further justification. Our culture is predicated upon the belief that there are dimensions to men and values in society which cannot be directly expressed in sensuous terms. If we are to reject the mind and the works of the mind at this late date in our history, then the humanities will soon atrophy and die. If, however, we are to continue to cherish the ideals which have brought us this far, then the humanities must continue to function as spokesmen for the values of the abstract, the principle, and the goal as against the attractiveness of the application and the immediate.

Whether we like it or not, it is the humanities which have told us what we are, what we may be and what is the society best designed to enable us to achieve the greatest degree of self-fulfillment. The humanities with their undramatic methods have refined those institutions of law, language, government, art, and ethics which are unhesitatingly considered the greatest monuments of our culture.

At this moment the problem of communication between the humanist, concerned with the principle and the goal, and the laborers in the market place, now seemingly preoccupied with the immediate, is our besetting problem. Until some resolution of these opposed forces is reached the resulting inertia will continue to favor developmental research in science as well as the humanities instead of the bold adventure on the beckoning frontiers of space.

The temptation to restrict the aim of the humanities to some more easily attainable goal, some more immediate limit, will always be there. In times of a shooting war such a restriction and limitation may be excusable. In the era of a Cold War it is neither excusable nor possible. We must continue to train the mind to a disciplined and unrelenting quest for truth and excellence in all forms; we must continue to try to meet all the demands made upon us, and that means we will continue to live a very exciting life for some time to come.

Jesuit Scholarly Publications

AMERICAN ASSISTANCY (1958-1959)

The sixth annual list of Jesuit scholarly publications covers the period from June 1, 1958, to May 31, 1959. It reports 184 contributions, an increase of 13 over last year; and 129 different contributors, 23 more than last year.

The largest number of contributions was in philosophy (39); the second largest was in theology and religion (31); the third largest was in history (13); and the fourth largest was in biology (12).

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Department of Archaeology

The following inscription proved baffling to the best of the English archaeologists as they sought to relate it to the known cultural and linguistic remnants of the Roman occupation:

TOTI
EMUL
ESTO

The mystery was cleared up by an old farmer who knew no Latin but could read simple English: "To tie mules to."

News from the Field

STUDIES: FORDHAM UNIVERSITY: The College of Liberal Arts of Fordham University offers a program of Inter-American Studies. The curriculum of studies and a series of extra-curricula activities are presented with the purpose of forming students in an understanding of Spanish and Portuguese, in the knowledge of the history of Latin America and of its relations with the United States, and lastly, in a knowledge of current economic, political and sociological problems.

Part of this program will be a year spent in Latin America at the Catholic University at Santiago, Chile. Students will be required to assist at courses and take examinations at Santiago. The program will be directed by a professor from Fordham University who will accompany them to Chile, and by a liaison professor from the host university. In addition to course work, they must prepare a scholarly research paper that will be guided by their professors in Chile, and be presented to the director of the program upon their return to the United States.

Students included in this program are given a special five-day program by the U. S. State Department. The maximum of \$1,820.00 is granted to the student to cover tuition, travel, and living expenses.

LOYOLA, CHICAGO: A Ph.D. program in sociology will begin at Loyola University this fall, according to the Rev. Ralph A. Gallagher, S.J., chairman of sociology.

The doctorate program in sociology, one of four offered by the nation's Catholic institutions of higher learning, will concentrate on social theory, problems, and organization.

Loyola has been granting bachelor degrees in sociology since 1911 and master's degrees since 1955. Sixty graduate students are now enrolled in the master's degree program.

Several assistantships and fellowships in sociology are available for the 1959-60 year. Applications should be made to the sociology chairman, Lewis Towers, 820 N. Michigan, Chicago 11.

Ten other Ph.D. programs are conducted by the university in the departments of: anatomy, biochemistry, chemistry, education, English, history, microbiology, pharmacology, physiology, and psychology.

LOYOLA, NEW ORLEANS: For the second year Loyola University of the South conducted a Summer Session in Mexico City. There were

ninety students from thirty-five American Universities representing twenty-seven states. The Jesuit Universities represented were: Canisius College, Creighton University, Fairfield University, Georgetown University, Loyola of Chicago, Loyola of the South, Spring Hill College, and Wheeling College.

One of the high points of the session was the private audience with the U. S. Ambassador to Mexico, Robert Hill, who was greatly impressed with Loyola's program and commended it highly. Loyola's plan for her 1960 Program will include a Teacher-Training Program for teaching Spanish in elementary and secondary schools.

