

THE Key REPORTER

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The Phi Beta Kappa Award in History, Philosophy, and Religion

THIRD BOOK PRIZE TO BE OFFERED YEARLY

AN ANNUAL award of \$1,000 to honor "interpretive historical, philosophical, and religious studies in the great tradition of humane learning" was established by the Phi Beta Kappa Senate at its annual meeting on December 5. History and philosophy are conceived in broad terms, and include appropriate work in the areas of political science, economics, sociology, and cultural anthropology. Such books as Charles N. Cochrane's *Christianity and Classical Culture*, Reinhold Niebuhr's *Moral Men and Immoral Society*, Gardner Murphy's *Human Potentialities*, Carl Becker's *The Heavenly City of the Eighteenth Century Philosophers*, Thorstein Veblen's *The Theory of the Leisure Class*, Hannah Arendt's *The Human Condition*, and C. I. Lewis' *Mind and the World Order* are examples of the kind of work that would be eligible for consideration.

The Phi Beta Kappa Award in History, Philosophy, and Religion, as the new prize is called, will be given for the first time next December to a book

published in the United States between July 1, 1959, and June 30, 1960.

The new prize will be the third to be offered each year by Phi Beta Kappa, and rounds out the series the Senate had in mind when the question of a book prize originally came up for discussion ten years ago. The first Phi Beta Kappa prize was the Christian Gauss Award for literary scholarship or criticism. It was so named in honor of the former Senator and President of the United Chapters who had conceived the idea of the prize, and who died just before the first award was presented in 1951 to Ruth Wallerstein for *Studies in Seventeenth-Century Poetic*. The second prize in the series was the Phi Beta Kappa Award in Science, which was announced by the Senate a year ago.

The technical conditions of all three awards are the same. Until 1957 eligibility for the Christian Gauss Award was limited to books published by a university press, but in that year the Senate
(Continued on back cover)



Alan J. Bearden

Loren Eiseley, who received the first Phi Beta Kappa Science Award for "Darwin's Century"

Senate Awards Christian Gauss and Science Prizes

FOR THE 1959 Christian Gauss Award the Senate has announced the selection of Margaret Gilman's *The Idea of Poetry in France*, which the author, formerly Professor of French at Bryn Mawr, finished writing just before her death in 1958. The prize money of \$1,000 was given to Bryn Mawr College, to which Miss Gilman left her estate.

Published by the Harvard University Press, the study was described by a member of the award committee as "a masterful book . . . based on an all but exhaustive examination and assessment of French pronouncements on poetry over a period of almost two centuries. . . . This book will be a necessary reference work and a starting point for new studies."

The first Phi Beta Kappa Award in Science was presented by the Senate to Loren Eiseley, Professor of Anthropology and Provost at the University of Pennsylvania, for *Darwin's Century*, published by Doubleday and Company. It was characterized by one of the award judges as "an excellent book, written in a fine, distinctive, and easily flowing style combined with good scholarship and a beautifully balanced judgment."



"Now if you will turn to page 16 of the agenda . . ."

Vice-President William C. DeVane has just convened the annual meeting of the Phi Beta Kappa Foundation—custodian of the capital funds of the Society—of which he is chairman. As all Senators are members of the Foundation, its meeting is held during a recess of the regular meeting of the Senate. Facing the camera, from left: Mr. DeVane, President Laurence M. Gould, Secretary Carl Billman, Treasurer Frank P. Smeal, Historian William T. Hastings, and Senator Frederick Hard. Backs to camera in background: Senators John W. Dodds, Richard D. Mallery, Marten ten Hoor, and Raymer McQuiston. In foreground: Senators Ernest Mackie and Anne G. Pannell.

HIGHER MATHEMATICS AT LOWER LEVELS

C. STANLEY OGILVY

THE FIRST cave man who tried to explain to his primitive pupils that "three" is not quite the same as "many" was probably impatient at their inability to grasp this new notion, which seemed easy to him. He was anxious to proceed to the next topic of the course, which was the introduction of another number, four. And then, if they could follow him into such high realms, he wanted to present a theory he had developed, for no mathematician has ever been able to resist showing his latest work to someone else. This was an abstract and useless theorem, but he had the feeling that it was important, and that some day it might actually have practical application. It was that two and two are four.

