

EDWARD B. ROONEY, S.J.-A TRIBUTE
THE HUMANITIES AND
THE JESUIT LIBERAL ARTS COLLEGE
SOCIAL SCIENCE AND
THE JESUIT LIBERAL ARTS COLLEGE
NATURAL SCIENCE AND
THE JESUIT LIBERAL ARTS COLLEGE
RECRUITMENT OF LAY FACULTY
NEWS FROM THE FIELD

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EDWARD B. ROONEY, S.J.

## A Tribute <br> 1937-1962

As this is written, two recent events may be considered significant or symbolic of what we wish to say in tribute to Father Edward B. Rooney on the completion of 25 years of direction of the Jesuit Educational Association. The first event was the assembling in August of 82 delegates at Loyola University, Los Angeles, for "The Workshop on Philosophy and Theology as Academic Disciplines". Although the teaching of philosophy and theology has been a perennial concern of Jesuit colleges, this meeting may be taken as the climax of increasing interest in these subjects over a period of years and as a definite pledge of future progress. Yet this was but one of many meetings of Jesuit educators for discussion of particular fields of academic activity during the past 25 years.
The second significant event is that within a few days after the Los Angeles meeting Father Rooney left New York by plane for the island of Madagascar (The Malagasy Republic) to attend as a delegate, by the personal designation of Father General, the "UNESCO Conference on Development of Higher Education in Africa," from September 3rd to 12th, 1962. These two events, then, typify Father Rooney's sponsorship, planning, and supervision of Jesuit educational work in the Assistancy and his tireless traveling as representative of Catholic and Jesuit education.

In the matter of travel it has been said in humor-but without envythat perhaps no Jesuit of our time has so faithfully fulfilled the injunction of the Constitutions of the Society that Jesuits are to be mobile-"to travel to various places . . . where there is hope of God's greater service" and advantage to our fellow men. In this day of cosmonauts, the encircling of the globe may not be as impressive as it once was, but to circle the world by plane and ship and train in the cause of education is at least worthy of note. One example of his world travel may be cited. In 1957 the Board of Governors of the J.E.A. requested Father Rooney to visit officially and to report on the educational work conducted by the Provinces of the Assistancy in the Far East and the Near East. In fulfillment of the assignment, Father Rooney visited Japan, Korea, Formosa, the Philippines, Thailand, India, Nepal, Ceylon, Iraq, and Lebanon, and returned by way of Rome to New York. At each school he was observant, sympathetic, and helpful, freely sharing his ample experience.

Among other items in the list of international activities is Father

Rooney's membership on the Administrative Board of the International Association of Universities. In 1948 he was a member of the United States delegation to the Preparatory Conference convened by UNESCO in Utrecht, where the Association was first established. To the distinct advantage of Jesuit and Catholic institutions he has continued to attend the meetings of this important group, as he has all meetings of the International Association of Catholic Universities (since its foundation in 1949), and every meeting of the Congresso Interamericano de Educación Católica. In 1947 and 1948, under the auspices of the National Catholic Welfare Conference, he served as its official delegate, along with Father Gerald G. Walsh, S.J. (R.I.P.), to the Displaced Persons Camps in Italy, Germany, and Austria, to interview academic personnel for placing them in teaching positions in Catholic colleges and universities in the United States. Two years later he performed similar services for the United States Department of State.

To select at random from a long list of activities and memberships on educational committees in this country, let it be recalled that Father Rooney has been for many years on the Executive Committee of the American Council on Education; has been a member of the National Advisory Committee on International Education; and for its first eleven years was a member of the Executive Committee of the National Council of Independent Schools. He has also taken an active part in the National Catholic Education Association both in its Washington office and as its official delegate to several international meetings. In the international sphere of education Father Rooney's facility in languages, in French, Spanish, and German (and a speaking acquaintance with Italian and Portuguese!) has enabled him to be at home in some rather bizarre environments. In parenthesis it may be added that he seems to have followed what the sacred writer has enjoined, that there is "a time to keep silence and a time to speak." Certainly he has never failed in observing the second half of the counsel!

If one asks what results have followed from his attendance at so many diverse meetings and from his membership on many committees of educational associations here and abroad, the answer is that on every occasion Catholic principles of education had in him a courageous spokesman and that on no occasion would any proposal in any way unsatisfactory to Catholic education be introduced or discussed without a vigorous challenge from Father Rooney. For this distinctive contribution Catholic education in our day is permanently indebted to him.

A remark is passing may be made to the point that is discussion of education all Jesuits are vocal. Each one knows what should be the goals
and standards of our education, and especially what each would do if he were to wield power for, by choice, a very brief period. For all such starryeyed proponents of educational perfection, a bit of wisdom from Winston Churchill may provide a salutary balance. "It is easy," he said, "to plan a war if you do not have to carry out the plans."
All that has been said so far may give the impression that the wider field of Catholic education has received his predominant attention. Such an impression would be erroneous. Father Rooney's dominant efforts have been in Jesuit education in the Assistancy. His assigned role as Executive Director and later as President of the J.E.A. has been fulfilled as director of the annual General Meeting of the Association and as chairman of the Executive Committee in its meetings twice a year and in the diligent carrying out of the many directives, plans, and proposals of the Committee, once they were approved by the Board of Governors of the Association. Notable among the successful achievements of the President and the Executive Committee have been the several national Insti-tutes-for Deans, for Principals, for teachers of Religion, for Deans of Schools of Business Administration, and for those engaged in Guidance.
In addition to these Institutes, there are eight Commissions of the J.E.A. which hold annual meetings and report to the President. Among these are the Commissions on Secondary Schools, on Liberal Arts Colleges, on Professional and Graduate Schools. To this list must be added another: that of the fourteen Conferences whose members attend annual meetings, generally in connection with the meeting of the respective national association. These Jesuit Conferences include a Conference on Jesuit Law Schools, on Medical Schools, on Schools of Dentistry, and of Social Service. These annual meetings Father Rooney has faithfully attended and encouraged. To the reports and proposals resulting from these meetings he has given his full attention. Of special current interest is an important activity, established by the Association, the Jesuit Research Council of America, with its new Headquarters and full-time Executive Director in Washington, D. C.
In all this supervision and activity, Father Rooney has faithfully obeyed the article of the Constitutions of the J.E.A. which defines the main work of his office as, "singularem rei educativae in tota Assistentia curam agere". In brief, he has unified Jesuit education in the Assistancy. This unity among Jesuit schools and institutions in the United States has been the primary aim of the Association as specified in the keywords of the charter document of the Instructio of 1934-"Unio et Cooperatio" !
A word must be added on the Central Office of the J.E.A.-a place that may seem mysterious and formidable to the outsider. From this Office
has come forth the Jesuit Educational Quarterly for 24 years-an achievement that speaks for itself. Another publication by the Office, this an annual, has developed into a mine of useful information, the Directory of the J.E.A. The volume for $1962-1963$ is the sixteenth in the series. From the Office also comes the Special Bulletin sent to all our schools and to administrators; the current issue bears the serial number 288. In it is all the news of Federal relations to education, of bills in Congress, of grants and scholarships. In it is information on every phase of education pertaining to Jesuit schools, and a valuable section: Applications for Emiployment from lay professors. Another function of the Central Office is the preparation of statistics. When they appear in cold, neat print, the annual statistics on enrollment in all Jesuit schools, on enrollment in Special Studies, on Scholarly Publications, on vocations, diocesan and religious, and on the academic background of candidates for the Society, there is no trace left of the immense work involved in their preparation.

The statistics on Jesuit Special Studies is of particular importance. This is a field that has engaged the permanent and special attention of Father Rooney, as therein is guaranteed the future of our educational work, the preparation of trained man-power, which was the main concern of the original Instructio. A comparison of the statistics for any period, for example, from $195^{2}$ to 1962 , would indicate what remarkable progress has been made, and which would be, in itself, a sufficient encomium of the work of the J.E.A.

Over the years the Central Office has become a clearing-house of educational information. Almost daily, requests for information on any subject come from newspapers, from magazine offices, from libraries, from foreign countries, and from Jesuits throughout the world. Recently the Office gave considerable time and advice to Indian Jesuits who were establishing a Jesuit Educational Association in India, which will have the similar organization as that in the United States.

No emphasis is needed for the statement that Father Rooney would be the first to insist that whatever has been accomplished in the last 25 years could not have been done without the perceptive encouragement of the Board of Governors and without the generous and effective co-operation of members of the Executive Committee-several of whom have gone to their reward and whose memory is held in benediction. Equal appreciation would be given to the Jesuits from various Provinces, who over the same period were appointed as Assistants to the President; namely, Fathers Allan P. Farrell, Leo A. O'Connor, William J. Mehok, Richard J. Costello, Eugene F. Mangold, and Paul A. FitzGerald.

In concluding, we should spare Father Rooney the embarrassment he
would feel in hearing himself praised, but the qualities of performance that he has brought to his office are plain for all to see. First and foremost, he has been wholly dedicated to the apostolate of education in the Society. In doing so he has dealt with Prelates in various countries, with officials of all educational associations here and abroad. He has worked closely with Jesuit and lay administrators and with teachers in Jesuit schools. By all of these he has been recognized and esteemed as an affable, friendly, encouraging, open-minded, helpful colleague.
Father Rooney has fulfilled with distinction the hopes of the Board of Governors when it appointed him on October 19, 1937, and we shall be fortunate and happy if we continue to profit from his direction and his vast experience-ad multos annos!

We have not lacked great teaching, and we may be grateful for the innumerable highly qualified and dedicated teachers who have provided it. Their contribution to our society is immeasurable. But the quality of teaching, generally, is lower by far than it should be, and lower, too, than it need be. It is here that we confront our greatest failure in matters pertaining to education. That failure consists of a stubborn refusal by our society to commit to the teaching profession a large enough measure of the best that we have in human resources. The quality of teaching is our basic educational problem. It will not be solved until all of our teachers have the competence that is now enjoyed by those whom we all recognize for their great and inspiring work in our classrooms, seminars, and laboratories.

Sterling M. McMurrin, U.S. Commissioner of Education

# The Three Areas of Study: A Symposium 

John E. Wise, S.J.

If a new Ratio is written for high schools and colleges, it will probably not describe courses, but areas of study, not specific books, but model syllabi. This can be contrasted with previous practice. For example, in the 1599 Ratio for Upper Grammar letters of Cicero such as the Ad Familiares, Ad Atticum, Ad Quintum Fratrem, are mentioned, the Eclogues of Virgil, and the fifth and seventh books of his Aeneid. For the Humanities year more of Virgil is listed, along with Odes of Horace, some prose reading from St. John Chrysostom, and several speeches of Cicero. To Cicero in Rhetoric year are added Demosthenes, Thucydides, Homer. Precepts of oratory from Cicero are augmented by those from Aristotle. The only author mentioned for mathematics is Euclid. But the authors are prescribed. They are to be taught in all Jesuit schools at the proper grade level. Method is delineated, the prelection, the recitation, written and oral exercises. Aims are stated with precision and specifically, such as those of the Humanities year-knowledge of the Latin language for speaking and writing, some content matter (historical items from the authors), a beginning grasp of the precepts of rhetoric. ${ }^{1}$

In the Fourth Part of the Constitutions, as contrasted with the Ratio, no specific authors are mentioned for the grammar curriculum. When we go to the Fourth Part of the Constitutions for the philosophy curriculum, which included science, and to which was added further mathematics, we find precious little mention of authors, the one exception being Aristotle. Even in theology, except for the prescription of lectures on the Old and New Testaments, only St. Thomas is named, with a reluctant clarification about Peter Lombard, Master of the Sentences, who St. Ignatius knew was outmoded. ${ }^{2}$ Perhaps this offers a keynote for the present symposium. The Constitutions are a work of genius, applicable,

[^0]as we may rationally accept and religiously hope, to many stages of civilization and growth of the Mystical Body. The Ratios, even that of 1599, were implementations. This point needs a good bit of discussion. The best focus to give for this discussion is that of the Instruction for the American Assistancy sent by Very Reverend Father General (Janssens) in 1948. Here we are asked to proceed in the "spirit of the Ratio Studiorum," having before our eyes "the peculiar essentials which can always and everywhere be reduced to practice." It is tempting to quote in full the brief delineation of such essentials, but we will be content with a summary: that we lead our neighbor to the knowledge and love of God, and that our students learn along with letters the habits worthy of Christians; that in this way we prepare men eminent in family life, in civil society and in the Church. Specific means are religious instruction, Scholastic philosophy, emphasis not only on content but on developed abilities, a personal interest in the students. An interprovince commission is urged to seek the adaptation of Ratio principles to today's needs, so that stability and uniformity may obtain in our schools. ${ }^{3}$ One is edified by the moderation and flexibility of the document, echoing the tone of the Constitutions. The present remarks, therefore, are offered in the "spirit of the Ratio," thus succinctly illustrated and traceable in clear genesis to the mind of St. Ignatius, as known from the Constitutions which he wrote.
Comments of this symposium are limited to the American college scene. It would be highly desirable to include the high school years, since articulation, the orderly sequence of studies is a paramount need. But the division has long been made in our American school system, and experts, at least those engaged in the field, should speak. Should a high school study follow this one? We will be discussing the humanities, the social sciences, science and mathematics. Examination shows that they overlap in high school and college years. One should strive for continuity in these subjects. United States history should not be treated superficially twice, but well once. Modern language in college should be an advance over that of high school; the same can be said for English and mathematics. Comment on the sequence of subject matter, that is, which discipline precedes the other, and what is the best order of procedure within the discipline itself, will be limited here to the college years.

Besides the sequence of studies, their interrelationships are important.

[^1]Charles P. Snow speaks of the tragedy of the "two cultures." ${ }^{4}$ Scientists today frequently cannot talk to philosophers, nor mathematicians to literary critics. There is need for all for a basic liberal or general education. Dialogue is otherwise not possible, or is rendered difficult indeed. Participating recently in a seminar with an able mathematician, I observed that he went with enthusiasm to study the philosophical works of Descartes, since he knew and was impressed with that author's well known contributions to mathematics. He had the background of a balanced education in a Jesuit school, and saw promptly the philosophical defects in Descartes. How many with similar needs of value judgments are equipped to make them? Descartes, indeed, was a philosopher of consummate influence, yet wrong in important fundamentals; moreover, he can be considered a great philosopher, seeking ultimates diligently, though wrongly. To differentiate such elements needs balance. Some know philosophy and not science. Snow tells us that ignorance of the second law of thermodynamics in an educated man is comparable to ignorance of the plays of Shakespeare, and of the notions of mass and acceleration, like illiteracy. A balanced curriculum aids perspective, and without perspective a man is ill-educated, and easily makes narrow judgments. He is well off if he has studied, especially in his adolescent years, the humanities, the social sciences, mathematics and natural science.
In discussing articulation and integration we have more or less taken for granted the notion of a general or liberal education. But we must further examine these terms to know better what we are talking about. Historically the term liberal arts included both the arts and sciences, the trivium and quadrivium, the qualitative and quantitative, the study of man and nature, and their Creator. But language changes, and "liberal arts" today usually refers to the humanities, one half of the old meaning. No matter, a liberal arts college is still a college of the arts and sciences, so history has its influence, and here the old meaning of liberal is re-tained-"arts and sciences." The three so-called components of the trivium (grammar, logic, rhetoric), and the four of the quadrivium (arithmetic, geometry, astronomy, music), are not the result of basic analysis, but rather an historical oddity. They had something to do with the Scriptural "seven pillars of wisdom," and a now happily defunct penchant for overdoing the allegorical. More important is the sound analysis concerning the qualitative and quantitative, or man in relation to

[^2]God, fellow-man and nature. Reality is studied in the liberal arts and man's highest powers are freed and nurtured for the contemplation. Liberal education is concerned with the humanities, the social sciences, mathematics and the physical-biological sciences.

