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A BIBLIOGRAPHY OF SCIENCE AND RELIGION

JAMES T. DEHN, S.J.

Introduction

This bibliography surveys books in English by scientists on the subject of religion and science and published after 1946. Although an attempt has been made to be complete within these limits, it has almost certainly failed. Additional contributions from our readers would be appreciated and will be published in a later issue of the BULLETIN. We have omitted books or articles on such topics as the philosophy of science although many scientists express their views on religion under this heading.

Since most scientists writing on this subject today are favorable to religion, the impressions gained from reading this collection might be too optimistic. Still, the scientist who speaks of religion as the enemy of man belongs to a dying species. His place has been taken by those who approve of religion as a kind of ethical lubricant on the wheels of progress. Yet this is not a majority view. There are as many practicing believers among scientists as in any other profession. And in between these two extremes the most common attitude is open-minded preoccupation. Since even priest-scientists sometimes find it difficult to read as much as they would like to in this area, we hope this bibliography will provide a helpful reference for our readers.

Individual Works

- Barbour, Jan. G., *Christianity and the Scientist* (New York: Association Press, 1960), 120 pp.; chairman of the religion department and associate professor of physics at Carleton College. W. G. Pollard aptly summarizes the book: "The unique feature of this book is that it deals with the scientist as a man under the tension of his christian commitment and his dedication to science." What is required, Barbour maintains, is "a balance, and perhaps alternation, between personal involvement and reflective detachment." This he finds in liberal protestantism. The author is also much concerned with the social responsibilities of scientists.
- Carrel, Alexis, *The Voyage to Lourdes*, translated by Virgilia Peterson (New York: Harper and Bros., 1950), 52 pp.; physician. A vivid account of a scientist's duty to doubt a miracle.
- Chauchard, Paul, *Science and Religion*, Volume 130 of the Twentieth Century Encyclopedia of Catholicism, translated by S. J. Tester (New York: Hawthorn Books, 1962), 156 pp.; neurophysiologist. Dr. Chauchard, a French Catholic, first describes "the various positions taken up by those who reflect on the relations between science and religion" and those who excessively separate or unite oratory and the laboratory. In the final section of the book he presents a reconciliation of science and religion as different approaches to one reality. He emphasizes man's body-mind unity and is much influenced by Teilhard de Chardin.

- Chauvin, Rémy, *God of the Scientists, God of the Experiment*, translated by Salvator Attanasio (Baltimore: Helicon Press, 1960), 152 pp.; biologist and experimental psychologist. This French Catholic addresses himself to the scientist who wants experimental verification of ideas, even religious ones. After several chapters on psychology and religion, he presents a number of cases of conversions to Catholicism for analysis.
- Coulson, C. A., *Science, Technology and the Christian* (New York: Abingdon Press, 1951), 111 pp.; professor of applied mathematics, University of Oxford. If Christians had realized what was happening in the industrial revolution perhaps they could have influenced things for the better. Now we are in a technological revolution, a union of science and invention that is changing even our way of thinking. Most scientists realize their limitations and seek moral guidance. Christians should realize this situation and "set the pattern of thought against which decisions and action may be judged."
- Coulson, C. A., *Science and Christian Belief* (Chapel Hill: University of North Carolina Press, 1955), 127 pp. In this lecture Professor Coulson aims "to enquire about the propriety of holding Christian views at all, in an age so profoundly influenced by scientific discovery and scientific thought." His conclusion is affirmative. Science itself must be a religious activity since "religion is the total response of a man to all his environment." Although he has many valuable things to say he inclines to view religion as a purely personal affair.
- De Vries, John, *Beyond the Atom: an Appraisal of our Christian Faith in this Age of Atomic Science* (Grand Rapids: William B. Eerdmans, 1948), 200 pp.; professor of chemistry, Calvin College. His theme is the harmony of science and the Bible.
- Fothergill, Philip G., *Evolution and Christians* (London: Longmans, Green and Co., Ltd., 1961), 395 pp.; biologist. The author, a Catholic, is convinced that evolution is not only a fruitful idea but will bring religion and biology together in the study of man, "because truth is indivisible." In his opening chapter he considers the relations between religion and science, especially biology. He then devotes five chapters to an exposition of evolutionary theory, excluding man. In chapter seven he takes up the evolution of man's body, and in his last chapter he relates this to Scripture, the Fathers, and recent Church documents. He concludes with a view of man's developing spirit much like that of Teilhard de Chardin.
- Hesse, Mary B., *Science and the Human Imagination* (London: SCM Press Ltd., 1954), 171 pp.; mathematician, University of Leeds. The author devotes most of her book to the history and philosophy of science, but with the intention that a better understanding of science itself may help to reopen communications between science and religion from the scientific side. Science, she concludes, describes the world in terms of analogies and is strongly conditioned by contemporary culture. It is always related to reality by experiment. The believer must reply to the sceptic by relating his creeds to the daily situations of life.
- Huntley, H. E., *The Faith of a Physicist* (London: Geoffrey, 1960), 159 pp.; former professor of physics, University of Ghana. The author, like C. A. Coulson who wrote his foreword, thinks of science as a religious activity since faith in nature's uniformity is at the basis of science and God is at the basis of this uniformity.