The degree of difficulty of much of mathematics is a function of the age in which it is being presented. I have little doubt that plane geometry was difficult for the Greeks to grasp at first. The calculus seemed terribly abstruse for years after it was invented. Relativity theory and a large number of other topics one could mention are tough mathematics today. But plane geometry is now considered elementary; calculus is by no means out of reach; and some of the more advanced subjects in today's mathematics will some day become part of everyone's ordinary education.

To see how ideas change regarding the alleged difficulty of mathematics, let us take a quick look at the state of affairs in American colleges about a hundred years ago.

At Williams College in 1843 the offering in mathematics was as follows:

Freshman year: algebra and Euclid. ("Euclid" was, of course, what everyone called plane and solid geometry until much later than 1843.)

Sophomore year: more Euclid, measurements, navigation, surveying, spherical trigonometry, conic sections.

Junior year (mathematics offered for only one third of the year): astronomy, plus the following option: French, Hebrew, or fluxions, Newton's name for calculus, still in use in 1843.

Senior year: no mathematics offered.

At Oberlin College the situation was much the same except that no fluxions were mentioned. Thus not even an introduction to the calculus was available.

At Princeton they were very enlightened: they called fluxions differential

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and integral calculus. But they jammed it into half the junior year and gave only astronomy to seniors. Note the exalted position of astronomy in all the curricula, possibly due to the influence of La Place's *Mécanique Céleste*.

The main points are obvious. It took most of the first two years of college to learn what is now taught in high school. Some of what was studied is not offered at all today on any level. One could not go beyond calculus in college; that was the ultimate, except for calculations in astronomy. This despite the fact that mathematics, Greek, and Latin constituted almost all of college education. Very little else was available, and for at least the first two years there were no electives.

Perhaps, then, ambitious young mathematicians could continue their study of the subject in the graduate schools? No, because there were no graduate schools, at least not in mathematics. The first facilities for graduate work in mathematics in this country were instituted in 1876 at Johns Hopkins. We can only suppose that American mathematicians, if indeed there were any, went to European universities to study.

What has happened in the past hundred years, and why? All the mathematics that was offered in the mid-nineteenth century during the first two years of college has been either pushed down into the high school or pushed out of the curriculum altogether. Junior-year college mathematics of those days has been vastly improved and expanded, and spread over the freshman and sophomore years; a host of new subjects have been installed at the undergraduate college level; and another even bigger group, almost a new world of mathematics, is studied at the graduate and post-doctoral levels. The question why this has happened is even more significant. Mostly, one can safely say, because


$$R = \frac{KL}{d^2}$$

of pressures from various directions: pressures from the scientific world; pressures—one hopes—from the students themselves, who want to learn more and learn it faster; and especially, as the graduate schools have come into being and prospered, pressures from above. It is this pressure from above, from the next higher echelon of education, that has the greatest effect. The secondary

What will happen to mathematics curricula under today's pressures to teach more math earlier?

If plane geometry was a college subject a century ago, will calculus one day be taught in the high schools?

schools feel pressed by the colleges. In the colleges we are concerned with the wants, needs, and even demands of the graduate schools, the engineering schools, and the mathematical professions.

These pressures in recent years have rapidly become more intense. Long before it became fashionable to worry about how much better the Russians can do everything than we can, the shortage of mathematicians was becoming acute. The number of new Ph.D. degrees in mathematics granted each year in the entire country is only about 250, a figure that has remained static for the past ten years. During this ten-year period the number of qualified mathematicians *needed* has been multiplied certainly by ten, perhaps by a hundred. This means, obviously, that many of the new jobs have to be done and are being done by *unqualified* mathematicians. Why are we in this predicament?

One could mention economic reasons for there not being enough mathematicians to go around: traditionally a mathematician's financial rewards have been small, although this situation is being remedied. There may be social and psychological reasons why youngsters have not chosen to make a career of mathematics; I shall not go into these, for the discussion would take us too far afield. But there is one very big reason that concerns me here: a major deterrent to a career in mathematics is its sheer bulk and the time consumed in mastering enough of it to get ahead. I suggest that there is not and never will be any way to beat the bulk problem. We all know how much new mathematics is being created every year. A typical issue of the *Mathematical Reviews*, published once a month, contains 144 pages, on each of which are five or six abstracts of new papers. Some abstracts may represent selections thirty pages in length, and all of them are summaries of new, previously non-existent mathematics. And we are going to get much more new mathematics as we go along; the bulk

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situation will get worse rather than better. We shall never get caught up. But can we do anything to keep from getting further behind? I suggest that we must try.