The terms liberal and general education are here used quite synonymously, as indeed they are in the well-known Harvard Report on general education. "The task of modern democracy is to preserve the ancient ideal of liberal education and to extend it as far as possible to all the members of the community." ${ }^{5} \mathrm{We}$ are not interested in the names, general or liberal. We select, as does the Harvard Report, basic learning areas. We think their committee has well outlined the areas of analysis, as being the humanities, the social studies, science and mathematics. Their committee studies both high school and college years; and is concerned with unity in the curriculum, integration.
Besides this reference to the Harvard Report, we acknowledge a debt to Newman's Idea of a University. Here is, as it were, a critique of the report from Harvard. Critiques are at times not palatable. They savor too much of "you do the work, we sit back and comment." The Idea of the University is, of course, not a critique in this sense. In fact both of it and of the Harvard Report we can say that they are the contributions of thinking men which all thinking men wish to share. Newman's study is undoubtedly the more basic of the two. The Harvard Report does not dodge questions, but it does not answer them, as does Newman. For example, their committee discusses the problem of philosophy in the curriculum, but concludes: "We think it would be serving no good purpose to require every student to take a course in philosophy." ${ }^{6}$ The compulsion aspect is not important, but philosophy is left out for basic reasons verging on relativism. One cannot really get at the truth. The quest of philosophy for many is "abstract and unreal."" Generalization goes "only so far as our knowledge of detail." "The ultimate control of education must be political." ${ }^{\ominus}$ Newman would disagree with all of this. He would say that the quest of philosophy is abstract and real, not unreal; he would say that ultimate generalizations must be the most valid, though their limits are unexplored frontiers; he would say that the ultimate control of education must be parental; that all control is limited by natural rights, unchanging, inviolable domains. At least I think he

[^3]would say all this. Let us state some theses of the Idea of a University and then come back to these questions.
Philosophy and theology are central to a liberal education. The philosophical habit of mind sees life whole, and is not in danger of myopism. The specialist thus educated can never so forget God as to be immersed totally in the cell of the biologist; the theologian can never pretend to be so occupied with God that he forgets His works, by which God is best known, or forgets the freedom of investigation founded on the dignity of man's own intellect. The litterateur cannot forget the moral law, the ethician cannot forget human nature, which literature primarily pictures -sinful human nature. "It is a contradiction in terms to attempt a sinless literature of sinful man." ${ }^{10}$ Thus, the integration of the disciplines is of immense importance, and is one of the functions of a liberal education. The basic integrating discipline is philosophy.

Philosophy therefore is realistic. Its fundamentals do not depend essentially on the ceaseless cumulation of detail, it is true, but it can be always more rich for the detail. It recognizes basic rights beyond the State, even beyond the Church in the sense that they cannot be denied.

Newman would have philosophy in his university. His is moreover the first and the lasting classical attempt to analyze philosophically the nature of a university. Plato and Aristotle had done it for man and for society; scholastic thinkers bent their efforts, from reason alone as well as from revelation, to understand God, man, and nature. No one had ever formally attempted thus to analyze the notion of a university. The Idea of a University is a philosophical quest, from reason alone. Newman takes the university as a "bare idea," and before it is viewed as an instrument of the Church. ${ }^{11} \mathrm{He}$ is interested in the idea of a university, its specific, formal concept. This he recognizes is intellectual culture. "Here it may leave its scholars, and it has done its work when it has done as much as this." ${ }^{12}$

Philosophy (including natural theology) is at the heart of a liberal education, conceived even in the natural order. In the real order of grace the specific function of a university is unchanged, only it has more material to work on. Reason is bettered, not negated. Newman treats the fuller Catholic picture elsewhere, ${ }^{13}$ but his work of genius lies in the philosophical analysis of liberal education. In this he includes phi-

[^4]losophy and commitment as essential. The Harvard Report does not. We would assert here with Newman the basic place of philosophy in the curriculum, but incidentally neither he nor we would wish the same number of hours, the same course for all students! This is not a good policy.
The present papers deal, therefore, with the subject matter of a liberal education. Unlike Newman's essay, they are placed in the concrete order, the specifically Catholic, Jesuit college, university of the day, but only in so far as general education is concerned, excluding elementary and secondary as well as graduate and professional areas. What subjects should be taught? and how?
In selecting such questions for discussion, we are not concerned with the psychological process of education, insofar as this deserves deep analysis. Man's intellect is formed from liberal studies. Does this apply to character also? The student forms his mind from his studies. He desirably attains a mental vigor, a continuing quest for depth, a poise and breadth, all qualities illustrated in Newman. If he is on his own so much for his intellectual growth, still moreso for his growth in virtue. Literature can occasion indifference, science scepticism, philosophy itself can engender pride. We may as well try to quarry rock with a razor or moor a ship with a thread, as to try to teach virtue with philosophy. ${ }^{14}$ Valid principles can be powerful in the mind, it is true, but grace and free will, aided by good example, are the areas of virtue. The more we let our students know this, the better. A good Catholic college supplies the means of virtue, natural and supernatural, but they must be used. "A Form of Infidelity of the Day", Lecture IV in the second group of essays in the Idea, as well as penetrating comments on refinement as distinguished from religion, ${ }^{15}$ sufficiently bear out the interpretation of Newman as isolating the real work of a liberal education, intellectual excellence. Character is not the specific goal. The Church concerns herself with the university, as she is or ought to be in all human endeavor, but one cannot have a good Catholic school unless it is a school. If liberal knowledge is among the noblest of man's attainments, it can and should be offered to the greater glory of God. But it should be liberal knowledge if this is the gift one intends to offer.
Intellectual excellence has two facets, what is learned and who learns

[^5]it. If we characterize a liberal education as giving mental vigor and breadth of vision, these are qualities of the philosophical habit of mind. Such qualities are best gained by studying the arts and sciences, studying God, man and nature as constituting reality. We can see the tragedy of a university which has to leave out God. Newman is eloquent on the majesty of the Supreme Being known from reason alone. ${ }^{18}$ A man is imperfectly formed who does not know God. State universities today should allow those who believe in God to study about God. How else can there be academic freedom? But leaving aside questions of the formation of the mind (at least as the specific material of these papers), we go to the subjects themselves. ${ }^{17}$ Their benefit to the human mind is obviously why they are chosen, but we are interested not so much in the habits of mind, a psychological field, as in the studies themselves.

We have mentioned the Harvard Report, and Newman's Idea. Where do Jesuit schools stand in the history of general and liberal education? Father Ganss has served his colleagues well in specifying the Fourth Part of the Constitutions as being the basic Jesuit educational document rather than the Ratio Studiorum. The latter is an application of principles rather than an enunciation of them. In the Constitutions we find flexibility, originality, alertness. Thus Aristotle was retained, and Aquinas installed, both decisions showing originality, since the tendency of the times was otherwise. Not only was Paris practiced assimilated, as being of the best, but organizational endeavor was undertaken in a systematic way that was new.

The classical Renaissance was more outside the University of Paris than in it, yet the Renaissance was reflected in Jesuit education. Competent judgment says that science was there too, ${ }^{18}$ though not prominent at Paris. Whence came such vitality? The life was in men, but the thought of such men is reflected in the documents, the most vital of which is the Constitutions of St. Ignatius. The Society is guided in its choices by the principle of the greater and more universal good. ${ }^{19}$ Schools occasion more spiritual good, as a Jesuit undertaking than even direct works of the ministry which can be done by others. The prominence of the educational ministry, chosen according to the basic norm of the greater good, appears in Father Janssen's Letter . . . concerning Our Ministries (1947),

[^6]scholarly research and schools coming first among the four areas specified, the missions and the apostolate of working people coming next in order. But we wish to apply the principle AMDG not to the choice of schools as a ministry, but to the choice of what kind of schools we should run-more specifically, what subjects are to be studied in the liberal arts, why and how?
Earlier Jesuit schools had the arts and sciences, subject matter of a liberal education. These areas are perennial. Man is known not only by the ancient classics (one excellent source), but also by modern literature, ${ }^{20}$ even by the pioncering of Freud. Nature looms so large today, with technological and theoretical advance, so much is the life of man affected, that one does not understand nature sufficiently for a liberally educated man without two or three years of science in high school and college, four or five years of mathematics. What of the social sciences, mainly new? They combine often the qualitative of the humanities, as in case study, with the quantitative of the sciences, as in statistics. Where do social sciences fit into general education? The Harvard Report has its considered comments, as does Newman, who shows how an economic view of life can supplant the philosophical if one is not liberally educated. ${ }^{\text {. }}$ With a liberal education professional knowledge of economics is an asset, in fact it can be held, and probably will in these papers, that a liberal education is defective without some study of economics.
This introductory paper attempts to explain the division-humanities, social science, natural science-as a suitable outline for discussing the subject matter of a liberal education. Jesuit schools and colleges do not differ in specific goals from other schools here. They may hope for more excellent subject matter, in some ways, because of their heritage (philosophy). They must endeavor for creativeness in aspects which are new in literature, social science and natural science. If they give school work as a spiritual offering, it should be excellent school work, which means not mere assimilation of values found elsewhere, but also pioneering to contribute values not found before. We need creative writers, scientists, economists, even to run good schools. ${ }^{23}$ It is true that such creativeness is more called for on the university level, but its effects are felt in general education. We are not, however, discussing faculty or students, but subjects, as far as such precision is helpful.

[^7]There is one last item to be covered in this introductory essay. It concerns the scientific method. What does this have to do with the subject matter of a liberal education? There are many subjects to be studied, or at least many areas of study, and there are many ways of getting at truth, not just one way, as John Dewey would have us accept. ${ }^{28}$ The humanities have their insight, ethics has its induction, so prominent in Aristotle's work on the subject, mathematics, science, social science, psychology, all have their methodology. Aristotle long ago recognized that logic was not monolithic. ${ }^{24}$ There is a problem of methodology. Father Henle has done well in his statements on the subject at the Santa Clara Institute for Jesuit Deans. He speaks of the humanistic approach, the philosophical, the scientific, theological, mathematical-all avenues to truth. ${ }^{\text {5 }}$ These are far from the circular street of John Dewey, which has no exit because it has no ultimates. The papers of this symposium will inevitably suggest or imply method along with content. This introductory paper can make certain remarks to advantage. The scientific method appears in three ways. It sometimes refers to the method of a controlled experiment, unknown to Aristotle, used perhaps by Archimedes, and appearing late (nineteenth century) in social science. This is a legitimate use of the term, as referring to a controlled experiment. More frequently the scientific method means hypothesis, data, testing, conclusion, application, or some such process, with data, and testing, and above all hypothesis having prominence. In the social sciences, even in literature, philosophy, and theology, the problem approach shares in this method. The ancients knew that philosophy began and ended in wonder. Certain knowledge does not mean comprehensive knowledge. When we confuse the little we know, with the infinity we do not know, we lack indeed Newman's "enlargement of mind." Thomas began asking the question "Who is God?" and ended up asking the same question. Augustine so inquires in his De Trinitate as if to find, and so finds as if still seeking. ${ }^{20}$ The scientific method understood as the problem approach is not new, although Dewey gave it an impetus of importance in modern times. In the sense of hypotheses and testing the scientific method distributes itself widely over the curriculum. In modern times, how-

[^8]ever, it grew up associated with materialism, not necessarily because of its frequent association with the natural sciences, but probably from limitations there. Relativism accompanies its use today in and out of natural science. Paradoxically, the materialistic aura of the scientific method is associated in Russia with absolutism not relativism. That shows that the scientific method is tied down to neither of these philosophies. It can be associated with a philosophy of freedom and commitment, and where there is freedom and commitment, spiritual values are at stake. These, remember, are known but not known fully. Who takes the wonder out of philosophy destroys it.
Not many Catholic or Jesuit names are associated with the growth of the controlled experiment as a method of knowing. Analysis would show, I conjecture, that we do better in the problem approach (the second meaning of scientific method) with our creative philosophers and theologians, to mention only Bellarmine and Suarez. A number of current Jesuit names could be mentioned for creative thought, had we not gotten into the context of our forefathers. Perhaps, however, in accordance with the burdens of scholarship and teaching, originality could appear more frequently among Jesuits and their associates in literature, science, social science. "Our people won't be satisfied until Catholic school products begin writing more great novels, producing more great plays, making new scientific discoveries, filling more academic chairs. . . ." ${ }^{27}$

But think of the special function of our schools here! We can use, we can advance the scientific method in its valid senses, in a context of man's spiritual endowments and of the quest for God. I do not think we will do this as well if we are defective in uses of the scientific method in the laboratory or mathematical formulae, or in the social sciences, or humanities, as far as it applies.

We should not be afraid to experiment. This can be safely done with pilot groups. If safely done there is motivation in the very pioneering not obtainable otherwise! Theories are tested in practice, when further talk about them would be useless. Experiments advocated by minority opinions should often be allowed, for this does not change lasting traditional emphasis, but only purges and vitalizes them.

We have discussed the scientific method with its meanings and connotations. I think there was a reason for doing this. It looms large in thought and teaching today. Its values must be assimilated and developed. Jesuit schools are in little danger of rejecting other avenues of

[^9]knowledge, which are even more important. Philosophy and common sense validate other ways of knowing-consciousness (what a realm for the psychologist here!), experience, testimony (for the historian with his related disciplines), deduction, analysis and that induction which brings us our first ideas. ${ }^{28}$ Revelation is a fount of certitude, the highest, because God is its immediate Author and its Witness. He aids, with His grace, in the firmness of the mind's grasp on the greatest truths.

So much for methods of knowing. We cannot discuss subject matter and leave these aside. We turn with interest to authorities in their fields in the following papers to see what should be taught in the liberal arts, and how it should be taught. The goal is mental vigor and breadth of vision. We cannot have the exercise and the life without the food. The content should be healthy and abundant, and especially for youth we might say, bearing out the analogy with the body. One type of formalism had the exercise without the food, activity without nourishment. But only in rich lands of history, science and all learning will the mind of youth be challenged and ready and keen.

We seek therefore a continuity in subject matter and an integration which lets one discipline be aware of another, while being well taught and studied in itself, an aspect more important perhaps for consideration here. We hope for excellent specialists, lay and Jesuit. We opt for a choice offered in an article by Father Harvanek. ${ }^{29}$ Scholars are needed on the campus, indeed without them where is the college campus? Thoroughly Jesuit goals do not seem tied down by the particular place of layman and Jesuit in curriculum or organization. The sources of authority are clearly stated in public documents. All accept these who wish to work in Jesuit schools, one type among many colleges and universities. As known by experience heavy participation of laymen even in government is consistent with such lines of authority, and is frequently necessary for excellence. When we ask for scholarly teachers let us remember that without them educational leadership is not possible. Let us hope that many Jesuits are among the scholars as well as among the administrators.
A closing note of this introductory paper concerns the goal of achievement, and the social responsibility of the university. We agree with the remarks of James W. Sanders concerning the social orientation of the school. ${ }^{30}$ In the opinion of the present writer one's personal attitude is

[^10]of the greatest importance. Awareness of national problems of juvenile delinquency, of aid to private schools; international needs for food, for literacy; not to speak of patent local issues; these will interest the campus if they interest the faculty. Such interests complement intellectual dedication, and need not conflict. Chemistry, physics, biology, as well as the social sciences, are taught in Russia to combat the "superstitions of religion," and to further the aims of dialectical materialism and atheistic Communism. ${ }^{3 .}$ Russia boasts of outstanding scientists. If it is not off the subject one could say that we should not fear to teach religion in our public schools at home. We need both science and religion. We need both learning and social responsibility.

In discussing the college curriculum, a continuation of the liberal, general education begun in the last years of high school, integration of subject matter has been stressed, and social as well as individual aims. All seems predicated on well chosen subject matter, well taught. The primary question of the present papers is "What to teach in college?" The discussion of the areas of study will take into account the gifted and the less gifted, even honors programs, ${ }^{32}$ but will consider general education requirements and options as distinguished from specialization.