Much of his book discusses beauty, art, and education with frequent excerpts from poems. He seems to be out to prove that a scientist can be a humanist, while urging literary men to learn some science.

Huxley, Julian Sorell, *Religion without Revelation* (New York: Harper Bros., 1957), 252 pp.; biologist. This is a new and revised edition of a book which first appeared twenty-eight years ago. Chapters three, eight and nine are outgrowths of recent lectures by this well-known naturalist and advocate of evolutionary humanism.

Klotz, John William, *Genes, Genesis and Evolution* (St. Louis: Concordia Press, 1955), 575 pp.; professor of biology, Concordia Teachers College, River Forest, Ill. and professor, Bethany Lutheran College. It is the author's thesis that evolution in the generally accepted sense of the term has not taken place. However, he allows for a little change within fixed kinds originally made by the Creator. In general he ignores any difficulties and chooses to emphasize any possible weakness of evolution. The author still maintains his biblical fundamentalism and concordism. For example, he rejects creation in places like Australia since "all air-breathing animals were presumably destroyed by the Flood." Yet his main purpose is to point out the blessings of science and to encourage conservative Christians to solve whatever moral problems science has raised.

Klotz, John William, *The Challenge of the Space Age* (St. Louis: Concordia Press, 1961), 112 pp. The gifts of God given through science offer a challenge to the Christian.

Krimsky, Joseph Hayyim, *A Doctor's Soliloquy* (New York: The Philosophical Library, 1953), 116 pp.; physician. This book contains faith in science and progress, exclamations about the wonders of nature and man's body, discourses on neuroses and disharmony, the ideas of Moses, Zarathustra and Marcus Aurelius, psychic phenomena and the symbolism of Bible stories, together with the idea that the vices and virtues of parents affect the germ cells of future generations. He advocates an ethical religion.

Lack, David Lambert, *Evolutionary Theory and Christian Belief, the Unresolved Conflict* (London: Methuen and Co., Ltd., 1957), 128 pp.; Oxford zoologist. The aim of this book is not to solve man's intellectual and metaphysical difficulties, but the much narrower aim of assessing Darwinism in relation to them. His general position resembles that of Fothergill, although he is not a Catholic. He emphasizes the need for personal religious experience since the arguments for Christianity are not compelling.

Lecomte de Nouy, Pierre, *Human Destiny* (New York: Longmans, Green and Co., 1947), 289 pp.; biophysicist. His book has been called the most remarkable essay in natural theology attempted by any scientist in our age. He attempts a probability calculation intended to refute the idea that life could have evolved by a chance process. Instead he demands an "anti-chance", God, and develops his own theory of finality to explain how evolution led to man. At many points his ideas resemble those of Teilhard de Chardin, especially in his description of man's future development in the spiritual plane. "The perfect man is not a myth; he has existed, in the person of Jesus."