This is where history can guide us and encourage us. A century ago plane geometry was taught to college sophomores, and all mathematics beyond the simplest elements of calculus was considered impossibly difficult for anybody except the mathematical genius. Yet in only a hundred years pressures from above have done wonders for the curriculum. Of course they have not done enough, and we are in the throes of further changes right now. Twenty-five years ago, when I was an undergraduate majoring in mathematics at Williams College, I took all the math that was offered. That curriculum today would be considered hopelessly inadequate for anyone expecting to proceed to graduate school. Even in the past *five* years at Hamilton College we have made substantial strides—forward, we hope. Five years ago we still took some of our freshmen through an algebra-trigonometry course for a year before launching them into the calculus sequence. We no longer offer that course. We have dropped certain other courses and instituted new ones on the advanced levels. We have accelerated the calculus sequence so that we now finish most of it in a year and a half. We complete calculus and differential equations by the end of the sophomore year. It is worth mentioning that it was in my *senior* year in the 1930's that I studied differential equations.

This shift of higher mathematics to lower levels has taken place as a result of forces that are stronger than ever today. What, then, can we expect to see in the future? I think we can venture to predict further drastic pushing down of more higher math to still lower levels. The handwriting is on the blackboard.

Progress Is Being Made

Elementary algebra is going into the grammar school. Algebra has already been taught experimentally in grades five, six, and seven, and not at the expense of traditional arithmetic. In fact the arithmetic reaps the benefits of the early algebra. The rest of the high-school curriculum will be condensed and accelerated; and certainly in our lifetime, possibly a very few years from now, a full year of so-called college calculus will become the standard high-school senior course. The next step, not too far away either, is *two* full years of calculus and allied topics in high school, so that our youngsters will then be able to begin as freshmen in college at a point well beyond that to which academic mathematicians at any level could have taken them a hundred years ago.

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You may think that this is an impossible dream. It is not. At Phillips Exeter Academy, a four-year college-preparatory school, every boy in school takes math for the first three years, and into those three years goes all of the traditional four-year material of algebra, geometry, and trigonometry. For the fourth year mathematics is optional, but three quarters of the seniors elect it. It consists of a full year of calculus with the necessary analytic geometry, and it prepares the boys for sophomore college math.

I fully realize that Exeter is not Our Town's Central High School, and for



many reasons. But nevertheless the same pressures that brought the program to Exeter are being exerted on Central High.

The 1959 Report of the Commission on Mathematics, appointed by the College Entrance Examination Board for the purpose of preparing a program for college preparatory mathematics, takes the view generally held today that calculus is a college-level subject. But it also recommends that well-staffed schools offer their ablest students a year of calculus and analytic geometry, warning only against premature general acceptance of a curricular responsibility for which few schools are now adequately prepared. Does this not indicate which way the wind blows? Without wishing to recommend calculus in the high schools, the Commission is unable to disregard its presence there. It would have been quite unnecessary twenty years ago to defend the position that calculus is a college-level subject: nobody then had the faintest idea that it was anything else. Incidentally the Commission does *not* favor just a smattering of calculus introduced at the end of the twelfth grade. Such an alleged introduction usually does more harm than good. The job must be done right or not at all.

The essential point, however, is that the student is to be ready, or almost ready, for calculus at the end of grade eleven. The commissioners feel so strongly about this that they return to it in the very last paragraph of the report:

Colleges have a heavy responsibility laid upon them by the Commission. They must revise their freshman courses so that the freshmen who enter college having com-

pleted three and one half or four years of the Commission's program are placed in a substantial calculus course or some other appropriate course of college level. The traditional freshman course will not suffice.

What they mean by "the traditional freshman course" is something including trigonometry and high-school advanced algebra. I have already tried to indicate that this course is rapidly falling into disuse in the best colleges. Of greater interest is the strong recommendation that high-school students should be ready for calculus at the end of grade eleven. Is it not possible to read between the lines that although the Commission feels that the time is not quite ripe to introduce calculus in grade twelve, it is so near at hand that the groundwork must be laid and ready?

What More Can Be Done?