Three topics are to be treated-the humanities, social science, and natural science. Included in the term "humanities" are such subjects as literature, language, philosophy, and history. Included under "social science" are political science, economics, sociology. Mathematics is placed in the "science" group, along with physics, chemistry, biology. There are other disciplines, but the present endeavor will not attempt to classify them-archaeology, anthropology, etc. The main lines are clear enough. A concluding statement follows the three specialized studies.

[^11]
# The Humanities and the Jesuit Liberal Arts College 

Thomas R. Fitzgerald, S.J.

The purpose of this paper is to propose a core curriculum in the humanities to be completed by every student in Jesuit liberal arts colleges. Whether he be majoring in biology or political science or philosophy or any other field of concentration, he would be expected to fulfill certain wide requirements within the humanities.

This work would span five areas: theology, philosophy, modern language, English, and history. No doubt even other courses might also be desirable. Immediately one might mention the visual arts, music, classical languages, or archaeology. But within a span of four years only a limited number of subjects can be successfully mastered. The five selected areas appear to represent those disciplines which are indispensable if a reasonably complete formation in the humanities is to be offered to all. Insofar as schools may be able to offer further work in the humanities to a student majoring in a social or biological or physical science, well and good; further work obviously will be expected of the student who elects to specialize in some particular branch of the humanities.

It is presumed that almost all readers of the Jesuit Educational Quarterly would, in general, agree to certain statements concerning the humanities. Perhaps these can be listed in schematic form.
I. The humanities should help man understand his nature, significance, and destiny. They should permit him to create for himself a Weltanschauung that embraces the conscious self, fellow-men, the material universe, and God: Father, redeeming Son, and sanctifying Spirit. They should give him a mature knowledge of the contents of his faith, and much of the motivation for achieving that personal commitment which the act of faith, fully lived, entails.
2. The humanities should have a special function in the acquirement of the intellectual virtues which are an important part of man's natural and supernatural development: an awareness of one's ignorance with a consequent thirst for wisdom together with a genuine respect for the opinions of others; also a healthy respect for facts, as opposed to an occasional tendency of scholars to theorize within a make-believe world of ideas.
3. The humanities should give man some understanding of the historical context within which he has come into existence. He should acquire some comprehension of the social, political, and intellectual currents which, for better or for worse, are giving direction to the age in which he finds himself. Though knowledge of Periclean Athens or of the 13th Century is good and desirable, man must above all come to terms with the 20th Century, accepting it with understanding and affection.
4. The humanities should assist man in communication. As a person surrounded by persons he should be master of written and oral discourse. Communication in the present world would also seem to require of the well educated college graduate that he be at home in at least one foreign language, being able to read, write, and speak this language with fluency. Above all a man should be able to converse with those of other professions and specialties. It is of the utmost importance that the scientist have psychological, moral, and social concerns; it is equally imperative that the non-scientist have some appreciation of the scientific revolution. C. P. Snow, in his work on the Two Cultures, ${ }^{1}$ has poignantly depicted the chasm that has opened between scientists and non-scientists in the modern world. He particularly stresses how urgent it is for the non-scientist to be open towards the facts of scientific life. Thus the scientific revolution has been accompanied, during the past 30 or 40 years, by the application of real science to industry. As a result a revolution in human life and culture is occuring as quickly as countries are industrialized. There looms up the possibility of a greatly extended life span (made possible not only by improved techniques in the healing arts themselves but by the improved construction of hospitals and dispensaries, as well as by the discovery and mass production of new drugs), the possibility of an adequate supply of food and of vastly increased leisure. It must be recognized that even today the majority of human beings exist at a mere subsistence level, working more or less as they have done from Neolithic times. It must also be recognized that change will come very fast; Russia was industrialized in 40 years, China will probably achieve this in 20; Snow predicts that this can be brought to the entire world within a half of a century. The remaining undeveloped nations already are demanding a share in those blessings of the scientific revolution which make possible increased longevity, adequate nourishment, and liberation from unremitting toil. It must be recognized that, if the western world does not quickly and

[^12]effectively assist the underprivileged nations into this new manner of life, the latter will, guided by Communist leaders, snatch these blessings from the reluctant hands of the Occident. It is here above all that communication is imperative: the scientists must be able to explain to the non-scientist what is occuring and what they, as individuals and as members of a nation, should do, and the non-scientist must be willing to listen and able to comprehend.
5. The humanities should assist man in the proper exploitation of the leisure that is becoming his. As the industrial revolution continues to advance and automation spreads, man is progressively liberated from his enslavement to his material environment. Increasingly he is free to devote himself to specifically human pursuits, to the things of the spirit. Here the humanities should offer to man an appreciation of the great works of literature in which, most successfully, human has spoken to human of the greatest values encountered in the course of man's existence. This appreciation of and hunger for good literature (including in "literature" the spoken word) will be a guide to man in his quest for meaning in the vast wasteland of the entertainment arts. It will permit him to exploit fully the possibilities of the screen that glows in the darkened parlor or theatre, without at the same time being drawn into the abyss of tasteless, crude entertainment that, punctuated by occasional commercials, has become the nightly destiny of so many American homes. In the following pages an effort will be made to indicate how the humanities courses in the Jesuit college can more effectively achieve these goals. How can the present work in the humane disciplines be improved? It should be clear to all that there must be a rigorous process of selection. The vast treasures of human wisdom cannot all be even seen, much less grasped, during the four swift years of college. The theologian, the historian, and the other teachers must choose within their own fields of specialization, being content to present well that which is of the most urgent importance, recognizing that the well educated college graduate will be the man or woman whose intellectual growth, at graduation only incipient, will expand during all the subsequent years of life on this or other planets. Above all the teachers must recognize that, given the multiplicity of subjects to be assimilated, each department must be content with a very limited number of class hours. As a basis for discussion it is proposed that the course hours be divided as follows:

| Theology | 16 or fewer |
| :--- | :--- |
| Philosophy | . |
| Modern Language | or fewer |


| English . . . . . . | 12 |
| :--- | :--- | :--- | :--- | :--- |
| History . . . . . . | 12 |

The author fully realizes that a wide-ranging article of this type takes him far beyond the boundaries of his own professional competence. It is his hope that the experts in each field will make haste to correct and amplify the suggestions which are here presented in somewhat skeletal form.

## Theology

Sometimes theology is called the queen of the sciences. In a special sense should this be true of the Jesuit college, for so much of the religious impact, so much of the very Catholicity of the four year program must come from the courses in theology.

Father John Courtney Murray, pre-eminently, has made the distinction between the two programs of theology, that of the seminary and that of the college. ${ }^{2}$ In the seminary theology exists primarily at the service of the magisterium; the student will one day be a priest speaking as a representative of the Church; he will share in her function of teaching. He will be, as she is, concerned to defend as well as explain the faith, and his training should be rigorously scientific. This explains the necessity of a valid positive theology, and the need for that kind of strict philosophical analysis which ordinarily involves some employment of scholastic method. The seminarian, having already completed his philosophical studies, should be able to participate in this speculative analysis. Moreover the seminarian receives most of his religious formation from sources outside the classroom. There are available for him spiritual instructions and guidance, retreats, days of recollection, and spiritual reading; he is taught to practice and is expected to be faithful to prayer and self-examination.
The college student should receive a different theology course, not merely a simplified one. He is destined to be a layman, and as such his role in the Church's service will be quite different from that of the priest. He will be living in a non-Catholic milieu, which he will attempt to impress with the stamp of Christianity. It is the Church's mission to Christianize all the world, including the particular society and culture in which men may find themselves. The time when the clergy could be active, even dominant, in the political and economic realm, is long past. In this 20th Century it is primarily the layman who will carry Christ

[^13]into the secular world and milieu of America. Insofar as this country remains Protestant, it is the layman chiefly who will have frequent contact with those of other persuasions. He will be a witness living among those who have not come to the one fold. The layman, on the other hand, will not be, in anything like the same sense as the priest, an instrument of the magisterium formally teaching doctrine in the Church's name. Furthermore, most of his religious formation and motivation must come from the theology course; he will not find these elsewhere in the curriculum, and it is not to be expected that all will actively participate in extracurricular activities of a religious nature.

From all of this there follow certain conclusions. The layman's theology will be less conceptual, less a defense of the faith. Christianity will be seen as the living history of the action of God upon naan, and often it will be explained in terms drawn from the domains of iove, action, and life. Though the content of the faith will not be minimized, there will be increased attention to the personal engagement which faith demands. The presentation will be strongly Christocentric, with the Church being viewed less in its external structure and more as the Mystical Body comprising the Head and all the faithful. Grace and especially the sacraments will be seen as involving a personal encounter with the Savior and as inviting, in response, a personal commitment. As far as possible, the exposition should be synthetic: thus moral theology and dogma will often be presented together, Christian conduct being the response to the inspiring study of the great religious truths. ${ }^{3}$

There should, of course, be emphasis upon recent theological developments. Thus the Scriptures and the Liturgy should be given the prominent role which they now have in the Church's life. The newer developments in dogma should likewise be underlined. Thus the defined doctrine of Mary's Assumption can be seen as stressing the importance of the material element in man, his body. This will permit a presentation of the far-reaching effects of the Incarnation making possible, in a sense, the sanctification not only of man's soul but of all his activity and his culture; this will involve a theology of history. ${ }^{4}$

It should be clear that such a program demands special gifts of the

[^14]teacher. His personal influence upon his students will be crucial. Thus there should be expected of him, as Father Murray has pointed out, several qualities: high theological scholarship, pedagogical gifts, a true interior spirit, and a knowledge of and sympathy towards the contemporary situation. ${ }^{5}$ Sympathy on the part of the teacher for modern philosophical currents of thought will be particularly necessary, for through a discreet utilization of the findings of subjectivity and personalism he will be able to present his theological material in a manner that is adapted to the needs and aspirations of his auditors.
If the teacher is to have a strong personal impact upon the students, how can he cope with the large numbers of those who take the courses of theology? Here, more than at any other point of the curriculum, are teachers and administrators faced with a dilemma. Through the medium of closed-circuit television it is possible for the gifted teacher to speak to many hundreds of students. But too readily this can become a mere lecture course in which the students listed passively with no intellectual give-and-take. Perhaps it is here that team-teaching offers the greatest promise. When one professor has lectured to a large audience during the first part of the period, then several teachers may possibly meet with smaller groups for dialogue.

Some teachers feel that because, in many institutions, theology receives only two hours weekly, it necessarily becomes a "minor" course. To remedy this problem some schools are experimenting with five semesters of three hours each in place of a more traditional grouping of two hours during each of eight semesters.

## Philosophy

Philosophy's importance in the curriculum cannot be exaggerated. However it should not be presented as a mere simplification of seminary philosophy. In the seminary the candidate to the priesthood studies his philosophy partially as a preparation for the study of speculative theology. He will eventually speak in the Church's name, and much of his study is specified by this future role of religious teacher. The layman, it is true, will one day be a witness, in the market place, to the faith, but his relation to the ecclesiastical magisterium will not be the same as that of the priest. Nor will his program of theology be speculative to the same degree as in the seminary; indeed the lay student will have completed

[^15]the major portion of his theological courses before he has acquired any true facility in philosophical method.
In the classroom inquiry rather than response should be the initial aim. What the teacher wishes to do first of all is to evoke in the student a philosophic cast of mind. The learner is to acquire a concern for human values, for life and for the human person. This craving for wisdom will, to a great extent, be awakened through contact with the teacher insofar as he himself is, in all humility, questing for truth. It would seem self-evident that such an attitude, the habitus philosophiae, will only with difficulty be acquired by the student if the courses are almost entirely in lecture form. There ought to be considerable dialogue in the clasroom, but such dialogue cannot be fruitful unless the student is qualified by protracted reading and study to accept his role in the interchange. Dialogue presupposes that the class sections will be reasonably small. Again, as is the case with theology, closed-circuit television and team-teaching may offer new possibilities.

Obviously there should be not mere quest but quest fulfilled. Gradually the student should realize that he is heir to a growing, living body of truth which has developed within a tradition steming from Plato and Aristotle. He should arrive as a solid core of certitudes which have been personally experienced and grasped, particularly as to the existence of God, the spirituality of the human soul, and certain ethical absolutes. Without the quest, no habitus philosophiae will result; but, if the quest never achieves any fulfillment, there will be only confusion and scepticism. The sharp awareness of one's ignorance should be accompanied by a humble grasp of some basic truths.

No doubt the content of the most fundamental theses of scholastic philosophy should be presented, but at the same time there should be a full openness towards the contemporary intellectual climate. Existentialism, phenomenology, personalism, and subjectivity have all been moving in similar directions, and this apparently growing convergence deserves close observation. The teacher should be altogether conversant with the writings of today's authors, such as A. Brunner, S.J., A. De Waelhens, G. Marcel, M. Nédoncelle, and G. Madinier. The theme of the person, his consciousness, liberty, his communication with other persons, all these should receive adequate treatment. ${ }^{\circ}$ Every effort should be made to assimilate the themes of evolution and history. From the Existentialists, particularly from those Existentialists who have worked within the Neo-Thomistic tradition, the teacher will derive much of value. His

[^16]philosophic presentation will take cognizance of the existentialist worldview as this was described a dozen years ago by Father Norris Clarke:

The first step is the intense subjective awareness of the supreme importance of the concrete, existing "I," unique in the universe. Next follows the phenomenological description of the self as a being thrown into the current of existence by some unknown force, committed to the adventure of existence whether it likes it or not, discovering itself as a "being-in-the-World" open to the world and to the other selves-in-the-world by its consciousness, and, as it faces the future, feeling itself gripped by the anguish of having to "create its own essence" and attain its destiny by the unpredictable risk of free choice. Lastly comes the discovery of the nature of this destiny and the genuine "existential" self-commitment to it.

The Christian Existentialists find this destiny in the God of the Christian revelation. They reach Him not by abstract reason . . . but by the "leap" of faith or hope. For Kierkegaard this is a leap into the dark, in the teeth of reason: "Credo quia absurdum." For others like Gabriel Marcel the leap is prepared by phenomenological analyses of human experiences such as hope and fidelity, which lead them to postulate the existence of a supreme Subject or "II" who is for us the supreme "Thou" and the ultimate ground of all "I-Thou" relationships among finite subjects."

It is for the philosophy department of each college to work out a curriculum that will, in terms of content, be reasonably complete. In all the larger schools the departments of philosophy are composed of many members. During his college days the student will be exposed to a succession of teachers. While some freedom must be left to the individual teacher to exploit his own philosophical interests and specialties, there must be a specific curriculum so that each student will receive a complete program.It is for the departments in each instance to determine just which philosophical problems can be handled and emphasized in the time available.

Since time will be at a premium, some pruning may be in order, and any overlapping must be obliterated. Readers of the Jesuit Educational Quarterly are familiar with the controversy which erupted concerning special ethics. Father Edward Sponga questioned whether a rational ethics was a sound foundation for the lay student's moral conduct. He felt that the student should not be guided by purely natural norms since he is living in a supernatural order which makes, on occasion, more exacting demands; furthermore, stated Father Sponga, on finer points the rational position may be unconvincing to the student. Thus it was pro-

[^17]posed that most of the material commonly covered in special ethics be transmitted to the department of theology. This position has provoked some rejoinders. ${ }^{\circ}$ Whether some of these points are to be covered in philosophy, in theology or in sociology, is a problem for the departments of each institution to work out among themselves, but there should be no overlapping. Moreover the teachers of philosophy must be ready to relinquish to other departments some of their more traditional areas so that they can, in the limited time available to them, give adequate treatment to the remaining questions and make satisfactory provision for attention to modern intellectual currents.