Leprince-Ringuet, Louis, *Atoms and Men*, translated by Elaine P. Malerin (University of Chicago Press, 1961), 118 pp.; meson physicist. The first five sections

- of his book are largely autobiographical. Part six develops the theme that a Christian is entirely at home in the world of science. The theoretical and practical aspects of science he likens to love and charity: "Love comes through contemplation, charity through mastery of the world. The Christian is called upon both to love and to serve." He is a French Catholic.
- Long, Edward LeRoy, Jr., *Science and Christian Faith, A Study in Partnership* (New York: Association Press, 1950), 125 pp.; civil engineer and Presbyterian minister. Religion does not oppose science but only the creed of scientism. The more ultimate role of religion is to interpret the meaning of things and to bring men redemption. Science, on the other hand, "deals with facts not with perspective." It shapes the world for man's service. Religion shapes men for the service of God. We need both.
- Marsh, Frank Lewis, *Life, Man and Time* (Mountain View, California: Pacific Press Publishing Association, 1957), 200 pp.; professor of biology, Emmanuel Missionary College, Berrien Springs, Michigan. Rejects evolution for special creationism and seeks a harmony of science with a literal reading of Genesis.
- Marsh, Frank Lewis, *Evolution, Creation and Science* (Washington Review and Herald Publishing Assoc., 1947), 381 pp.
- Mather, K. F., *Crusade for Life* (Chapel Hill: University of North Carolina Press, 1949), 87 pp.; geologist. Three lectures in the McNair series. The first discusses the challenge science gives religion from the fact that "salvation by knowledge seems more plausible and more likely to succeed than salvation by faith." He urges theologians to make it clear that science is not the only valid approach to life, especially in the pressing problems of human relations. The second lecture discusses the challenge of Marxism while the third, "Perspective for Tomorrow", is devoted to showing that fears of a population explosion are groundless. Intelligence, goodwill, industry and education will provide.
- Miller, Carl Wallace, *A Scientist's Approach to Religion* (New York: Macmillan, 1947), 127 pp.; professor of physics, Brown University. He aims to "restate the essentials of Christian thinking" and calls for understanding and patience on both sides of the science-religion conflict. He tends to consider belief in God as a kind of practical postulate, more fruitful than merely setting up a moral code. Now that secularism has won its rights over traditionalism, he urges that we not lose the church entirely.
- Morris, Daniel Luzon, *Possibilities Unlimited, A Scientist's Approach to Christianity* (New York: Harper Bros., 1952), 191 pp.; research chemist. Although he admits that he has not received the Christian faith, he certainly makes a very appealing case for Christianity in a refreshingly direct style. "The fact that so many earnest Christians belong to so many different denominations" he finds a great obstacle, as he confesses in his last chapter.
- Pollard, William G., *Physicist and Christian, A Dialogue between the Communities* (Greenwich, Connecticut: Seabury Press, 1961), 178 pp.; physicist and Episcopal priest. The first part of his book develops various aspects of life in the two communities of physics and religion, comparing and contrasting them. The second part shows how both approaches give us real knowledge. His conviction that the basis for reconciling the two communities is not "metaphysical, but personal" comes from his deep interest in both, not from any lack of respect for metaphysics.