How can we telescope the old four-year high-school mathematics course into three years, and ultimately into two? One way has already been suggested: start algebra much earlier than grade nine. Even so, some things will have to be omitted, especially if any topics of "the new mathematics" are going to be introduced. *What* can be omitted has been something of a sore point, but the high schools have lately become more reconciled to it than they were at first. Much of the formal part of plane geometry must go; practically all of numerical trigonometry and logarithms must go; and almost all of solid geometry is either going or gone, and I wish it would go faster. The use of a whole semester of senior year by college-bound students for the study of solid geometry is a criminal waste of time and talent. Solid geometry is not, despite its conventional defense, required by the engineering schools.

Perhaps the contention that most of numerical trigonometry and numerical logarithm work should be dropped from the curriculum requires justification. Some of my freshmen tell me that they spent four to six weeks in their high-school courses solving numerical triangles by logarithms. Why? How did such a strange topic ever get into the high-school curriculum? We have already answered that: straight from the nineteenth-century college curriculum. And how did it get there? A hundred years ago in this country every man was more or less his own surveyor. If he did not know how to measure and map his land, he was likely to be cheated out of some of it. The familiar schoolbook problem of measuring an inaccessible boundary across a pond was a very real problem of everyday life. One learned trigonometry in order to use it, and one learned about logarithms in order to facilitate

(Continued on page 7)

The Book Committee Recommends . . .

- Humanities **Guy A. Cardwell, John Cournos, Robert B. Heilman, George N. Shuster**
 (Philosophy, Literature, Fine Arts)
 Social Sciences **Robert C. Angell, Frederick B. Artz, Robert K. Carr, Earl W. Count, Lawrence A. Cremin, Louis C. Hunter, Norman J. Padelford, C. Vann Woodward**
 (History, Economics, Government, Sociology, Education)
 Natural Sciences **Ralph W. Gerard, Kirtley F. Mather**

Guy A. Cardwell

THE SATYRICON OF PETRONIUS. *Translated with an Introduction by William Arrowsmith. Michigan. \$3.95.*

This fragmentary minor classic, thorny with problems for editor and translator, is here presented unexpurgated in an American English that is quite up to the translator's requirements by being at once vividly colloquial and vigorously literary. Mr. Arrowsmith displays ingenuity and taste in reproducing or suggesting shifts in language levels, parodies, and word play of several kinds.

THE FLOATING WORLD IN JAPANESE FICTION. *By Howard Hibbett. Oxford. \$6.50.*

The "floating world" turns out to be the gay, pleasure-seeking world of the new urban society of the Genroku era (c. 1680-1740). Stories of this world, despite their Oriental strangeness (including the strangeness of overshadowing feudalism), bring with them for Western readers of early English fiction something resembling the shock of recognition. Stories and illustrations combine to help one understand those *ukiyo-e* woodcuts that have, usually in modern reproductions, become a commonplace in American homes.

A DICTIONARY OF AMERICAN PROVERBS AND PROVERBIAL PHRASES, 1820-1880. *By Archer Taylor and Bartlett Jere Whiting. Harvard. \$9.50.*

Students of American literature, writers, and interested readers will be attracted to this thoroughly useful collection. Parallels in reference works and in modern writers are added to citations from the basic list of works examined. Thus, if one wishes to know why Davy Crockett calls a particular exploit a huckleberry over his persimmon, one is directed to pertinent scholarship that may help him to satisfy his curiosity.

THE THIRD ROSE: Gertrude Stein and Her World. *By John Malcolm Brinnin. Little, Brown. \$6.*

Mr. Brinnin views Gertrude Stein as an important, delightful writer, whose work was "confoundingly new." It is not essential that one admire Miss Stein or like to read her, however, to enjoy this lively, glib essay in biography and criticism: Miss Stein's reported conversations are often wonderfully good, especially when she is commenting on the writers who, like Hemingway, visited her *salon* in Paris, and the book is peppered with engaging stories of art and artists.

SHAKESPEARE AND COMPANY. *By Sylvia Beach. Harcourt, Brace. \$4.50.*

An amusing, gossipy account of that fascinating time when Pound, Hemingway, Anderson, Fitzgerald, Stein, Gide, Valéry, and a host of others frequented Miss Beach's

Paris bookshop, "Shakespeare and Company." The anecdotes and personalia wear thin in spots, but the recollections of Joyce and of the first publication of *Ulysses* would float more trivia than Miss Beach has managed to assemble.