## Modern Language

In no area has American education been more deficient. In no area has American education recently been making greater changes and advances.
Until World War II the United States was to a considerable degree insulated against foreign contact. Americans who went abroad often were satisfied with a minimum command of foreign tongues. This tradition did not quickly die. It will be recalled that midway through the Eisenhower administration almost half of the heads of American diplomatic missions were unable to speak fluently the languages of the countries to which they were accredited. Americans simply did not believe that they needed to know a second language.
There had been shortcomings in the instruction offered in the schools. The departments of modern languages had, to a considerable degree, taken over from the teachers of Classics their methodology. The Classicists of the rgth Century for the most part used the so-called grammatical approach. First the rudimentary forms of the new language were learned by heart, and the rules of grammatical usage were acquired. The student might be drilled in his command of forms and syntax through exercises, but the reading of continuous texts was reserved for a late stage in the learning process. ${ }^{10}$

[^18]By 1945 storms of change were blowing. Experience during the war years had convinced many teachers that language instruction could be greatly improved. There has resulted the insistence upon the spoken word. This was notably stressed by the Modern Language Association in a declaration of policy: language teaching should progress through the four stages of hearing, speaking, reading and writing.' ${ }^{\text {. }}$
At the same time it was recognized that spoken command of a language required highly intensive drill work. Hence the proliferation of language laboratories in which, with the help of tapes, the teacher's presence is many times multiplied. Each student is drilled separately by him, thanks to tapes that can be copied on high-speed duplicators. At the same time the student can make his own recordings and compare them with the original. Oral tests can be administered through the language laboratory, and, like the executive who uses his Dictaphone at those times which are most convenient, the teacher can at his leisure grade the oral examinations which the students have recorded.
It has been recognized that the spoken command of a language is facilitated by an early beginning. During the first years a child's mouth and throat can readily form new sounds, a condition known as linguistic plasticity. In time the mouth hardens, and the exact reproduction of strange sounds becomes more difficult. Taking this into account, the Modern Language Association has encouraged the beginning of the languages at the grammar school level, usually at the 4th grade. In 1955 271,617 students were already studying languages in the public elementary schools. By 1960 this number had jumped to 962,247 . $^{12}$
At the same time language work at the high school level is being intensified. Students are encouraged to continue one modern language rather than begin a second, and the traditional pattern of two years' work at the secondary level is gradually being lengthened. If present trends continue, the colleges can expect to receive in increasing numbers students who are well-grounded in a modern language, including the speaking and listening skills.
It is here proposed that all students in Jesuit liberal arts colleges continue their first foreign language during freshman and sophomore years. The classes should be conducted exclusively in the language being studied, but the courses should by no means be restricted to the perfecting of the language skills. At this level the student should learn the refinements of correct composition. However the primary concentration

[^19]should be on the culture of the people whose language is being studied; this will involve wide readings in original literature, together with a study of a nation's history and character.

The graduate of such a course will be able, if need arise, to live in a foreign land in which a foreign tongue is spoken. He will understand conversation and will be fluent in it. In any case he will be familiar with the most representative literary works of a nation other than his own, and he will know its history and will better understand the attitudes and aspirations of its people.

## English

Naturally the teachers of subjects other than English should demand written work which will be corrected and graded with an eye to style as well as to content. Responsibility for writing skills, however, rests primarily with the departments of English.

While there should be exercises in various types of creative writing, it is especially important that the students become adept at composing forceful expository prose. Such prose is the modern embodiment of the eloquentia perfecta which was always the ultimate aim of the Ratio Studiorum Inferiorum. No doubt the rhetoric of Quintilian must be thoroughly modernized, but it is for the teachers of English to demand incessantly of their students an eloquentia perfecta suited to the needs of the 20th Century.

At the sime time the teachers should introduce their students to as large a portion as possible of English literature. In the past we have, sometimes offered too little of the vast heritage of English letters; it is desirable that the student of today feel at home in every sector, from Beowulf to Faulkner. Particularly should he be taught to understand and evaluate the moderns. It would be a mistake for the teacher to expend much energy and time upon new writings of merely ephemeral significance. On the other hand the student should be ready, upon finishing school, to choose his way with discernment through the flood of books that each year will rush from the presses.
Special advances have been made during the past 20 or 30 years in the field of literary criticism. It is for the English teachers to present in their courses as much of this critical theory and method as can be assimilated. The attention to the literary work itself and the close reading which the New Critics have fostered can be of great value to the college student. If the criticism does not become excessively theoretical, it offers the reader the tools whereby he can judge with some insight writings both
new and old. ${ }^{13}$ This ability to discriminate between good literature and bad, cultivated in the English courses, will greatly aid tomorrow's graduate in finding his way through the vast deserts of television to the occasional but very rewarding oases.

Many in the English departments may feel that art and morality are distinct spheres; they may hold that in judging a work's artistic value they must distinguish this from the art object's moral impact upon the reader or viewer. ${ }^{14}$ They should, however, be willing to treat of both art and morality. It would seem reasonable that the English departments of Jesuit colleges bear the responsibility for indicating to the students under what limited conditions works of art (whatever their artistic value may be) can be a moral threat to the reader or viewer.

## History

History often is listed among the social sciences. This is scarcely surprising, since it relies so much upon the disciplines of political science, economics and, to a lesser degree, anthropology. The busy student who does not major in the social sciences will have too little contact with them unless his history program is comprehensive.

It is proposed that i2 semester hours in history, rather than the more or less traditional 6 , be required of all students. In these courses there should be a somewhat detailed study of the 19th and 20th Century developments in the economic, political and social realms. Thus the student may begin to understand the rapidly evolving industrial society in which he lives. It will be for the departments of theology to do justice to modern religious problems and thought; the professors of philosophy will take into account those intellectual currents of the present which are speculative but not specifically theological. It will be for the historians to interpret to their students the political, economic and social mutations which are being triggered by the ever more swift advances in pure science and technology.

[^20]Since the present is rooted in the past and can be adequately understood only in terms of the historical context in which it has evolved, the history program should not be limited to a study of the last century or century and a half. Attention should be given to the entire Christian era and to its cultural antecedents, but there will be time to examine the earlier centuries only in rapid survey. American history, insofar as this is essential for a proper grasp of modern times, should have its place.

In at least one semester the work should achieve greater depth than is possible in a survey. In this more advanced course the student ought to acquire some understanding of historical method and some practice in forming historical judgments. He should be forced to respect facts and to dig for them. In all the history courses wide reading should be of obligation. Since so many excellent books are now available in inexpensive editions, history teachers,-indeed the teachers in all departments,can reasonably demand readings which, 15 years ago, were available to only a very few students at any one time.

There are today those who assert that, in view of the flourishing state of science and technology, men can achieve the highest civilization even apart from God and by their own unaided powers. Nevertheless, it is because of this very progress in science and technology that men often find themselves involved in difficulties which affect all peoples, and which can be overcome only if they duly recognize the authority of God, author and ruler of man and of all nature.

Pope John XXIII, in Mater et Magistra

## Social Science

## and the Jesuit Liberal Arts College

Joseph P. Fitzpatrick, S.J.

The vitality and vision of the curriculum of the Jesuit school of the 16th century, as described by Father Wise, is an impressive testimony to the alertness of the Jesuits of that time. A similar vitality and vision at the present time involves an alertness about the formation of students of Jesuit schools in the best of contemporary social science. The experience of the social sciences in Jesuit Colleges and Universities in the United States has not always been a happy one. Courses in social science were often introduced haphazardly and often became the refuge of weak students, a situation which did not serve to impress either the faculty or the student body with the extremely important role the social sciences are playing and will continue to play in the life of contemporary man. In fact, no education claiming to be "general" in the sense used by Father Wise, can possibly achieve its objective today unless it enables the student to know himself as the social sciences are unfolding man to himself; and unless it equips the student to live as a skilled and cultivated person in modern society. In brief, the social sciences touch so directly on the formation of man himself that they rightfully claim a place as a humanistic discipline in the curriculum of a general education.

The definition of general education as given by Father Wise could be analysed briefly by saying that it involves three things: wisdom, knowledge and skill.

Wisdom: it seeks to communicate to the student an insight into human life and behavior by acquainting him with the most eloquent expressions of man's experience in classical and contemporary literature, in the arts, etc.

Knowledge: it seeks to engender in the student a love of truth for its own sake, whether it is revealed or naturally known; and to engender it in such a way that the student seeks to know truth whether in the Homeric poem or the census report, in the biblical passage, the historical document, the balance sheet or the laboratory test-tube.
Skill: it seeks to form the student in the basic skills of life to a degree to which they should be possessed and exercised by an educated man. Speaking is a skill; but speaking with precision, with grace and in a
cultivated manner, is the skill of the educated man. He possesses the skills of communication, but possesses them as they have been cultivated by centuries of effort.

Traditionally these objectives were sought through the famous curriculum of arts and sciences: theology, philosophy, literature and mathematics. They taught man "life" rather than an occupation; they communicated the meaning of life rather than the method of making a living. There are many ways in which this achievement can be supported by training in the social sciences. ${ }^{1}$

## The Communication of Wisdom

The valuable contribution particularly of anthropology and sociology has been the development of new concepts, new insights into man's social relationships which give the student a deeper understanding of the nature of man in his social life. When taught in such a way these social sciences become a "cultural course" in the true sense. They aim not to fit the student for a particular task, but to provide him with an understanding of human behavior that will enable him to act more humanly in any situation in which he may find himself. Whether a man is writing a drama or running for district attorney; administering a university of ten thousand students or running a union of ten thousand workers, in all these instances, men are interacting in a social context, influenced by social norms and pressures, in fairly consistent cultural patterns which can be observed, analysed and understood. The social sciences aim at giving the student an understanding of these consistent features of man's behavior; they constitute a genuine knowledge of man.

When presented properly, this becomes part of the humanistic training of our present day. Obviously it is not presented in the form of the eloquent expression of deep personal experience as one finds it in the sulking of Achilles, in the lament of Priam over Hector, in Augustine's description of his Mother's death, in Antigone's concern over her brother's burial. But certainly, for any educated man of our day, an understanding of the difference between courtship patterns in the United States and the selection of the marriage partner in India should be part of his general knowledge of man. An understanding of the influence of culture on man's moral judgments or religious practice is part of the omne humanum studied by the learned person. If any event of our day

[^21]can be called a deep human experience, it is the experience of migration. Familiarity with this experience as given in such works as The Polish Peasant; ${ }^{2}$ Oscar Handlin's, The Uprooted; ${ }^{3}$ or Edith Abbott's Historical Aspects of the Immigration Problem ${ }^{4}$ should certainly be part of the educated man's sharing of the experience of the men of his own time. Granted that no sociological books will give the vivid portrayal of social climbing that is given by Marquand in Point of No Return, nevertheless, the more systematic understanding of social class and upward mobility contributes much to man's appreciation of the nature of the society in which he lives. Finally, in a technological and industrial world, the understanding of the impact of industry on man's social relations is a very important part of humanistic education. For example, Bakke's book, The Unemployed Worker, ${ }^{5}$ or W. H. Whyte's The Organization $M a n^{6}$ can give an insight into man's experience in a technological world which is most important for the educated man.

The presentation of the basic concepts of sociology and anthropology, concepts such as culture; socialization, or the forming of the personality under the influence of culture; kinship; social class; social control; social change, when skillfully done, can give the student an awareness of man's experience in our own society, and throw considerable light on the behavior of men in earlier generations. In this manner, the social sciences share the role of a humanistic discipline.

## The Pursuit of Knowledge

Basic to this discussion is the premise that science, in its truest sense, the systematic pursuit of knowledge and truth by every reliable method, is an essential part of the general education of the learned man. Without it, no student is intellectually formed any more than a student of the thirteenth century would have been formed if he had not been trained in scholastic method. Basically, research methods are the heart of man's search for truth in the present day. They represent, in the physical sciences, one of man's greatest achievements of the past two centuries. The application of scientific mehtod to the study of man will represent one of the greatest of man's achievements in the present century. It is unlocking the door to the secrets of man and nature, and the learned man must be equipped to participate in the quest.

Scientific method, taught by itself, is generally dull and uninspiring

[^22]to the student. Like skull practice for a football team, it does not come to life until it is worked out on the field. Therefore, it seems that the scientific method should be taught in the realistic setting of a piece of serious research, in physical or social science. As the chapter on the physical sciences indicates, the course should be a course in science, not about science. Likewise the training should be in scientific method, not about it. It should communicate to the student an understanding of the nature of the scientific concept as a construct of the mind designed to express the meaning of some observed uniformity in nature; the use of the hypothesis in scientific research; research design; the standard methods of gathering evidence; the organization and processing of data; the analysis of the evidence and the development of new concepts in the light of new evidence.
This is the ideal. However, as is indicated in the chapter on the physical sciences it may be too difficult to execute. It is a very complicated task to direct the research work of majors in the social sciences. What would be the practical chance of success if this direction had to be extended to the entire student body? And the successful execution of a research project would probably require more basic training in a discipline than could be given in the first year or two of general education.
A suitable substitute could be found in a review and analysis of significant and interesting research which has been published and which has contributed to the development or clarification of concepts. An adaptation to the social sciences of a course similar to that presented by James Conant in On Understanding Science could be effective in teaching the student the nature of scientific research and the development of concepts.

Is it essential to have a course in the scientific method in the social sciences? Obviously not. This would perpetuate the situation we are trying to correct of reduplication of courses. Somewhere in the first two years, serious formation in the scientific method must be given. There is no need that it be explicitly in the social sciences. For instance, the skillful teaching of Conant's course, On Understanding Science would enable the student to understand the application of the same method to the study of man's social life. In the effort toward integration, it seems natural that the course in scientific method be integrated with logic and epistemology. An imaginative re-organization of these two courses should be able to allow for an adequate introduction to scientific method. However, in the re-organization, close collaboration would be required between professors of logic and epistemology and the professors in the empirical sciences.

## Skills of Living in Society

Finally, in discussing the relation of social science to humanistic disciplines, it remains to touch on one other point, the function of general education to equip educated men and women with the skills of living in society. In discussions of humanistic training, social skills are often confined to a consideration of those patterns of gracious living which were characteristic of educated classes in an aristocratic society. Society has changed radically since then, and the skills of huamn living have not stood still. Social relations in modern life become crowded and complex; techniques have changed; customs have been extensively modified. This means that the skills of communication and of social intercourse must be developed accordingly. The educated man of the present day must have: 1)-more information; 2)-a mastery of more complicated methods of dealing with people; and 3)-be prepared to deal with rapidly changing situations. The listing of these skills does not imply that they are restricted to the educated classes. Everyone must have them. Therefore, a fortiori, the educated person must have them to a cultivated degree. Just as his speech is a sign of his training, so also his behavior in a complicated society must be a sign of his culvtivation also.

Information: The basic methods of gathering relevant information are not the exclusive possession of the social sciences. What the social sciences do is to prepare the student to seek information systematically in a number of important areas of his life. He should know how to read a balance sheet, and know where relevant economic, business and government information is readily available and what it means. He should have a gentleman's knowledge of what is inside the huge volumes of the U.S. Census, the Statistical Yearbook of the United Nations or the Statistical Abstract of the United States. The student should have an educated man's familiarity with Point Four, Technical Assistance, UNESCO. Much of this is a simple matter of library technique. But much more important is a sense of appreciation of what this information means and how it is related to the great human issues of our time. It is obvious that a student could achieve this without any training in the social sciences. However, in a curriculum of general education, it would ordinarily be the social science course that would Provide this information systematically.