- Pollard, William G., *Chance and Providence: God's Action in a World Governed by Scientific Law* (New York: Scribner's, 1958), 190 pp. This is an account of the author's struggle to reconcile his newfound faith in God with his physicist's attitude of treating all unobservables as hypotheses. Ideas which helped him are Bohr's complementarity principle, distinctions between physical reality and historical reality and between scientific and historic time. Buber's I-Thou, I-It distinction also appeals to him.
- Riddle, Oscar, *The Unleashing of Evolutionary Thought* (New York: Vantage Press, Inc., 1954), 414 pp.; biologist. In the first part of his book he sets out to show that evolutionary thought discredits any belief in the soul or the supernatural, and deplors the efforts of some scientists to leave room for religion. In the second part he concentrates on what he calls the suppression of biological truth in the classroom by power-mad organized religions, varying Paul Blanshard's theme. Finally he presents various letters he received after a lecture he gave years ago, mostly approving his stand. He looks to the battle head where the arch-enemy is the Catholic Church surrounded by the lesser obstacles of other religions.
- Russell, Bertrand, *Religion and Science* (New York: Oxford University Press, 1961), 255 pp.; mathematician-philosopher. Reprint of an earlier work, Henry Holt and Co., 1935. The warfare between science and religion is practically over, with science, standing for progress, the victor over the savagery of religion.
- Sabine, Paul E., *Atoms, Men, and God* (New York: The Philosophical Library, 1953), 226 pp.; physicist. He attempts to integrate the faith he inherited from his father, a Methodist preacher, with his scientific knowledge. The result is a rational approach to the spiritual world. From relativity he concludes to "Universal Mind" and from quantum mechanics to "Great Purpose." Christianity he looks on as a synthesis of cultures under the "catalytic action of the traditional account of the life and death of Jesus of Nazareth" whom he calls a Galilean mystic. Science and the inner experience of faith validate "a belief in a God of love, a personification, if you like of that mysterious Power that "guides the stars in their courses . . ."
- Schilling, Harold K., *Science and Religion, An Interpretation of the Two Communities* (New York: Charles Scribner's Sons, 1962), 272 pp.; physicist and dean at Pennsylvania State University. By discussing science and religion as communal enterprises he centers the difficulties between them not so much in specific teachings as in general attitudes and aims. A means of lessening tensions, he suggests, is to separate permanent facts from dispensable theories in both science and religion, and he presents six lists to illustrate his point. His idea of what is dispensable in religion is highly debatable. He tends to reduce Christian doctrine to myth, by which he means a valid cultural insight, but in the process historical revelation seems to vanish. (See a review by Fr. Joseph Mulligan, S.J., *America*, 108, Feb. 9, 1963, p. 207).
- Sinnott, Edmund W., *Two Roads to Truth, A Basis for Unity under the Great Tradition* (New York: Viking Press, 1953), 241 pp.; Yale biologist. His two roads to truth are reason (science) and spirit (religion). The conflict he says is due to authoritative claims to truth on the part of religion, more especially by the Catholic Church, to which however he is not unsympathetic. His solution is to make the "wager of faith" in the tradition of liberal Protestantism.

- Smethurst, Arthur F. *Modern Science and Christian Beliefs* (London: James Nisbet and Co., Ltd., 1955), 300 pp.; chemist and geologist as well as canon and chancellor of Salisbury Cathedral. He aims to show how science and religion complement each other and to discuss the problems which arise from their relations. His view occasionally seems too restrictive of science, but in general is well-balanced. He considers in turn problems which physics, biology and psychology raise for Christians and problems which the miracles and creeds of religion raise for scientists. He concludes with four appendices on logical positivism, dialectical materialism, existentialism and the theological positions of Bultmann and Heim.
- Smith, Charles Raimer, *The Physician Examines the Bible* (New York: Philosophical Library, 1950), 394 pp.; physician. A harmony of the Bible with science, almost verse by verse.
- Stromberg, Gustaf, *The Searchers* (Philadelphia: D. McKay, 1948), 242 pp.; astronomer. A somewhat fantastic philosophy of the here and the hereafter. Boris Charkoff, a Russian musician, attends a number of meetings of a group called "The Searchers" composed of various scientists, philosophers and theologians. Boris even gets to talk to a genie.
- Taylor, F. Sherwood, *Man and Matter, Essays Scientific and Christian* (London: Chapman and Hall, 1951), 238 pp.; chemist and historian of science. The author's attention was first turned to the Catholic Church by his studies of the Galileo case. He was finally converted through the example of some Catholic friends. Chapter XI of his book is a good treatment of the scientific world-view imposing itself on science and artificially opposing science to religion.
- Temperley, H. N. V., *A Scientist who Believes in God* (London: Wodder and Stoughton, 1961), 176 pp.; fellow of King's College, Cambridge and Smithsonian research fellow of the Royal Society. He lost his faith as an undergraduate, then returned. The limitations of science are brought out well in his book. In arguing the case for Christianity he presents it as a postulate which explains many facts of man and history in a much better way than naturalism. This, he is convinced, is the way to present Christianity in modern times. However, he is rather impatient with mysteries, especially the Trinity.
- Whittaker, Edmund, *Space and Spirit* (Hinsdale, Ill.: Henry Regnery Co., 1948), 143 pp.; physicist. Sir Edmund writes on theories of the universe and arguments for the existence of God. He says that if St. Thomas were alive today he would show how science could be "gathered into the framework of divine knowledge." He discusses the five ways of Thomas and concludes that they only need reformulation in modern terms. This he does for the arguments from causality and from purpose. Basic to his argument, however, is the conviction that science has established the fact of creation in time, something scientists would not agree upon.
- Yarnold, G. D., *Christianity and Physical Science* (London: A. R. Mowbray and Co., Ltd., 1950), 173 pp.; clergyman and former lecturer in physics at the University of Nottingham. He writes his book to show that a scientist can be a Christian. "Both science and religion, then, claim to be true; and, as with all truth, the ultimate verification in either case lies in experience." The Christian experience comes in the coherence given to life lived in the light