Also Recommended:

HISTORY AS ROMANTIC ART: Bancroft, Prescott, Motley, and Parkman. *By David Levin. Stanford. \$5.50.*

JOHN JAY CHAPMAN: An American Mind. *By Richard B. Hovey. Columbia. \$6.50.*

HOWELLS: His Life and World. *By Van Wyck Brooks. Dutton. \$5.*

THE FUGITIVE GROUP: A Literary History. *By Louise Cowan. Louisiana. \$5.*

THE ANATOMY OF AMERICAN POPULAR CULTURE, 1840-1861. *By Carl Bode. California. \$6.*

Kirtley F. Mather

THIS SCULPTURED EARTH: The Landscape of America. *By John A. Shimer. Columbia. \$7.50.*

LANDSCAPES OF ALASKA: Their Geologic Evolution. *Edited by Howel Williams. California. \$5.*

Two beautifully illustrated books with texts written by qualified geologists who present their knowledge in such a way that anyone can gain a better comprehension of the scene; should be eagerly welcomed by many a traveler.

NO STONE UNTURNED. *By Louis A. Brennan. Random House. \$5.*

"An almanac of North American prehistory," in which an able amateur archaeologist sets forth in fascinating style the evidence accumulated in recent years concerning the antiquity (about 30,000 years) and cultural evolution of pre-Columbian man on this continent.

MEN AND ATOMS. *By William L. Laurence. Simon and Schuster. \$4.50.*

FROM HIROSHIMA TO THE MOON. *By Daniel Lang. Simon and Schuster. \$5.95.*

Journalistic accounts of America's entrance into the atomic age; replete with human interest and highly informative. Mr.

Laurence, science editor of the *New York Times*, is of all newsmen the most knowledgeable about nuclear physics and he had a ring-side seat in almost every episode from 1939 onward. Mr. Lang, staff writer for the *New Yorker*, tells how the lives of many individuals have been caught up in the tumultuous events of the new era.

WHAT IS CYBERNETICS? *By G. T. Guilbaud, translated from the French by Valerie MacKay. Criterion. \$3.50.*

A commendably sane and balanced presentation of the central ideas which cluster around the concepts of information and control; brings its intriguing subject well within the intelligible range of the layman.

THE TRANSIT OF VENUS. *By Harry Woolf. Princeton. \$6.*

An unusually interesting study of an important phase of eighteenth-century science involving the transits of Venus in 1761 and 1769. The organization of research on an international basis by government-supported scientists seems to have been a forerunner of the recent IGY.

THE NEUTRON STORY. *By Donald J. Hughes. MAGNETS.* *By Francis Bitter.*

ECHOES OF BATS AND MEN. *By Donald R. Griffin. SOAP BUBBLES.* *By C. V. Boys. HOW OLD IS THE EARTH?* *By Patrick M. Hurley. Doubleday. 95¢ each.*

The first five of a projected series of inexpensive paperbacks designed to bring to secondary school students and interested laymen the information about the physical sciences that every person needs for intelligent adjustment to the new world of science.

Also Recommended:

ZOOGEOGRAPHY. *A symposium edited by Carl L. Hubbs. \$12. GRASSLANDS.* *A symposium edited by Howard B. Sprague. \$9. American Association for the Advancement of Science.*

SPACE HANDBOOK. *By Robert W. Buchheim and the Staff of the Rand Corporation. Random House. \$3.95.*

THE SUN. *By Karl Kiepenheuer. Michigan. \$5.*

A SHORT HISTORY OF SCIENTIFIC IDEAS TO 1900. *By Charles Singer. Oxford. \$8.*

MATHEMATICS AND THE PHYSICAL WORLD. *By Morris Kline. Crowell. \$6.*

Robert K. Carr

THE AMERICAN FEDERAL GOVERNMENT. *By Max Beloff. Oxford. \$4.50.*

This is a worthy addition to the long line of works by Europeans from Tocqueville to Brogan describing and interpreting aspects of the American political system. Professor Beloff finds much to praise but is apprehensive about the ability of the American political system to function effectively in an ever more complex world.