Skill in human relations: In the second place, certain simple skills in human living are essential. Modern industrial experience and the confusion of rapidly changing neighborhoods have given men clear evidence of how little they sometimes know about the elementary facts of
good human relations. For educated men to face such things as the rapid migration to the suburbs, the migration of Mexicans or Puerto Ricans to large cities, de-segregation in the schools, the promotion of interracial housing etc., a common sense approach is no longer adequate. It is true that, sometimes, in these matters, the wisdom of a simple uneducated janitor may be far more useful than the sophisticated ideas of the specialist, nevertheless, in general, complicated modern living places a premium on the person who understands the differences of race and culture, who can communicate effectively with working people if he is a manager; who can move with a certain cultivated sense in the midst of tense situations. These are but a few of the skills of the cultivated man in contemporary society. Although none of these is essentially dependent on training in the social sciences, nevertheless, it is the courses in social science which are most likely to develop these in a student in a program of general education.

These skills are extremely important in relationship to the communication of an understanding of a complete Catholic life which is the objective of the general curriculum of a Jesuit College. The recent Pontiffs have repeatedly stressed the social question as the most serious question confronting Catholics today; they have spoken eloquently about the obligation of Catholics to be alert and busy about exerting the influence of Catholic ideas and life for the re-organization of social and economic institutions. But this will become possible only when educated Catholic people have the necessary knowledge about social life and organization, and the basic skills for dealing with them. In such an important area of modern life as the fulfilment of moral obligations in the promotion of social justice and charity, the student without the elemenary skills for dealing with social issues is helpless. It is in this area where the great need for training in the social sciences becomes critical for the responsible, educated man of today. This does not imply that courses in social science, of themselves, will form in the student a consciousness of social responsibility. This is much more a question of virtue. The social sciences provide the virtuous man with the knowledge of social realities which he needs in order effectively to practice the virtues he has developed.

Rapid social change: Finally, it must always be remembered that students of Jesuit colleges today are going through an extraordinary social revolution. In days when such amazing developments are taking place as de-segregation, the guaranteed annual wage, the development of underdeveloped areas, the organized movement of millions of people to a better homeland, the end of colonialism, in days such as these, humanis-
tic training would not equip the student for a full and fruitful life if it did not make him familiar with the basic social issues involved in these amazing developments. If general education is to make a student sensitive to the deep stirrings of the human soul, alert to the experience of men as they are challenged by a new world, keen in their understanding of human behavior, it must give to students a competence in and familiarity with these rapid social changes. This is where the social sciences must enter the curriculum in general education.

## The Organization of Curriculum

In view of the foregoing discussion, what can be said of the organization of the curriculum in order to provide the training in social science which has just been reviewed.

It is evident that a survey course in the social sciences is not suitable for this purpose. What is needed is the serious introduction of the student into the basic concepts of the social science disciplines so that they will appreciate the new insights into man's social life which are being provided by the social sciences, and an understanding of the scientific method as applied to the study of man's behavior. The social sciences which require special attention here would seem to be Anthropology, Sociology and Economics. It is much more likely that a student has had considerable study of Government in his high school course. If this is strengthened in the high school curriculum, it is the one social science which could be omitted with least danger of loss to the student in the college program. Furthermore, it is much more likely that questions pertaining to government will be discussed in history courses, than questions pertaining to the other social sciences. Finally, with some introduction to government in high school courses, it should be easier for the college student to select free electives from the course offerings in government than from those in Anthropology, Sociology or Economics.

In view of the limited possibilities of the curriculum, a minimum of a three credit course in the basic concepts of Anthropology and Sociology and a three credit course in the basic concepts of Economics appear to be essential. It would be ideal for these to be given in Freshman year so that the student may have this beckground before his study of scientific method. They should be courses, not introducing the student to specialized work in the social sciences, but rather communicating to the student the contributions of these disciplines to a deeper understanding of the nature of modern social and economic life, and of man's place in it.

The training in scientific method involves greater difficulties. As indicated above, this training should be integrated with the courses in logic and epistemology. Some experimenting should be done to develop an effective, integrated course of this nature and to introduce it in the general curriculum in the first two years. In the absence of such a course, the training in scientific method will have to be provided either by a course in physical science or social science. This could be a one semester course in sophomore year designed to give the student an understanding of scientific method by studying its application in contemporary research, or by applying it himself if this proves workable. The course need not be given the uninviting title of "Scientific Method." Rather it could be called something like "Significant development in modern science"; or in social science if that be the case. The objective should be the study of the development of significant concepts through empirical research. This would not simply be a history of some development in science but an attempt to help the student participate in scientific work by following some significant developments through, step by step, from the asking of the significant question, through the formulation of hypotheses, the working out of the research design, the accumulation of evidence, the processing and interpretation of the data. If properly done, in interesting material, this should enable the student to develop a genuine appreciation for the significance of scientific method. This will require imaginative and creative teaching. But is this not something we should expect in a rapidly changing age!

The present discussion is confined to the place of social science in the general curriculum. It could profitably be continued to discuss the integration of the program for majors in social science with the programs in the other disciplines in the college program. So much particularly of anthropology and sociology can be significantly related to history and literature; and is in turn raising so many important problems about religion and knowledge, the possibilities for integrated teaching and research would seem to be very promising. The revolution in scripture studies has really resulted from the influence of the social sciences on the understanding of the sacred writings. Developments in the study of the organization of the Church are beginning to be affected by new concepts of organization, structure and function which are current in the sociology of organization. However, for this creative achievement to take place, the ground work must first be laid in a basic awareness and understanding of the social sciences in the general curriculum.

# and the Jesuit Liberal Arts College 

William G. Guindon, S.J.

Because it is caught up in the swift-flowing stream of American education, the Jesuit college of liberal arts is tossed and swirled, as is its secular counterpart, by the churning crises affecting humane education in an age of rapidly expanding science. In common with other private and public institutions of learning, the Jesuit college asks itself: is our current plan of liberal study effective in producing a truly cultured graduate? does it prepare the non-scientist for the full life in a scientific age? is science making its own proper liberalizing contribution to the education of both the specialist and the non-scientist?

The relation of science to liberal education is an important one, more important to the twentieth century than to any age in the past. Every day brings an enormous increase in knowledge of the material universe, and in the harnessing of natural resources to the tasks of mankind. When everyday living and governmental expenditures, the feeding and defense of advanced and underdeveloped nations, and the physical conquest of worlds beyond this earth depend in increasing measure on the advances and development of science, the role of science in every man's education has become extremely important. However liberal education may be defined-whether in terms of the full, rounded development of man in all his higher faculties, or as the process of furnishing the individual with the ability to appreciate truth and to form critical judgments -the very fact that it must prepare man for life in the real world makes its relation to the study of science a fundamental one. Is there a contribution to liberal education that comes only from scientific study, and, if so, what is the contribution, and how best can its successful employment be ensured?

Although this is not the place to enter a long discussion either of Jesuit aims in education or of the nature of liberal or general education, particularly since the introductory essay in this Symposium has given a careful delineation of both, still a brief summary of these ideas, forming a proximate background against which to evaluate the contribution of science, may not be out of place.

Nearly all educational theories and plans of study have taken cogni-
zance of the milieu in which the educated person is to live and work. Thus, the traditions of liberal education, from the times of the ancient Greeks and Romans, emphasized that it is the education of free men, of the leaders of civilized society, who must lead their fellow men by the force of their ideas and the persuasion of their eloquence. Later theories, and practice too, have been formulated with the milieu in mind: the society of free men, democracy, or the Mystical Body of Christ, and so on; these formulations strive to achieve their aims by more immediate stages, focussing on the development and balance of all man's faculties, on the cultivation of expression, or on the breadth and acuteness of his rational faculties.
Christopher Dawson ${ }^{1}$ develops the thesis that only by making Christian culture the unifying element in liberal education can the Western world again achieve a truly liberal culture. Only by combining traditional liberal studies with Christian faith can an educated person be formed, aware of the past and understanding the present with a sufficiently unified point of view so as to be able to influence the future.
Dawson's ideal obviously includes the harmonious development of the human personality, in all its natural faculties, physical, moral and intellectual. The emphasis he places on contemporary culture as an ingredient of liberal education necessarily entails attention to the scientific features of present-day life. All of man's intellectual achievements must be gathered into the unity of the Christian outlook, embracing time and eternity, nature and the supernatural.

In a recent unpublished study of the foundations of Jesuit educational policy, the Ignatian use of creatures, in the strikingly simple yet allembracing terminology of the Spiritual Exercises, is shown to be operative in the beginnings of the Society's educational apostolate. ${ }^{2}$ The genetic relationship of the fourth part of the Constitutions and of the Ratio Studiorum, in its successive forms, to this fundamental principle explains the free innovations and the flexible spirit that characterizes these great documents.

In another monograph of recent date, ${ }^{3}$ a study is made of the aims that St. Ignatius sought through the teaching labors of his sons: a humane and polished eloquence, whose expression was to be perfected by rigorous self-exercise; a grasp of the fundamentals of philosophy and theology, unified in a solidly Christian outlook. In the phrase consecrated by

[^23]centuries, Jesuit education seeks the harmonious development of all the faculties, the well-rounded development of the whole man. Yet this timeless ideal was necessarily sought with contemporary instruments: the methods of Paris and the writings of ancient Greece and Rome were boldly employed as the best currently available means.
In his courageous innovation, taking the best from the university education of his time, St. Ignatius saw the value in the idea that Newman would later express in his description of the university: a place to fit men for the world, namely, for the contemporary milieu.

The post-Christian mentality that operates in the best secular centers of liberal education today is well outlined in a now-famous Harvard study. ${ }^{4}$ Infected by relativism in the philosophical pursuit of truth, and avoiding the theological dimension of man's quest for an explanation of life, it focusses on the development of the mind as the chief goal of a liberal education. Traits of mind betray the presence or absence of a liberal training; the chief traits, briefly, are 1) logical or effective thinking, 2) communication of thought by the expression and interchange of ideas, 3) judgment, or the ability to apply the whole range of human ideas in a relevant way to the facts of life's experience, and 4) discrimination among values, ranking intellectual, moral and esthetic values in their proper hierarchy.

In all these attempts at defining the goals of liberal education, certain common aspects will be useful for determining the relevance and contribution of science study to the formation of the liberally educated person. All definitions of liberal education somehow commend the balanced development of the person, embracing some degree of achievement in attaining a humane, cultured, social awareness of the main streams of human thought and emotion, of the history and problems of civilizations past and present. In all liberal systems much is made of the ability to think logically and independently, to arrive at whatever measure of truth is possible in a given situation, and under given conditions of knowing. But liberal education is not conceived as a privilege to be enjoyed in solitude, away from contact with the rest of human society, although the advantages of seclusion for the development of ideas and the evolution of a philosophy may be a temporary haven. Rather, the liberally educated man is to feel moved to the service of his fellow men and to recognize his debt to the society that gave him his initiation into the world of ideas and ideals. Finally, a well-developed critical faculty,

[^24]the ability to bring ideas and ideals into judgment about values, on the moral, intellectual and esthetic levels of life, is an aim of all liberal systems of education.

Christian education, of course, adds a fourth and supernatural dimension to the liberal concept: not merely does it retain as a proper object of study man's natural relationship to God, but it aims at the elevation of nature in the order of Redemption. It is not afraid of exploring that part of man's relation to God that can be revealed by the logic of unaided reason, and which, in fact, forms the true basis on which ultimately all values and judgments must rest. Neither, and, this is the specifically Christian contribution it makes, is it constrained to ignore the breathtaking development of the human person by and as the instrument of Grace, destined by the fruits of the Incarnation and Redemption to the eternal companionship of the Father.

## Science and Liberal Education

The function of science in liberal education can only be judged by its potential contribution to the aims of liberal education. If it can make a significant contribution, then it may have a place in such an education; if its contribution is important and irreplaceable, then no liberal education can fail to accord it a place. The same norm may be used to decide what scientific discipline or disciplines should be included in liberal education, and the time and importance to be allotted. The identical test must be applied to actual scientific instruction: it must be such as to aid, rather than hinder or defeat, the general purposes of a liberal education.

In order to appraise the potential contribution of the study of science to a liberal education, it will be helpful to list promising aspects of science and its methodology. Most noticeable is present-day science's striving to explain: the mere ascertaining of myriad facts many of them seemingly insignificant in themselves, is severely subordinated to the search for unifying ideas to make the facts intelligible. This process most often, but not always, involves the application of mathematical reasoning, to the facts, which themselves have been cast in numerical form, as the results of measurement. Most fundamental to the nature of scientific inquiry is the formulation of hypotheses, or the construction of mathematical models of reality, with the consequent comparison of quantitative comparison of predictions deduced mathematically from the models with the numerical results of factual observation. The continuous interplay of model and measurement is looked upon most often as the creative function of the scientific mind, although it was considered in a
more literal philosophy as a process of verification and proof of the hypotheses formed during the investigation. The present evaluation of the reality of scientific models as creations of the mind gives emphasis to the revisability of such models; under this aspect of scientific thought, the limits and tentative nature of scientific knowledge stand out as unique in man's experience. A final aspect of the study of science that is of interest in the context of liberal education, concerns not science itself, but its impact on the civilization of the present day: the effects of the industrial and scientific revolutions have reached into every corner of modern society, affecting standards of living, ease of communication and travel, the interrelations of government and the economy, the tools of warfare, and the knowledge of the physical and psychological world of which man is a part.

The potential contribution of the study of science toward a liberal education can be looked at from the point of view of its relation to other branches of knowledge which are usually found in such curricula. Science's precision of definition and careful delineation of experiment and results give it a certain affinity to language studies; the verbum proprium is as necessary in scientific description as it is in any other of man's attempts to communicate. Science, particularly the more mathematical branches such as physics, has many relations with mathematics. Each has depended on the other in its development, science looking to mathematics for techniques and theorems for drawing explanations of phenomena out of the mental constructs that are modelled on nature, and mathematics finding in science both a field of concrete application of theory and a stimulus to new discoveries that may solve the problems proposed by scientific investigations. The philosophical disciplines likewise have reciprocal relations to the natural sciences; the discoveries of science about the material world are part of the data which philosophy must bring into its more ultimate explanation of the world, and at the same time the logical analysis of the sources of knowledge and of the various methods of achieving it give to the scientist a deepened appreciation of the nature and method of science. The validity of deductive and inductive processes is another topic of common concern to both philosophy and science; the nature, scope and criteria of generalizations made from scientific data are subject to scrutiny in the light of the principles of logic. While the historian can give to the scientist a much-needed perspective derived from the record of the giants of science of the past and of their discoveries, perhaps a more significant insight that can be derived from history concerns the impact of scientific discovery upon contemporary civilization, and, inversely, of cultural aims and ideals upon the state of scientific development.

## The Non-Specialist in Science

It will facilitate the process of adjusting the permanent aims of Jesuit liberal education to the contemporary scientific age, if two different problems are first described. These are related to the science instruction of non-science majors in the society's colleges, and the overall program of the science major.
In the last few decades many different ways of incorporating science courses into the curricula of Jesuit liberal arts colleges have been explored. The simplest (from the restricted point of view of the science faculty) is to offer a single course, or a group of courses among which to choose, whereby every student must satisfy a "science requirement;" these courses are the usual introductory courses in the various branches, astronomy, biology, chemistry, geology, or physics, and most often are survey-type offerings making little or no use of mathematics beyond high school algebra. In some cases these courses have been altered by the reduction of their content and the elimination of mathematical discussions, with the aim of accommodating the background and interests of the students enrolled in them.

Many schools, recognizing that standard offerings may not be of service for students who will find in them their sole exposure to science, have arranged special courses. These are often general surveys, drawing on several areas of science. A more thorough-going adaptation has been made by those institutions that have provided courses which, by selection of topics and special emphasis on method, illustrate the methodology of science rather than catalog its results. Another plan selects for the student, on the basis of his high school work in science, that course from among the ordinary and special offerings which will best round out his experience.