of faith. Most of his book is devoted to describing how the rationality of the universe fits well with the data of faith, especially the miracles of the New Testament.

Van der Ziel, Albert, *The Natural Sciences and the Christian Message* (Minneapolis: T. S. Denison and Co., Inc., 1960), 259 pp.; professor of electrical engineering, University of Minnesota. His book grew out of a series of lectures he gave to Lutheran pastors. It intends to show that "the natural sciences and the Christian message are neither in harmony with each other, nor in conflict, but are radically different." This is in keeping with the admiration he expresses for Karl Barth. Most of the book is a short course in science with warnings at the end of each chapter for science and religion to stay in their own back yards. Although he cuts through a lot of confusion by this approach, he chooses to ignore the real contacts which science and religion have.

Collections

Baillie, John, *et al.*, *Science and Faith Today* (London: Lutterworth Press, 1953), 60pp. A short collection of BBC Broadcast talks assembled by the Reverend Baillie. The three scientists represented agree that science and religion are complementary ways of describing and dealing with reality, with religion the more important.

Eyring, Henry, *et al.*, *Science and Your Faith in God, A Selected Compilation of Writings and Talks by Prominent Latter-Day Saints Scientists on the Subjects of Science and Religion* (Salt Lake City: Bookcraft, Inc., 1958), 317pp. In general these essays were written for Mormon consumption and have limited appeal. The best contribution is by Dr. Eyring, who is dean of the graduate school at the University of Utah and president of the American Chemical Society. He sees science and religion as aiding one another.

Long, Edward LeRoy, Jr., *Religious Beliefs of American Scientists* (Philadelphia: Westminster Press, 1952), 168 pp. The author refuses to define religion because he wants to present a spread of thought on the subject. However, he does not hesitate to categorize the thirty or so scientists he surveys into those who start with science and work toward religion and those who start with religion and work toward science. He concludes that among scientists "one finds the same range of religious philosophies that appears among the populace as a whole." Therefore, science is no obstacle to religious belief.

Mixter, Russel L., *Evolution and Christian Thought Today* (London: The Pater Noster Press, 1959), 226 pp. This volume was published on the centennial of Darwin's *Origin of Species* by members of the American Scientific Affiliation, a group of over 800 evangelical Christians who are scientists. The first ten chapters give objective accounts of the history and present state of biological evolution, ending usually with the remark that modern science and Genesis properly understood are complementary, not antithetical. The final chapter is the only one written by a non-scientist and sounds a little out of tune with the rest of the book. While not disagreeing with the ideas of the rest of the book, the last author, a conservative minister, is unsympathetic, tending to see more evil than good coming from the theory of evolution.