MARQUETTE UNIVERSITY: On June 19, 1959, as part of the Summer Meeting of the American Physical Society at Marquette, a symposium was held on the Nature of Physical Knowledge. It was organized by Professor Henry Margenau, of Yale, and Rev. L. W. Friedrich, chairman of the Marquette University Physics Department. Principal speakers in this symposium were: Prof. P. W. Bridgman, Harvard University; Dr. Frank Collingwood, Marquette University; Prof. Henry Margenau, Yale University; Rev. George Klubertanz, S.J., St. Louis University; Prof. Alfred Landé, Ohio State University. The proceedings of this symposium will be published by the Marquette University Press.

A semester system in the College of Engineering will be introduced next fall, according to Dr. A. Bernard Drought, dean of the college. The new schedule will replace the present quarter system. For their first semester, Engineering freshmen will follow a general Liberal Arts curriculum. Arts courses also will be implemented into the schedules of other classes. In announcing the change, Dean Drought said "no student will have to spend more time in school than originally planned, and there will be no tuition change." He stated that the main reason for the change is to "give Engineering students the opportunities to learn from fellow classmates in the various schools their views, feelings and attitudes." The change will be incorporated into the evening division with adjustments made in the summer program. The co-op system will be conducted on a four-month work, four-month study basis.

Courses leading to a major in Theology will be offered to undergraduates beginning next fall. The curriculum will be under the direction of Father Bernard Cooke, S.J., chairman of the Theology department, who expressed a belief that the program at Marquette will be the only one of its kind at a Catholic college in the United States. Father Cooke said the new major would provide a solid background for students in related fields of history, philosophy, sociology and psychology. A program leading to a master's degree in Theology was established at

Marquette in 1953. Undergraduates will be required to complete 26 hours for the major, 20 of which must be in upper division. The 18 hour requirement for a minor remains unchanged.

WOODSTOCK COLLEGE: Dr. Magda B. Arnold, the first woman to teach at the nation's oldest Jesuit school of theology, Woodstock College, is lecturing in the College's summer seminar program. She is a regular member of the Department of Psychology at Loyola University, Chicago.

Woodstock College's summer seminars are intended to help the Jesuit students keep up their interest in other intellectual fields while they are engaged in a four year study of theology. In addition to Dr. Arnold who is lecturing on a scientific investigation of personality, eight other visiting lecturers are conducting seminars in this summer. They include Studies in Phenomenology, Rev. J. Quentin Lauer, S.J., of Fordham University; Guidance Counseling, Rev. John R. McCall, S.J., professor of psychology at Weston College, Mass.; The Concept of God and Man in Modern Fiction, Rev. William T. Noon, S.J., author of the recent study on James Joyce, "Joyce and Aquinas"; Economic Development of Underdeveloped Areas, Rev. Robert H. Neubeck, S.J.; Lay Theology, Rev. Francis M. Keating, S.J., of the Department of Theology of St. Peter's College, Jersey City; Jesuit Education, Rev. George E. Ganss, S.J., Chairman of the Classics Department at Marquette University.

GRANTS AND GIFTS: CREIGHTON: A grant valued at \$6,325 has been renewed for three Creighton University faculty members for the third consecutive year.

The National Cancer Institute of the Department of Health, Education and Welfare is underwriting this grant for the continuation of studies of the surface tissues and cells (cytology) of the uterus.

A research grant totaling \$15,690 for a two-year period, has been awarded to Dr. Allen B. Schlesinger, Director of the Creighton University Department of Biology.

The largest and most expensive mosaic in the country has been purchased by Charles H. Juergens of New Rochelle for presentation as a gift to his alma mater, Creighton University in Omaha, Neb.

The mosaic, depicting the ruins of the Roman Forum, will be featured in a million-dollar library to be built as part of a long-range construction and expansion program at the Jesuit university.

This masterpiece of art is almost two thousand square inches in area and is valued at approximately \$100,000.

It hung in the Metropolitan Museum of Art from 1892 to 1917. This

is believed to be the only mosaic of its kind in the United States with the exception of one, much smaller in size, that is said to have been presented to President Wilson when abroad.

The rare books room in Creighton University's million-dollar library will be a memorial to the Nebraska State Council of the Knights of Columbus.

Creighton University announces that the development program already has realized \$5,630,000 for the 10-year program, now in its third year. The goal is \$17,000,000.

FORDHAM UNIVERSITY: The National Science Foundation has announced a grant of \$51,950 to the Physics Department of Fordham University, to provide a High-Speed Electronic Computer for use on four research projects being carried on by members of the Department. These research projects are under the direction of Professors Canavan, Shapiro, Weber, and Mulligan, and involve calculations of fundamental properties of atoms, molecules, and nuclei.

Most of the grant will be used to purchase a Bendix G-15 General Purpose Electronic Computer, which will be installed in Freeman Hall on the University Campus. The Computer will be available to other Departments of the University carrying out research work requiring computing facilities.