These attempts at including science and scientific method in the education of the non-specialist in science reveal many difficulties, and prompt the certain conclusion that the ideal solution has not yet been found. The outlines of a further attempt may be derived from a consideration of the problems encountered in the experiments carried out so far.
Offering for the non-specialist a course already offered for another purpose, such as for the pre-medical student, where some general re strictions on the course-content are usually implied, tends to defeat the purpose of introducing the general student to the aims, methods and content of science. Unless his background in high school has already given him some familiarity with other branches of science, this one course, in addition to being a survey concentrated on one branch to the
exclusion of others, often overwhelms him with facts and rules to be memorized. The internal consistency of the discipline, its reduction to a small number of general principles, does not appear, nor is it possible to make it visible, due to lack of time and mathematical techniques. One severe problem in setting up a course, for all non-specialists is the disparity of their high school backgrounds; it has proven practically impossible, with the best of good-will and with experienced teachers, to avoid boredom in those students that have had better high shcool preparation in mathematics and science, and discouragement in those whose background is weaker. The dilemma can readily deflect the course into one on the history of the particular discipline; one then must question whether the original aims can be achieved by such a modified course, particularly since scientific explanation is so frequently quantitative. Another practical difficulty, that leads to frustration on the part of the professor, is the student's attitude toward the use of mathematical ideas (even the simplest, such as proportions, fractions, and the operations of ordinary algebra!), and the rigid fear or stubbornness that impedes his work; attempts to break down the barrier of arithmetic are resisted fiercely!

There are, of course, more fundamental obstacles to the achievement of really liberalizing knowledge of science in a one-year course, foremost of which is the very limitation to a one-year course. To give some idea of the breadth and power of scientific method and of its limitations demands more than a single year's work; even if attention is limited to a very few selected topics, chosen for their representation of characteristic theories and problems, this time limitation is a severe one. Even more essential is the attitude, training and method of the professor: he must combine a specialist's knowledge with both a humane understanding of the mental barriers to scientific thinking and a philosopher's appreciation of the method and validity of scientific thought, a combination all too rare on the college scene today.

This gloomy picture may suggest the counsel of despair: abandon the whole idea, make no attempt against such odds to give the non-specialist any acquaintance with scientific thinking. But this decision would have the disastrous effect of sealing off practically forever from the nonspecialist the whole world of science, permanently confirming for him the split described in Sir Charles P. Snow's recent work on the dichotomy of culture. ${ }^{5}$ Reflection on the aims of liberal education shows that such a solution to the admittedly difficult problem of how to introduce

[^25]the children of each culture to their opposite numbers, is simply inadmissible: no responsible educator would wish to cut off the majority of arts students from a whole field of speculative knowledge, and particularly from one so prominent in today's civilization.

To give the non-specialist no science at all is to leave to mere chance and personal preference the possibility of acquiring even a minimal comprehension of the laws governing the material world. It would leave the non-scientist permanently illiterate in a literature that has allowed mankind to dominate material creation, for weal or woe! Further, it would leave irreplaceable gaps in his liberal intellectual formation: he would never see the primary application of the mathematical and quantitative type of investigation that has in recent years had application also in the field of social science, nor would the constructural nature of physical science have illustrated for him the nature and methodology of scientific investigation. In a word, he would be ignorant of the methods, aims and laws of one of man's most active intellectual endeavors.

## The Liberal Arts Science Major

As far as education in science goes, the main difficulty with presentday Jesuit curricula for the non-specialist is that he is underfed: he has been proffered a meagre diet, unsalted with mathematics, so that he can neither appreciate its distinctive savor, nor draw from it the strength with which to meet the scientific challenges of the present world. The student majoring in science in a Jesuit liberal arts college is hindered by a much different obstacle: the curriculum as a whole is overcrowded. There are so many heavy requirements to be met simultaneously that he must spend too much time in class, and divide his attention into too many different areas at the same time. While in general his major field provides a solid grounding in basic principles or could do so with simple changes, the number of subjects competing for his attention necessarily devalues the worth of every course he takes.
For the sake of illustration, provincial or even parochial though it be, a Physics major at Boston College takes about 144 semester-hours of credit in his four years, averaging, when laboratory and recitation hours are included, at least 20 contact hours per week each term. Under the present program these semester-hours are divided about as follows: 43 ( $30 \%$ ) Theology and Philosophy (including the History of Philosophy), 33 ( $23 \%$ ), English, Modern Language, History and Art or Music, 36 ( $25 \%$ ), Physics (including the introductory course), 26 ( $18 \%$ ), Chemistry and Mathematics, and $6(4 \%)$ Elective. Technically the elective is
a free one, but most students choose to add another physics course, which allows them to put $29 \%$ of their work into their major field; entrance into a good graduate school with any less would be hazardous.

While the above description fits the present program in one science in a single institution, I believe that its general form is typical of programs in other sciences, and in other colleges. Some fields less dependent on mathematics, may allow or encourage greater choice of free electives or auxiliary science courses. But, in general, they provide solid programs which give a mastery of fundamental principles and prepare for further scientific work.

All these science major programs live in a liberal arts atmosphere, in which the great ideas of literature, history, philosophy and theology operate to produce both the broadened view-point and the mature critical judgment of values that are the hoped-for product of liberal education. A closer approach to this noble ideal, and at the same time a more intense mastery of the basic ideas in the field of specialization, could be achieved were the curriculum and the school-day less crowded by multiplied requirements.

It is true that at many Jesuit institutions special programs mitigate somewhat the rigor of heavy required course-loads. Accelerated philosophy programs, optional lecture attendance, advanced standing in areas treated thoroughly in high school, and other special arrangements are usually available, most often in connection with Honors programs. In some schools electives or required courses may be taken in summer sessions, lightening or supplementing the ordinary scheme.

But all these special arrangements seem to be exceptions to the basic program. The fundamental difficulty is that too many subjects and too many hours of class are required in the liberal arts curricula. This difficulty, of course, is felt in all areas of specialization, but appears more acute in those areas of science depending heavily on mathematical prerequisites. While the defects that follow from this overloading impede the student's progress in his special field as well as in all the general areas he studies, the chief result is to lessen the effectiveness of the whole program as a liberalizing, cultural process.

## Proposed Curricular Changes

Two quite different problems of present-day Jesuit liberal education have now been exposed: the non-specialist is not adequately introduced to science, a vital area of human intellectual achievement, and the scientist, as well as the specialist in other areas, is oppressed by an overload
of courses and class-hours. The following proposals for curricular revision attempt to remedy both, in an integrated fashion; a new grouping of required and elective courses includes broader requirements in science and mathematics, while reducing the total number of courses in any given semester.

The non-scientist, if he is to receive a training in science commensurate with his desire for a liberal education in a world dominated by scientific advances, must have his way cleared of two obstacles: the limitation of his science study to a single year, and the weakness of his mathematical background. It is proposed to effect this by requiring that, in the first two years of college, a science course and one in mathematics be taken in each semester. The sequence and subject matter of both sets of course would be adjustable to the student's background and, if possible, his major interst.
The mathematical sequence would consist of four one-semester courses: Analysis, Calculus, Statistics, and Foundations (sets, groups, etc.). The sequence would assume that the high school had supplied two years of algebra and the elements of trigonometry; it would be a flexible sequence, in such wise that a better prepared student could begin at a later point in the series, and, to make up the minimum total of four semesters, choose from a list of mathematics electives: Differential Equations, Advanced Calculus, Numerical Analysis, Computer Programming. If the student's preparation is deficient, he could supply the deficiency in algebra and trigonometry in his first semester, or, preferably, in the summer before freshman year, and then later the sequence.

The sequence in science would have a similar structure: four semesters, one in Chemistry, two in Physics, and one in the Structure of Physics (analysis of development of several fundamental theories). This series of courses would assume that a good course in Biology had been taken in high school; were this not the case, but Chemistry had been done well, Biology could be substituted for the first semester. If the high school preparation of the student is judged adequate for advanced standing in the science sequence, the requirement of a four-semester total could be supplied from science electives: Biochemistry or Biophysics, Experimental Psychology, Mechanics, Atomic Structure. All of these courses, as well as those in mathematics, would be specially designed to be meaningful for the non-specialist, integrated with previous courses in the two sequences, and pointed toward general principles and the nature of scientific knowledge, rather than isolated facts and rules. The basic freshman courses (Chemistry and Physics) would include laboratory experience.

Stress should be laid on the flexibility of this proposed dual sequence, as regards the accommodation of improved science and mathematics offerings in the high school. Many influential voices in public life and in educational circles have been clamoring for these improvements, and huge sums of money are being spent on their realization. A supply of students has already begun to trickle in with preparation surpassing our former science requirement courses. If Jesuit colleges were to adopt the flexible program herein recommended, adjustment to the waves of students entering soon with improved preparation will be automatic.

Obviously, such an enlarged plan of science and mathematics requirements for all liberal arts candidates will have a strong impact on the rest of the curriculum; it cannot be simply added on, or even inserted as a mere replacement of another portion of the present crowded curriculum. How it is to fit in will become apparent as the proposed overall curriculum is unfolded.

The most urgent need of the science major in the current Jesuit liberal arts college is for more time, more time for reading and independent work. He needs a more humane number of required class-hours, and a reduced number of subjects to be pursued simultaneously. This need is felt not merely by the scientist, but by the student majoring in any area of liberal study, and the pressure of present schedules impedes not only his development in his chosen field, but also his appreciation of the other disciplines whereby the cultivated mind is formed.

The new curriculum sketched in outline below proposes a twentieth century updating of the ideals of the ancient Ratio: it will still be a characteristically Jesuit offering, both in its emphasis on theology as the ultimate source of truth and in its courageous use of creatures in a new setting. In its modernity, it will recall the appositeness of the first Ratio, which applied the first (Parisian) methods of the day to current (classical) material, for an abiding supernatural end.

The Jesuit college of twentieth-century America must provide its liberal arts graduates with the mastery of fundamental principles in four critical areas, in addition to the area of their specialization. These cardinal areas are: understanding of Christian Theology, backed up by philosophy; literature and style in English; familiarity with the nature and findings of Science, often expressed in mathematical language; and awareness of the great advances in the Social Sciences. Graduates im-

[^26]bued with fundamental knowledge in these four disciplines, knowledge capable of issuing in critical value-judgments in these areas, will be truly liberally educated for the modern world.

A curriculum which seems apt for achieving the Society's aims in the present century might fit into a scheme of five courses per semester, each of three hours credit. Exceptions to the three-credit limitation would be science courses with laboratory, of which not more than one meeting per week would be generally required. While suggestions are given for the breakdown of the various disciplines into specific courses, these should be understood as suggestions, the ultimate choice being the result of discussion among persons of first-hand experience in the given field.

Theology should no longer be taught in its customary two-credit divisions, but by means of one three-credit course per year; the semesters might divide into Old Testament, New Testament and the Church, Dogma and the Sacraments, and Moral and Ascetical Theology. In the semesters in which Theology is not taught, three credits in Philosophy would take its place; these courses might be Logic, Philosophy of Science, Rational Psychology, and Natural Theology.
Strictly linguistic subjects would be limited to English, the vernatular, in a four-semester sequence in freshman and sophomore years. The accent would be equally on composition and critical appreciation; habits of effective writing should be reinforced by later requirements in connection with courses in the student's major field. A year of History, orienting the present age in its continuity with the past, should be given in junior year; a semester each of the History of Philosophy and of the History of Science would be given in senior year.

The Mathematics and Science sequences, outlined above, would be a requirement of the freshman and sophomore years.

An innovation, as far as many Jesuit colleges are concerned, is the requirement, also for freshman and sophomore years, of a four-semester sequence in social studies; this is necessary to enable the graduate to understand and properly evaluate the complexities inherent in presentday society. These studies might be divided into single semesters in Sociology, Government, Economics and Social Psychology.

Two courses in each semester of both junior and senior year would be free for study in the field of specialization. It is assumed that the necessary introductory courses have been provided in the general requirements of the first two years of college; for special areas in which this is not the case (for example, modern or classical languages) special ar-
rangements, possibly interchanging sophomore English with a junior elective course, might be satisfactory. Other adjustments might be made by use of summer session courses.

Finally, one course in each semester of the last two years is held open for electives, these should be chosen "widely and wisely," not in the major field as a general rule.

Grouping these courses in a fashion similar to that shown above for present day curricula, the percentages of credits allocated to the several areas becomes apparent. The division of credits is: 27 ( $21 \%$ ) Theology and Philosophy (including the History of Philosophy), 21 ( $17 \%$ ) English and History (including the History of Science), $26(21 \%)$ in Mathematics and Science (required), $12(9.5 \%$ ) in Social Studies, 28 ( $22 \%$ ) in the major field, and 12 ( $9: 5 \%$ ) in Free Electives. The total of 126 semester-hours of credit, a reduction of about on-eighth over older curricula, includes allowance for six laboratory credits; for students not majoring in science the total of credits would be slightly less (I22), and the precentages correspondingly a little different.

Because of the reduced number of courses and class-hours, more outside readings can be assigned; it would be well to supplement these by assignments over the summer, using lists drawn up for the purpose. A possible scheme would suggest readings in English literature and criticism after Freshman, in History after Sophomore, and in Philosophy (current problems) and Theology (ascetics), after Junior year. These general readings might be accompanied by others designed as background for the student's field of specialization.

## Table I. Outline of Proposed Program

| Year | PRECEDING SUMMER | FIRST SEMESTER | SECOND SEMESTER |
| :---: | :---: | :---: | :---: |
| I | (Deficiencies) | Theology (Philosophy) | Philosophy (Theology) |
|  |  | English | English |
|  |  | Mathematics | Mathematics |
|  |  | Science | Science |
|  |  | Social Studies | Social Studies |
| II | Readings in English (literature and criticism) | Theology (Philosophy) | Philosophy (Theology) |
|  |  | English | English |
|  |  | Mathematics | Mathematics |
|  |  | Science | Science |
|  |  | Social Studies | Social Studies |


| III | Readings in History (world, cultural) | Theology (Philosophy) | Philosophy (Theology) |
| :---: | :---: | :---: | :---: |
|  |  | History | History |
|  |  | Major | Major |
|  |  | Major | Major |
|  |  | Free Elective | Free Elective |
| IV | Readings in Philosophy and | Theology (Philosophy) | Philosophy (Theology) |
|  |  | Hist. Philosophy (Sci.) | Hist. Science (Philosophy) |
|  |  | Major | Major |
|  | Theology (ascetics, current problems) | Major | Major |
|  |  | Free Elective | Free Elective |

This program, which is shown in outline in Table I, covers the essential areas which contribute directly to the formation of a cultivated intellect and judgment. Since, except for students who would major in a modern language, languages other than the vernacular have, in the past, been required chiefly as tools for later specialized study and not as literature, these have not been made a general requirement. If the preparation of a student is such that literary appreciation and good expression are possible for him in a modern language, then these desirable goals may be achieved in the free electives; reading ability, necessary for some graduate programs, can be achieved in summer courses, or, later, in the graduate school, if necessary. Ideally, and the high schools appear to be moving toward this goal, the liberal arts candidate will come to college with reading ability in at least one modern language; the required yearly and summer reading lists should be drawn up in such a way as to encourage continued proficiency in language skills.