Monsma, John Clover, *The Evidence of God in an Expanding Universe. Forty American Scientists Declare Their Affirmative Views on Religion* (New York:

- G. P. Putnam's Sons, 1958), 250 pp. The editor, a prominent protestant minister, asked a number of scientists, "Is there a God?" The answer generally given in this book is that science reveals a Higher Power but that revelation is required for man to know God. For the most part the authors are not outstanding names in science. Rather they represent the little man, the professor and the industrial or government scientist.
- Needham, Joseph, *Science, Religion and Reality* (New York: G. Braziller, 1955), 355 pp.; biophysicist. Reprint of a collection of essays first published in 1925. Singer and Eddington are the most famous of the nine contributors. The introductory essay by George Sarton sets the naturalist tone of most of the book.
- Shapley, Harlow, *Science Ponders Religion* (New York: Appleton-Century-Crofts, Inc., 1960), 308 pp. Professor Shapley, a Harvard astronomer, presents the views of eighteen scientists given at a conference on religion held in New England. There is a fairly wide range of opinion expressed, leaning somewhat to Shapley's own naturalism.

WOODSTOCK COLLEGE

REPORTS OF SCIENTIFIC ACTIVITY

HIGH SCHOOLS

St. George's College. As part of the Easter vacation courses sponsored by the Association of Science Teachers of Jamaica, the experimental program of the PSSC physics curriculum was demonstrated by the physics students of St. George's College. The demonstration was under the guidance of Fr. Raymond McCluskey, S.J. and Mr. Stanley Grabowski, S.J. Many physics teachers from the schools of Jamaica, officials from the Ministry of Education and members of the faculty of the University of the West Indies were present. During the summer Fr. McCluskey attended a summer institute in the advanced topics of the PSSC curriculum at St. Lawrence University in Canton, New York.

Mr. John E. Surette, S.J.

COLLEGES AND UNIVERSITIES

Boston College. Dr. Joseph H. Chen of the physics department has received a one-year contract for \$52,000 from the United States Air Force Cambridge Research Laboratory to conduct research in solid state physics. The work will relate to the physical mechanisms associated with the growth and perfection of single crystals which manifest electrical, magnetic and optical properties.

Geology. As retiring president of the National Association of Geology Teachers, New England Section, Fr. James Skehan, S.J., gave his presidential address at the annual meeting held at Tufts University, April 2-4, 1964, on the "Evolution of Island Arcs in the Boston College Reservoir." Professor Bombolakis has been awarded a two-year contract amounting to \$20,000 by the Air Force for research in rock mechanics. While Fr. Skehan was participating in the Earth Science Writing Conference at the University of Colorado during the summer months, a Boston College Earth Science Research Center was located in the geology department of the University of Colorado. Field studies were carried out by Boston College students.

Fr. James W. Skehan, S.J.

Physics. Fr. William G. Guindon, S.J., currently on leave at Cornell University, served on a selection board for the NSF cooperative fellowships. Fr. John H. Kinnier, S.J., has been director of an NSF in-service institute for secondary school teachers of physics, with a grant of \$5,520. This year marks the completion of a five-year sequence of a graded program in instruction for secondary school teachers of physics. Dr. Frederick E. White, acting chairman of the physics department, is the director of a summer institute in physics for high school teachers, with a grant of \$29,500 from the NSF.

Fr. William G. Guindon, S.J.

Fordham University. Fr. Henry F. De Baggis, S.J., will administer a mathematics grant of \$9,700 for support of an undergraduate science education program.

Chemistry. The chemistry department has been given a \$30,000 grant for the sup-

port of research entitled "Radicinin: Structural and Biosynthetic Studies" under the direction of Dr. Donald D. Clark. Another grant of \$10,500, for the same program, will be under the direction of Fr. Frederick J. Dillemath, S.J. "Fungal Degradation Studies on Lignins," a program of the organic chemistry and enzymology departments, will also be aided by a NSF grant of \$48,000. The program will be under the direction of Dr. Friedrich F. Nord. Dr. Leo K. Yanowski, the originator of "Everybody's Chemistry" on WFUV, has been notified that his programs have been chosen for broadcasting by the Armed Forces Radio. The package of thirteen tapes will be broadcast around the world, featuring "Chemistry in the Civil War" and "Chemistry in Foreign Lands." Dr. Yanowski was chairman of a discussion group on the education, background, personal attributes and opportunities of chemists. The discussion was held by the Catholic Guidance Council at Cardinal Hayes High School on March 3rd. It was attended by guidance counselors of Catholic high schools in the Archdiocese of New York.