GEORGETOWN: Prof. Francis O. Rice, of the Chemistry Department, is directing a one-year program of basic research under a \$32,500 grant from the National Science Foundation. The research program is entitled "Preparation and Reactions of Free Radicals." Other current Chemistry Department grants are as follows:

Prof. William W. Zorbach, \$25,000—4 years, from National Institute of Arthritis and Metabolic Diseases; Prof. Zorbach and Dr. Gerhard Pietsch, \$18,000—2 years, National Science Foundation; Prof. Soma Kumar, two grants from U. S. Atomic Energy Commission, one for \$16,133 and another for \$12,700; and Prof. Joseph E. Earley, \$6,900, from Smith, Kline and French Foundation Co.

GONZAGA UNIVERSITY: Otto J. Eckel, night switchboard operator at the University for many years, recently presented Gonzaga with a \$1,200 check, which he specified for use in the proposed chemistry-science building.

Eckel, now retired, said the money was to be used as a faculty endowment until such time as construction of the building is possible.

LOYOLA, BALTIMORE: A grant of \$22,782 has been made by the National Institute of Mental Health, Bethesda, Maryland, to Dr. Charles G. Wilber, Research Professor of Physiology and the Rev. Joseph A. Burke, S.J., Assistant Professor of Biology, both of Loyola College, Baltimore, Md.

LOYOLA, CHICAGO: Loyola University has received a \$150,000 grant to expand its graduate training and research program in oral anatomy. The grant was made by the Department of Health, Education, and Welfare.

Dr. Schoen said that \$30,000 a year has been awarded for five years beginning Jan. 1. The funds will be used for graduate student stipends, faculty salaries, and equipment for an expanded program training graduate dentists for teaching and research in oral anatomy.

A new animal behavioral laboratory of Loyola University's psychology department was dedicated in ceremonies at 4 p.m., Monday, Oct. 12, on the school's Lake Shore Campus, 6525 N. Sheridan Rd.

Many nationally prominent psychologists and psychiatrists from industry and education attended the dedication and inspected the new laboratory facilities.

The Rev. Charles I. Doyle, S.J., founder and director of Loyola's child guidance center, discussed the history of Loyola's psychology department. A reception followed the ceremonies.

Opened this fall, the new laboratory was made possible through a recent \$60,000 government grant under provisions of the National Defense Education Act.

The grant provides \$2,500 a year for three years as a stipend for each of four graduate students conducting research experiments, and a similar amount to the university for new equipment.

According to available statistics, Loyola is the only Catholic university in the nation and one of two midwestern schools to receive a similar grant for behavioral research.

REGIS has come in for some rather hefty bequests during recent months. The first was a \$65,000 mansion near Grant, Colo., deeded to the college by Mrs. William Coors Porter, daughter of the founder of the Coors Brewery. More recently, the college received a packet of income property in Denver valued at \$35,000, the gift of an anonymous benefactor, and a rare oil painting appraised at \$25,000, the gift of Mr. and Mrs. Joseph B. Gould of Denver.

ST. LOUIS UNIVERSITY: The first gift in St. Louis University's 150th anniversary development program is \$500,000 from David P. Wohl.

Matched with funds under the Hill-Burton program for Missouri, the gift will make possible the 60-bed, \$1,000,000 David P. Wohl Health Institute at the school of medicine for the treatment and study of mental illness. Construction is to begin early next year.

After an exhaustive study of research programs proposed by various institutions throughout the nation, Stanford University decided to present its famed atom-smashing cyclotron to St. Louis University.

The 42,000-pound cyclotron, which figured in studies that led to the development of the atomic bomb, will be installed in new quarters being built at St. Louis U. and will be used in advanced research programs in nuclear physics.

Stanford officials said their study indicated St. Louis U. was the institution that would be able to use the cyclotron most profitably.

A gift of \$500,000 has been presented by Monsanto Chemical Company to the University for a new Science Center, one of the priority needs of the development program.

The proposed science center will be composed of two buildings joined by common lecture facilities. It will house Tech School and the departments of chemistry and physics.

The building housing Tech School will allow an immediate doubling of its enrollment to 1200 students and the addition of a program in mechanical engineering.

UNIVERSITY OF DETROIT: The National Science Foundation in Washington, D. C. has awarded U-D a grant of \$8,000 for the furtherance of undergraduate participation in science research projects. The grant is largely an experimental endeavor and will continue only if the results of this year's student work meets with the Foundation's approval.

Science and literature will benefit from two research grants awarded to the University of Detroit this week.

Dr. Peter J. Stanlis, associate professor of English, will receive \$4,000 from the Relm Foundation of Ann Arbor. The grant is earmarked for a research project on Eighteenth Century political and social thought.

Dr. Leon Rand will receive \$5,000 from the Research Corporation of New York to supervise a research project in organic chemistry. The grant will also support a research fellow who will carry on a project under the direction of Dr. Rand.