The institution of this plan of study depends critically on the high school preparation of the student; this is particularly evident in the field of language preparation, both in English and in other languages, and also in the areas of mathematics and science. Hence a program such as this must be advertized early to prospective candidates, and their schools, to allow for proper course selection there; some deficiencies can be made up in summer sessions (for example, before freshman year), and others can be taken care of, at least in the areas of science and mathematics, by the flexibility of the required two-year sequences. The enormous sums being spent on the improvement of high school instruction by the federal government ${ }^{7}$ and by private foundations, seem to ensure that in all these areas preparation that would have been considered utopian a few years ago, will rapidly become commonplace, and great numbers of

[^27]students will be ready for advanced programs. Meanwhile, for the shortrun, until these high school reforms are accomplished, transitional adjustment of the proposed curriculum could be made, using the flexibility of its freshman-sophomore sequences. The period of transition may well be shortened if the liberal arts colleges themselves announce their support of high school improvements, and their plans for giving the better prepared high school graduate a revised program adopted both to the times and to his increased capability for learning.
The flow of liberal education's theory and practice is swollen today by three strong tides: a renewed evaluation of the importance of individual activity and initiative in learning, the enormous scientific and social advances of the twentieth century, and the rapidly increasing numbers of youths eager for a liberal education. Three great conflicts must be faced by these waves of new graduates: the strength of free men against totalitarianism, the harrowing contradictions of a world in which men go hungry while others bury their surplus food products, and the missionary toils of the Church seeking to bring Christ to mankind. These tides and struggles challenge the Society of Jesus to renew the vigor and timeliness of the educational apostolate.
No less than in the days of her founding, when our early predecessors boldly improvised, borrowed, rearranged and innovated a most successful scheme of liberal education, today's problems call for clear-headed, realistic evaluations of all means that may help us to provide the right solution. The crisis demands our adjustment of curricula and techniques of teaching to the better-prepared and more sophisticated youth that enters our colleges, so much different from the early adolescents for whom the original Ratio was designed. It demands our employment of modern weapons, natural and social science, as instruments of intellectual formation as well as information, and their employment with the enthusiasm given in earlier times to the teaching of classical literature. We must not seek change merely for the sake of change, but neither may we hold to ancient ways merely because they are ancient. If we attack this problem boldly, whole-heartedly, as Ignatius would have done, the Society of Jesus may again deserve the acclaim of leadership among the world's educators.

# Conclusion 

Paul A. FitzGerald, S.J.

A symposium is defined as a conference at which a particular subject is discussed and opinions gathered; it is also described as a collection of opinions gathered for publication in a periodical. This is precisely what has been attempted here. Several opinions on a common theme have been submitted by knowledgeable people for the further discussion of a wider audience. The common subject is Jesuit education; the opinions elaborate three facets of that education. The preceding papers, then, offer something old and something new.
In the comprehensive and learned Introduction to this Symposium, it was wisely noted that if a new Ratio were written at this point in the history of Western education, "it (would) probably not describe courses, but areas of study, not specific books, but model syllabi." It is to be hoped that in these three papers together with the Introduction, a start has been made to chart a new approach to traditional areas of study and to delineate the curriculum within those areas. The authors have made a serious attempt to adjust the traditional curriculum of the Jesuit college to the spectacular development of the natural sciences and the growing importance of the social sciences while preserving at the same time the liberal training and formation characteristic of the Jesuit college.

The papers were not intended to be exhaustive or definitive. They were intended, rather, to indicate new possibilities, new approaches, new arrangements; they suggest a revision of emphasis, and a distribution of courses that would be more consonant with educational requirements in the space age. The objectives are the same; only the means have been revamped to meet a new challenge in a new world.

Since these papers involve the objectives of Jesuit education and the means to attain them, the Symposium, for fullest understanding, should be taken in conjunction with recent writings on the same subject. One thinks immediately of "The Objectives of the American Jesuit University," which appeared last year in the Jesuit Educational Quarterly. ${ }^{1}$ This article encouraged further discussions on the same theme at specially organized seminars at Woodstock College, St. Mary's, and Alma. The same point came to the attention, at least obliquely, of the PhilosophyTheology Workshop held at Loyola University, Los Angeles in August

[^28]1962. At that very important gathering, the participants discussed certain aspects of this problem, with some concentration upon Theology and Philosophy as academic disciplines and their place in the curriculum. ${ }^{2}$ In addition, there is a special sub-committee within the Jesuit Educational Association which has been charged with the task of refining quite precisely the goals of Jesuit education. A preliminary positional paper is currently under construction by this committee.
All of this goes to prove that much thought and planning has been directed and is being directed to this important subject; and much more will be written before the last word has been said. However, nothing but good can come from this type of domestic examination. For if and when a new blueprint is drawn for Jesuit education, the architects will be forced to lean heavily upon these and similar writings which will necessarily form the basis of a new order. For this reason, it is hoped that the papers that appear in this Symposium will be discussed, debated and criticized by those who are interested in the future course of Jesuit higher education in the United States. It would be helpful, for example, if the Conference of Presidents, at its annual meeting, would find the time to comment on the curriculum proposed by these papers. The Symposium might also form the basis of further discussion at the regional meetings of Jesuit Deans. Chairmen of departments might with profit put on their agenda topics from this Symposium which would be germane to a given discipline. We cannot afford to neglect any opportunity to advance the argument.
The world of science, technology and industry is inexorably moving ahead with increased acceleration. The academic world must run faster to remain in the race; Jesuit educators must not lag behind the leaders. The search for truth will continue and the pursuit of excellency must be unremitting. There is also an urgency for quality, for only in quality can we really compete. The participants in the Symposium feel that a somewhat new approach is necessary at this time to reach the goal and to achieve success. They will be happily rewarded if their thoughful remarks contribute in some measure to that end.
Finally, it remains to be noted that the authors of these papers, with the exception of one general meeting at the Central Office of the JEA, wrote with a minimum of collaboration and consultation. After the general division into three areas was agreed upon, and the Introduction had been made available to all participants, the authors were quite free to exercise initiative and freedom in developing the academic areas as-

[^29]signed to them. For this reason, perhaps, there is some overlapping in the treatment of certain subjects and minor disagreements on other points. While these possibilities were anticipated, it was generally felt that the papers would lack spontaneity and originality if a rigid outline were imposed upon each. The results seem to have justified the decision to allow a measure of discretion.

Papers of this caliber require time and effort. As a last word, therefore, the editors of the Quarterly would like to record their appreciation to the four authors for the work involved and for the excellent papers that have been made available to discerning readers.

## Twins Aim High-Moon Duty as Jesuits

Omaha-The application to serve with the Jesuits caught the eye of the Superior General in Rome. The volunteers were in-year-old twins seeking moon duty in 1982.
Father John B. Janssens wrote to Steve and Tom Murnan, servers at St. John's church, Omaha, advising them that "it takes years of training to be a spiritual astronaut."

The letter also advised the boys to "study diligently, stay healthy, and be faithful in serving Mass and going to Confession and Communion to prepare yourselves to be Jesuits on the moon or some place on earth, if that is where God would prefer you to labor for Him."

## Revised Statement on Recruitment of Lay Faculty

Over and above the normal good practice prevailing in the employment and retention of faculty and administrative personnel in higher education, Jesuit institutions have mutually agreed on the following statement:
r. The members of the Jesuit Educational Association honor the right of the lay faculty and administrative personnel in their institutions to improve themselves personally and professionally as opportunity arises. They recognize, too, the right of each institution among them to strengthen its position in the educational world by the process of recruitment. The totality of Jesuit educational impact, however, is not strengthened by excessive recruitment among the Jesuit institutions. Normally, therefore, an effort should be made to recruit from sources other than our own institutions. Such a policy in no way impinges upon the right of individual staff members to seek employment changes among the institutions of the Jesuit Educational Association.
2. If one Jesuit institution initiates interest in securing the services of a full-time or part-time person employed at another Jesuit institution, the President (or his delegate) of the interested institution should as a courtesy contact the person's President prior to any contact with the prospective employee. The contact with the President should inform him of the institution's interest. It should seek permission to approach the individual if his present contract endures beyond the time when his services would be desired.
3. If lay personnel in a Jesuit institution should directly make the initial approach to another Jesuit institution, the institution approached may negotiate with such a person, if his contract expires prior to the time when his employment is desired. If his contract extends beyond that time, then the institution or the person must in writing seek permission to negotiate.

In the January 1947 issue of the Jesuit Educational Quarterly, Vol. IX, No. 3, p. 144, the code on the Recruitment of Lay Faculty was published. This code had been drawn up by the Executive Committee of the JEA and, on the instructions of the Board of Governors of the JEA (the Fathers Provincial) was submitted to the Superiors of all the Jesuit institutions in the United States at that time. It was only after all Superiors
had agreed to it that the Fathers Provincial approved the code and made it policy for Jesuit institutions of the American Assistancy. (Cf. Response 1946, III, B, pp. 8-9.)

At its January 1962 meeting, the JEA Conference of Presidents of Jesuit colleges and universities approved for submission to the Board of Governors the revision of the code and expressed the thought that secondary schools might wish to adopt the same procedure. The revised code was sent to the Rectors of all Jesuit high schools in the United States and from the replies received it was seen that the high school rectors also approved of this revision.

In their May 1962 meeting, the Board of Governors of the JEA stated that in view of the fact that the Presidents of Jesuit colleges and universities have recommended a revision of the statement on Recruitment of Lay Faculty and that the Rectors of Jesuit high schools have agreed to this revision, the Board of Governors approved the revised version and directs that the revised version should be published in the pages of the Jesuit Educational Quarterly. (Response 1962, IV, P, p. 4)

Giuseppe Cardinal Pizzardo, Prefect of the Sacred Congregation of Seminaries and Universities, has defended the "perennial vitality" of the Latin language.

The Cardinal, writing to a meeting of educators in Milan, praised Latin for its "highly educative power."
"The Church has always judged the teaching of this tongue as an essential element for refining the mind and spirit of man and for enabling him to understand and approach the highest levels of culture," the Cardinal said.

## News from the Field

A Loyola University of Chicago law school professor, Frank C. Sullivan, will soon embark on a world-wide study of legal systems under a $\$ 300,000$ Ford Foundation grant. Trial procedures in twenty-four nations will be studied first-hand by American legal scholars from five universities cooperating with Loyola.
Termed the Loyola University Comparative Study of the Administration of Justice, the project is designed to aid American law schools produce improved courses in civil and criminal procedure and evidence. American attorneys will receive valuable information needed in handling the foreign activities of their clients.
The 34-year-old professor will leave on a short trip in April to Venice, where he will summarize the Loyola study for members of the Italian Association for the Study of Procedure.
In June, Professor Sullivan will return to Europe for the summer to coordinate the work of the other scholars from Duke, Oregon, Miami, Louisiana and Syracuse universities.

The Loyola University Study of the Administration of Justice is the brainchild of Professor Sullivan who, in 1959, was awarded a $\$ 25,000$ Ford Foundation grant for a preliminary study. Under this project Sullivan studied criminal and civil trial procedures in England, Austria, Turkey, Japan and Brazil. He spent six months traveling 46,000 miles to make the survey.
Professor Sullivan will devote his full time to the Administration of the project during the summer and $1962-63$ academic year.

The National Science Foundation has given a grant to the University of Detroit of $\$ 68,000$ for the development of a new engineering graphics curriculum. The project, under the direction of the University of Detroit, will also include representatives of the University of California at Berkeley, the U. S. Military Academy, Princeton University, the University of Minnesota, University of Maine and Syracuse University. The purpose of the project is to revise, strengthen, and broaden the role of graphics in the scientific engineering curriculum.

The Fondo Histórico y Bibliográfico José Toribio Medina, a statesupported foundation in Santiago, Chile, has just published, with the help of the American Council of Learned Societies, the first index ever
available to North and South American Spanish-language periodicals. Covering fifty magazines over the period 1843-1935, Revistas Hispanoamericanas, Indice Bibliografico was begun in 1938 by Sturgis E. Leavitt of the University of North Carolina and completed, twenty-two years later, with the aid of two collaborators, both American scholars.

## HIGH SCHOOLS

With the opening in September, 1962, of Xavier High, Concord, Massachusetts and Brebeuf Preparatory, Indianapolis, Indiana, the number of Jesuit American high schools now reaches the total of fifty schools. This total of fifty schools includes Colegio San Jose in Arequipa, Peru, and Colegio San Mateo in Osorno, Chile. These schools are considered by their respective Father Provincials as American high schools rather than as Mission high schools.

The California province has announced a new high school in Sacramento, California. The first phase of construction will start this coming summer and the school will enroll freshmen only in September of 1963. Classes will be added gradually and the new school will have an estimated four-year enrollment of some 1,500 boys. Present cost is estimated at $\$ 2,500,000$. The name of the school has not yet been selected.

## BUILDINGS

The University of Santa Clara is getting a new library. The new $\$ 1,500,000$ library will be named after Michael Orradre, regent of the University, who contributed $\$ 250,000$ to the library fund. The new building will contain 69,000 square feet and will have space for 350,000 volumes. This is nearly three times the capacity of the present library. Despite the tripling of space, the new building is constructed in such a way as to permit easy addition of more floor space in the event of future overcrowding. One area of the new library will be devoted to Italian culture and history in recognition of the service to the university by the Italian Committee of Santa Clara Valley. It is hoped that the building will be completed by the fall of 1963 .

The University of Santa Clara announced the beginning of their new student building, The Benson Memorial Center. The two-story building, announced for completion within a year, will include student and faculty dining rooms, snack bar, bowling alleys, lounges, day student lockers and showers, and offices.

Canisius College has broken ground for two new buildings on their Buffalo campus-a dormitory to house 298 students and a student union. The L-shaped, six-story-plus-basement dormitory will be on the southeast corner of the campus and the Student Union will be between the new dormitory and the science building. The dormitory will be completed for $\$ \mathrm{r}, 770,000$ and the Student Union for $\$ 1,760,000$. Most of the funds for the construction of these two buildings will come from a governmental loan.

Gonzaga University is replacing their chemistry building with a new $\$ 700,000$ facility. The building will include five class rooms, some twenty laboratories, faculty offices, student lounge, chemistry library and a 300seat auditorium. It is interesting to note that over $\$ 500,000$ of the $\$ 700,000$ cost of the building was collected by gifts from alumni, parents of students, members of the board of regents, and contributions from regional and local firms. The new building will be called Hughes Hall after Mr. and Mrs. Edward H. Hughes of Spokane, who contributed almost onethird of the total cost of the building.

St. Louis University has started to build on the new 22-acre extension of its main campus in the Mill Creek Valley Redevelopment Project. The three-level building will house the University's department of physics. It will be the first building in a future project of a complex to be devoted to physics, chemistry and engineering. It is so designed that two more levels can be added as student population increases.

The building will include laboratories for nuclear research, connected with an underground area housing a cyclotron, shops, and electron and x-ray microscopes.

Fairfield University has chosen the name of Campion Hall for the new dormitory to be ready for student occupancy in September, 1962.

Spring was the time for the campus of Loyola University of New Orleans to start breaking out in new buildings. In early April, ground was broken for the central utilities building. The building will provide central heating and air-conditioning for all the buildings on the campus. In May, ground was broken for a two-story dormitory for 400 male students. The entire building will have year-round air-conditioning. Besides residential facilities, it will also include a main cafeteria accommodating 850 people, a coffee shop seating 150 people, and faculty and private dining rooms. The cost of the building is estimated at $\$ 1,527,000$.

Creighton University will join funds from Mrs. George Brandeis, who donated "a substantial gift," and student contributions to add 80,000 square feet to their present student center. The $\$ 300,000$ building will be ready for use by the fall of 1963 .

Loyola University (Chicago) was notified that approximately 60 acres of property on the site of Hines Veterans Administration Hospital in Maywood, Illinois, have been made available for the construction of a new University Medical Center.

According to the Department of Health, Education and Welfare and the General Services Administration who jointly announced the transfer in Washington today, approximately 13 acres of surplus property will be made available to Loyola immediately for the construction of a first phase of a $\$ 16$ million Medical Center. This will consist of a basic science building and an adjoining 300-bed University Hospital.

The use of approximately 47 acres will be retained by the Veterans Administration for a period of up to five years. The latter provision has been made because of certain facilities now present on the 47 -acre parcel.

At the same time, the Illinois Department of Mental Health acquired an adjoining tract of approximately 30 acres on the same site to construct a mental health hospital-clinic.