Dr. Philip S. Gentile gave a talk entitled "Coordination Compounds" at Syracuse University on March 13th. Professor Emil J. Moriconi gave a seminar before the chemistry department of the University of Pennsylvania on April 1st. Professor Moriconi has received a three-year grant totalling \$66,400 from NIH for his work on "Synthesis of 17-aza-D-Homosteroidal Hydroxamic Acids." Fr. Frederick J. Dillemath, S.J. and Dr. Leo K. Yanowski acted as judges at the twelfth Annual Meeting-in-Miniature sponsored by the New York Section of the American Chemical Society at the College of the City of New York on April 18th. Three Fordham chemistry majors presented papers at this meeting, based upon the results of their individual research which was supported by an NSF undergraduate research grant.

Fr. Robert D. Cloney, S.J.

Holy Cross College. Four of the fourteen seniors in chemistry are returning to Holy Cross for M.S. work during the year 1964-1965.

Chemistry. Fr. Bernard A. Fiekers, S.J., was on sabbatical leave for the spring semester of 1964 at the Massachusetts Institute of Technology to study structural inorganic chemistry under Professor F. A. Cotton. Professor R. W. Ricci will be employed in the NSF institute at the University of New Hampshire during the summer of 1964. Plans for the revision of the chemistry curriculum will produce a core curriculum and will help to solve the problem of reconciling the recommendations of the Academic Advisory Council with those of the American Chemical Society for the certification of its graduates. The chemistry major will take analytic chemistry in freshman year and organic chemistry and physics in sophomore year. A pre-medical and pre-dental course will no longer be formally offered.

Fr. Bernard A. Fiekers, S.J.

Loyola College. On July 13 Fr. Joseph A. Sellinger, S.J., former dean of the College of Arts and Sciences of Georgetown University, succeeded Fr. Vincent F. Beatty, S.J., as rector and president of Loyola College, Baltimore. Fr. Beatty taught chemistry at Loyola from 1941 to 1944 and from 1949 to 1955, when he became president of Loyola College. Fr. Sellinger taught chemistry at Loyola from 1945 to 1948.

Fr. Edward S. Hauber, S.J.

St. Joseph's College. Fifteen physics majors have been offered fifty-three fellow-

ships and/or assistantships. A matching grant of \$50,000 from NSF for undergraduate instructional equipment has enabled the department to acquire several new pieces of equipment: a continuous gas laser, two four-inch magnets with regulated power supply, a gauss meter with a probe operating on the Hall effect, a Mossbauer effect analyser, five Stull-Ealing linear air tracks, a 50 megacycle electronic counter.

Fr. John S. O'Connor, S.J.

St. Peter's College. NSF has awarded \$9,140 to the department of biology. This sum will be matched by the college and the total amount will be used to purchase equipment to fit out physiology and microbiology laboratories. Dr. Ross F. Nigrelli, director of Research at the New York Aquarium and author of some 200 publications, delivered the 1964 Mendel Lecture on metabolites of the sea.

Fr. Jerome H. Gruszczyk, S.J.

Wheeling College. Fr. Joseph A. Duke, S.J., served as a member of the NSF evaluation panel for undergraduate instructional scientific equipment at meetings held in February. Mr. Charles Loner will attend the NSF summer institute for chemistry teachers at Michigan State University. A new spectrometry lab has been added to the chemistry department's facilities. Included in the laboratory are recording spectrophotometers for the visible, ultraviolet, and infrared regions as well as for gamma ray spectrometry. Nuclear counting equipment is also included in the laboratory. The chemistry curriculum has been accelerated and coordinated to enable chemistry majors to complete their requirements with 128 college credits. Fr. Duke will attend the NSF institute on "Electronics for Scientists" at the University of Illinois.

Fr. Joseph A. Duke, S.J.

SCHOLASTICATES

Spring Hill. Mr. James Sliney, S.J. (*Calif.*) was elected president of the American Institute of Physics Student Affiliate at Spring Hill College. Mr. Robert Paradowski, S.J., (*N.E.*) was elected secretary for public relations of the American Chemical Society Student Affiliate. Mr. Joseph Keenan, S.J., (*Md.*) has received a teaching assistantship from Clark University and will begin his studies at Clark in the fall. Mr. Amado Sandoval, S.J., (*Ant.*), who has just received his Master's degree in chemistry from Columbia, will be teaching several scholastics advanced inorganic chemistry during the summer.

Mr. Robert J. Paradowski, S.J.

Woodstock College. Scholastics who hold graduate degrees in the natural sciences have formed the Research Institute for the Natural Sciences of Woodstock College (RINS). The institute consists of four divisions: biology, chemistry, mathematics and physics-astronomy. Mr. Anthony P. Mahowald, S.J., (*Wisc.*) is the director. In addition to two NSF grants in biology, which are being administered by Mr. Mahowald and Mr. Roland Lesseps, S.J., (*N.O.*), the institute has recently obtained a three year grant at \$30,000 per year from NASA. This grant will be used for research in the following three areas: correlation between the occurrence of spread-F and of tropospheric disturbances [Mr. Victor L. Badillo, S.J. (*Phil.*)]; studies in

the OB Association I Lacertae [Mr. George V. Coyne, S.J., (*Md.*) and Mr. Timothy E. Toohig, S.J., (*N.E.*)]; exploratory studies of meteorites and tektites using the Mossbauer effect [Mr. John G. Marzolf, S.J., (*Buf.*), Fr. James F. Salmon, S.J., (*Md.*) and Mr. James T. Dehn, S.J., (*N.Y.*)]. Fr. Robert Brungs, S.J., (*Md.*) represented RINS at an international symposium on boron held in Paris during the summer. Mr. George V. Coyne, S.J., (*Md.*) delivered a paper on "Color Photometry of Selected Lunar Features" at the summer meetings of the American Astronomical Society in Flagstaff, Arizona.

Fr. James F. Salmon, S.J.

GRADUATE STUDIES AND RESEARCH

St. Louis. Mr. Andrew J. Dufner, S.J., (*Ore.*) graduated in June with a Ph.D. in physics. The title of his dissertation is "An Analysis of Electron Polarization and Scattering Asymmetries Using the Multiple Scattering Theory of Toptygin." Mr. Augustus Udias, S.J., (*Antilles*) graduated in June with a Ph.D. in seismology. The title of his dissertation is "A Numerical Method for Focal Mechanism Determination using S Wave Data." Mr. John L. Kieffer, S.J., obtained an M.S. in engineering mechanics. The title of his thesis is "Pulse Testing of a Nonlinear Dynamic System Having Displacement Limiting." Mr. William P. Lonc, S.J., (*Can. Sup.*) presented a paper at the Philadelphia meeting of the American Physical Society in March entitled "Measurement of Magneto-resistance in Boron Crystals and Films." Mr. Lonc will complete his dissertation for the Ph.D. in physics while teaching in Halifax next year. Mr. Robert F. O'Brien, S.J., (*N.E.*) presented a paper at the Denver meeting of the American Physical Society in June entitled "Dynamic Nuclear Polarization in Irradiated Alkali-Halide Crystals." Mr. O'Brien has completed his research and requirements for the Ph.D. in physics and will graduate in February, 1965.

The physics department began moving into the new physics building on May 25. The new building contains faculty offices, laboratories and research facilities, including a cyclotron. The Institute of Technology building is expected to be ready for the fall semester.

Mr. Robert F. O'Brien, S.J.

Spellman Hall. Mr. Albert Fritsch, S.J. (*Chi.*), successfully defended his thesis in chemistry and received his Ph.D. from Fordham in June. Fr. Alan McCarthy, S.J., (*N.Y.*) recently published an article in the *Journal of Protozoology* entitled "Three Acidophilic Volvocine Flagellates in Pure Culture." The co-author of the article was Bohuslav Fott of the Botanical Institute of the Charles University in Czechoslovakia.

Mr. James F. O'Brien, S.J.

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