Both transfers of property were made under the procedures of the Surplus Property Act of 1944 .
Loyola University's Stritch School of Medicine, now located at 706 South Wolcott Avenue, will relocate its pathology, medicine and surgery departments in buildings now available on the 13 -acre site.

Following completion of architect's plans for the first phase of the Medical Center and the completion of a capital funds solicitation from corporations, foundations and individuals, ground will be broken and construction will begin, according to University officials.
A study is being made regarding the disposition of a 54 -acre parcel of land the University purchased in 1954 for the construction of a Medical Center on the northwestern sector of the city on Carpenter Road between Devon and Touhy Avenues near the Skokie, Illinois, border.

The President's Committee on Juvenile Delinquency and Youth Crime has awarded St. Louis University a grant of $\$ 84,975$ for a research and training program aimed at combatting juvenile delinquency.

The program will be conducted by the University's School of Social Service, and will be directed by the Rev. Bernard J. Coughlin, S.J., instructor in social work.

One phase of the program will consist of in-service training at St. Louis University for correctional personnel involved with juvenile delinquency, such as probation and parole officers, juvenile court workers, teachers and social workers. The training will take a multi-disciplined approach, involving such fields as sociology, psychology and social work, and will focus on psycho-dynamic, socio-cultural and community factors that bear on the cause of delinquency.

A second phase will be devoted to research and will seek to determine the influence of educational and group therapy work with parents and responsible relatives on the behavior of delinquents. The school will select, at random, two groups of six couples each who have court-supervised juveniles. One group will be given the educational courses and group therapy, the other will not. Tests will be made at the end of six months and a year to determine the effectiveness of the program.

Gonzaga Prep, Spokane, took first place in the debate tournament of the National Forensic League, held in Missoula, Montana, in June. This was the first time any Catholic high school had taken first place in the $40-$ year history of the tournament.

In the debate tournament of the National Catholic Forensic League held at Miami Beach on June i and 2, Jesuit high schools comprised three of the four debate teams in the final rounds: First place winner was Regis high school of New York; Xavier of New York, defeated only by Regis was second; and the University of Detroit high school was fourth. About seventy teams were entered in debate.

A $\$ 150,000$ gift to the Marquette University School of Medicine from the Josiah Macy, Jr., Foundation was announced by Marquette's President, Father William F. Kelley, S.J.

The unrestricted grant is the first large contribution from a national, private foundation in Marquette's current fund-raising effort. It will be used in support of faculty salaries, particularly in the basic medical sciences.

Marquette is seeking $\$ 30$ million in the next io years for buildings, endowment, faculty improvements and student aids. In addition, the "Marquette Program" calls for $\$ 15$ million in research grants.

The Macy Foundation was established to promote human welfare through medical education and research. Marquette's Medical school graduates about 100 physicians each year. Degrees in medical technology and physical therapy are also awarded by the university.

## PRELIMINARY VOLUMES

## Workshop in Philosophy and Theology

Los Angeles, 1962

Volume III: Patterns in the Teaching of Philosophy and Theology in American Jesuit Colleges and Universities, 1960-61, at \$4.50 per copy (postpaid).

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> 22I North Grand, Saint Louis 3, Missouri
N.B. The published Proceedings are not yet available.


[^0]:    ${ }^{1}$ A useful print of the 1599 Ratio is found in T. Corcoran, S.J., Renatae Litterae, saeculo a Chr. XVI in Scholis Societatis Jesu Stabilitae (Dublin: University College, 1927). Allan P. Farrell, S.J., The Jesuit Code of Liberal Education: Development and Scope of the Ratio Studiorum (Milwaukee: The Bruce Publishing Company, 1938), pp. 342-345, outlines the curriculum, as does George E. Ganss, S.J., Saint Ignatius' Idea of a Jesuit University (Milwaukee: Marquette University Press, 1954), pp. 45-51.
    ${ }^{2}$ A translation of the Fourth Part of the Constitutions is found in Ganss, op. cit., pp. 281-335: Special reference is made to IV, 5 (pp. 296-298), and IV, 12-14 (pp. 321-327). St. Ignatius prudence in the transition from Peter Lombard is noted in Ganss, pp. 158-9.

[^1]:    ${ }^{3}$ Instructio pro Assistentia Americae de Ordinandis Universitatibus, Collegiis, ac Scholis Altts et de Praeparandis Eorumdem Magistris, and Constitution of the Jesuit Educational Association (New York: Jesuit Educational Association, 1948, "Instructio," II, 7 and 8, pp. 13-14.

[^2]:    ${ }^{4}$ C. P. Snow, The Two Cultures and the Scientific Revolution (New York: Cambridge University Press, 1961). Cf. Harold G. Cassidy, The Sciences and the Arts: a New Alliance (New York: Harper \& Brothers Publishers, 1962).

[^3]:    ${ }^{5}$ General Education in a Free Society: Report of the Harvard Committee (Cambridge: Harvard University Press, 1945), p. 53.
    ${ }^{6}$ Ibid., p. 209.
    7 Ibid.
    ${ }^{8}$ Ibid., p. 143.
    ${ }^{9}$ Ibid., p. 25.

[^4]:    ${ }^{10}$ John Henry Cardinal Newman, The Idea of a University: Defined and Illustrated, ed. Charles Frederick Harrold (New York: Longmans, Green and Co., 1947), IX, 7, p. 203.
    ${ }^{11}$ Ibid., VI, I, p. III.
    ${ }^{12} \mathrm{Ibid}$.
    ${ }^{13}$ Cf. "The Tamworth Reading Room" essays in Discussions and Arguments on Various Subjects (New York: Longmans, Green and Co., 1907), p. 254-305; or in the Harrold edition (1948), Essays and Sketches, II, 173-214.

[^5]:    ${ }^{14}$ Newman, Idea, V, 9, Harrold edition, p. 107. Tendencies of the scientific and literary mind are mentioned, see ibid., IX, 4, p. 199; and VIII, 8, p 179.
    ${ }^{15}$ Newman, Idea, VIII, 8, Harrold edition, p. 179. I believe that the Fourth Part of the Constitutions (IV, 16, 1 ; Ganss, op. cit., p. 329) goes along with this analysis when it says that we should teach along with letters habits worthy of Christians, Letters are the prime, specific object though character is surely more important. Cf. 1599 Ratio, "Rules for Extern Students," I, Corcoran, op. cit., p. 344; Instructio, II, 7, 1, p. 13.

[^6]:    ${ }^{16}$ Newman, op. cit., Idea, II, 7, pp. 32-33, and III, 7, 55-56.
    17 Jaime Castiello's studies on the transfer of training are partially treated in his Humane Psychology of Education (New York: Sheed and Ward, 1936). See the goal mentioned in the Instructio (II, 7, 20, P. 13), "ut totus homo cum omnibus facultatibus rite formetur et evolvatur." A useful study of the transfer of training is had in Walter B. Kolesnik, Mental Discipline in Modern Education (Madison: University of Wisconsin Press, 1958).
    ${ }^{18}$ Farrell, op. cit., pp. 370-374.
    ${ }^{19}$ Epitome, VII, 2, 618.

[^7]:    ${ }^{20}$ See the discussion of courses in Western culture in Christopher Dawson in The Crisis of Western Education (New York: Sheed and Ward, 1961).
    ${ }^{21}$ Newman, Idea, VII, 7, 8, 9, Harrold edition, pp. 148-156.
    ${ }^{22}$ Paul A. FitzGerald, S.J., "Research versus Teaching," Jesuit Educational Quarterly, 22: 197-205, March, 196r.

[^8]:    ${ }_{23}$ "Inquiry, discovery take the same place in morals that they have come to occupy in sciences of nature. Validation, demonstration become experimental, a matter of consequences," Reconstruction in Pbilosophy (Boston: The Beacon Press, 1948), p. 174.
    ${ }^{24}$ Cf. Walter J. Ong, S.J., Ramus: Method, and the Decay of Dialogue, (Cambridge: Harvard University Press, 1958), p. 221, and Chapters V and VI, illustrating the logic of supposition and the logic of probabilities.
    ${ }_{25}$ R. J. Henle, Objectives of the Catholic Liberal Arts College," Proceedings of the Santa Clara Institute for Jesuit Deans (New York: Jesuit Educational Association, 1955), pp. 15-16. See the later article in Thought (35:513-536, 1960), "Science and the Humanities."
    ${ }^{2 s}$ De Trinitate, IX, 1, 1.

[^9]:    ${ }_{27}$ Comment in America, 106: 685, February 24, 1962.

[^10]:    ${ }^{28}$ Aristotle, Posterior Analytics, I, 1, 71 a; II, 19, 100b; cf. Nichomachean Ethics, VI, 3, 1139b.
    ${ }^{29}$ Robert F. Harvanek, S. J., "The Objectives of a Jesuit University-a Dilemma," Jesuit Educational Quarterly, 24: 69-87, October, 196r.
    ${ }^{30}$ James W. Sanders, S.J., "A New Approach to a Catholic Philosophy of Education," Jesuit Educational Quarterly, 24: 91-94, October, 1961. The article is concluded in the January, 1962

[^11]:    issue. Its analysis of Father Lonergan Insight (experience, understanding, judgment) has reference to basic method well compared with Dewey's limited scope.
    ${ }^{31}$ See current syllabi as shown in Soviet Education Programs, United States Office of Education publication (Washington, D.C.: Government Printing Office, 1960), pp. 52, 6r, 76.
    ${ }^{32}$ William F. Lynch, S.J. "Honors Program and Vertical Collaboration," Jesuit Educational Quarterly, 24: 206-218, March, 1961. Sample high school programs are discussed in James B. Conant, The American High School Today: A First Report to Interested Citizens (New York: McGraw-Hill Book Company, Inc., 1959) .

[^12]:    ${ }^{1}$ Two Cultures and the Scientific Revolution, Cambridge, 1959.

[^13]:    ${ }^{2}$ "Towards a Theology for the Layman," Theological Studies, 5 (1944), 43-75; 340-76.

[^14]:    ${ }^{3}$ Cf. Pierre Ranwez, "Problèmes de formation religieuse: aspects pédagogiques et doctrinaux," Nouvelle Revue Théologique, 1946, 483-95; Georges Delcuve, "Le Problème de la formation religieuse dan le monde moderne," Lumen Vitae, 1949, 209-32. Many articles in Lumen Vitae deal with the presentation of the Kerugma.
    ${ }^{4}$ There has been a continuing dialogue on this topic, within Catholic circles, between those of the eschatological and those of the incarnational viewpoint; cf. Paul Henry, S.J., "The Christian Philosophy of History," Theological Studies, 13 (1952), 419-32. Now the theologian must, of course, also take account of the numerous writings of Pierre Teilhard de Chardin, S.J.

[^15]:    ${ }^{5}$ Murray, pp. 346-47.

[^16]:    ${ }^{\text {e }}$ Cf. the writings of Robert O. Johann, S.J., especially his "Subjectivity," The Review of Metaphysics, 12 (1958), 200-34.

[^17]:    7 W . Norris Clarke, S.J., "Recent European Trends in Metaphysics," Proceedings of the Twelfth Annual Convention of the Jesuit Philosophical Association, 12 (1950), 53-54.

[^18]:    ${ }^{8}$ Edward J. Sponga, S.J., "The Place of Philosophy in the Jesuit College," Jesuit Educational Quarterly, 22 (June, 1959), 17-26.
    ${ }^{9}$ John P. Leary, S.J., "Social Ethics in Our Colleges: A Rejoinder," Jesuit Educational Quarterly, 22 (October, 1959), 69-73; Edward Jarvis, S.J., "Ethics in the College Curriculum," Jesuit Educational Quarterly, 22 (March, 1960), 201-204.
    ${ }^{10}$ Cf. the author's "The Language Revolution," The Catholic Educational Review, 58 (1960), $36 \mathrm{r}-67$. Whether the method of language instruction which prevailed in the 19th Century was that which had been employed for teaching the Classics during the Renaissance, is a question that is beyond the scope of this paper; for evidence concerning this problem cf. George E. Ganss, S.J., Saint Ignatius' Idea of a Jesuit University, Milwaukee, 1954, pp. 209-15.

[^19]:    ${ }^{11}$ Proceedings of the Modern Language Association, 73, no. 5, pt. 2 (December, 1958), 99. ${ }^{12}$ New York Times, May 20, 1962.

[^20]:    ${ }^{13}$ The influence of Cleanth Brooks has been especially notable. College courses have been already much influenced by his various texts, particularly by: Cleanth Brooks nd Robert Penn Warren, Understanding Poetry: an Anthology for College Students, New York, Henry Holt and Company, 1938. Other notable works of literary criticism include: Cleanth Brooks, The IW ell Wrought Urn: Studies in the Structure of Poetry, New York, Reynal and Hitchcock, 1947; René Wellek and Austin Warren, Theory of Literature, New York, Harcourt, Brace and Company, 1949; William K. Wimsatt, Jr., The Verbal Icon: Studies in the Meaning of Poetry, Lexington, U. of Kentucky Press, 1954. A more difficult, but notable work is: William K. Wimsatt, Jr. and Cleanth Brooks, Literary Criticism: a Short History, New York, Alfred A. Knopf, 1957. For a very brief survey of modern literary criticism cf. René Wellek, "The Main Trends of TwentiethCentury Criticism," The Yale Review, 51 (Autumn, 196r), 102-18.
    ${ }^{14}$ This position has been espoused by no less eminent a figure than Jacques Maritain in his Art and Scholasticism, New York, Charles Scribner's Sons, 1930, pp. 74-86.

[^21]:    ${ }^{1}$ The great difficulty in this chapter is the problem of relating the discussion to all of the social sciences, or even of defining what are the social sciences. In view of current experience in the Colleges, the social sciences will be understood to include Anthropology, Sociology, Economics, and Political Science or Government.

[^22]:    ${ }^{2}$ W. I. Thomas and F. Znaniecki, The Polish Peasant, New York, 1927.
    ${ }^{3}$ O. Handlin, The Uprooted, New York, 1951.
    ${ }^{4}$ Edith Abbott, Historical Aspects of the Immigration Problem, Chicago, 1922.
    ${ }^{5}$ E. W. Bakke, The Unemployed Worker, New Haven, 1940.
    ${ }^{6}$ W. H. Whyte, The Organization Man, New York, 1956.

[^23]:    ${ }^{1}$ Christopher Dawson, The Crisis of Western Education (New York: Sheed and Ward, 1961).
    ${ }^{2}$ John W. Donohue, S.J., Jesuit Education, An Essay on the Foundations of Its Idea (Unpublished; New York: Fordham University, 1961.
    ${ }^{3}$ George E. Ganss, Saint Ignatius' Idea of a Jesuit University (Milwaukee: Marquette University Press, 1954).

[^24]:    ${ }^{4}$ General Education in a Free Society: Report of the Harvard Committee (Cambridge: Harvard University Press, 1945).

[^25]:    ${ }^{5}$ C. P. Snow, The Two Cultures and the Scientific Revolution (New York: Cambridge University Press, 1961).

[^26]:    ${ }^{6}$ For instance, the remarks of the Chairman of the U. S. Atomic Energy Commission, Glenn T. Seaborg, Nobel laureate chemist and former Chancellor of the University of California at Berkeley, before the National School Board Association, St. Louis, Missouri, April 14, 1962. Education for Our Age of Science (Washington: U.S. A.E.C. Press Release S-7-62, 1962).

[^27]:    ${ }^{7}$ The sum expended by the National Science Foundation for Summer Institutes alone in 1962 was approximately \$15 million.

[^28]:    ${ }^{1}$ Robert F. Harvanek, S.J. (October 196r), 69-87.

[^29]:    ${ }^{2}$ The Proceedings of the Workshop will be published and made available at an early date; the work papers are already available.