WITH LIBERTY AND JUSTICE FOR ALL. *An abridgment of The Report of the United States Commission on Civil Rights. Superintendent of Documents, U. S. Government Printing Office. 35¢.*

This government document will undoubtedly find a richly-deserved place in the permanent literature of American civil liberties and also have a profound influence on

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public debate and policy information in this field for many years to come. Particularly concerned with civil rights violations affecting voting, education, and housing, it presents an extensively documented, vigorously argued case for increased legislative and administrative action by the federal government in support of civil rights.

LAW AS LARGE AS LIFE. By Charles P. Curtis. Simon and Schuster. \$3.50.

This urbane and sprightly book re-examines the perennial issue of the proper role of the United States Supreme Court. Judicial activism, judicial self-restraint, Learned Hand, Justice Black, and Justice Frankfurter are all examined carefully and dispassionately by this wise and good-natured observer. In the end the author does seem to choose sides and to prefer a judicial review strong enough to safeguard "a Natural Law for Today." If this turns out to be little more than the well-advertised Hand-Frankfurter position in new guise, the reader's wits have nonetheless been constantly challenged and his taste thoroughly delighted by this entertaining little book.

POLITICAL POWER AND PERSONAL FREEDOM. By Sidney Hook. Criterion. \$7.50.

One of the most intelligent and articulate observers of the contemporary political scene here presents a selection of his scattered writings of the last decade or two. Some readers may feel that "personal freedom" too often takes second place to "political power" in Sidney Hook's view of things, particularly where society's efforts to protect itself against subversive activity are in question. But few analyses of the conflict between freedom and power in the Cold War era are more tightly reasoned and continuously stimulating.

Frederick B. Artz

HELLENISM. By Arnold J. Toynbee. Oxford. \$4.50.

A brief, brilliant, and tendentious survey of eighteen centuries of Greek civilization.

HELLENISTIC CULTURE: Fusion and Diffusion. By Moses Hadas. Columbia. \$6.

Admirable study of the Eastern Mediterranean world after Alexander's conquests made it a great melting pot of religions and cultures.

THE MIDDLE EAST: A History. By S. N. Fisher. Knopf. \$8.95.

An excellent introduction to a large subject; over half of the book is devoted to affairs of the last 150 years.

THE ART OF LIVING: Four Eighteenth Century Minds—Hume, Horace Walpole, Burke, Franklin. By F. L. Lucas. Macmillan. \$5.

A learned but urbane voyage through the world of English thought in the Age of Reason. If you like the eighteenth century, this book will delight you.

GERMANY AND WORLD POLITICS IN THE TWENTIETH CENTURY. By Ludwig Dehio. Knopf. \$4.

A series of five essays make up one of the most thoughtful books to come out of Germany since World War II.

ROAD TO REVOLUTION: A Century of Russian Radicalism. By A. Yarmolinsky. Macmillan. \$5.95.

A work both scholarly and interestingly presented of the whole revolutionary movement in Russia from 1790 to the close of the nineteenth century.

SIR WALTER RALEIGH. By Willard M. Wallace. Princeton. \$6.

The author, who bears his deep learning lightly, has written a vivid biography of a colorful Elizabethan who belongs also to American history.

Earl W. Count

THE INLAND WHALE. By Theodora Kroeber. Illustrated. Indiana. \$4.50.

Here are nine tales from the lore of the California Indian tribes, consummately chosen. Each is the story of a woman; together, the list scans a broad spectrum of human mood; each has its own poetry. That the murmur of this poetry comes through from forest, stream, and people despite the English screening, is due to a raconteuse attuned yet always poised in selecting and retelling; and her sensitive critical notes befit her respectful handling of the tales.

THE NEW GOLDEN BOUGH. Edited by Theodor H. Gaster. Criterion. \$8.50.

In this re-editing Dr. Gaster has preserved the original thesis entire. Yet editorial notes—every serious reader will prize them—point to the spots where research has passed beyond the old master, and a modernized format makes for readier cross-referring. *The Golden Bough* continues to be a landmark, but with its potential for misleading reduced; and it continues to be literature.

OEDIPUS AND JOB IN WEST AFRICAN RELIGION. By Meyer Fortes. Cambridge. \$2.

Anthropology has indeed come a long way since Frazer's *Golden Bough*. Psychological insights have revealed to us that mythology embodies the world-view of a society and of the individual within it.

THE CULTURE AND ART OF INDIA. By Radhakamal Mukerjee. Praeger. \$10.

Probably no other of the world's great civilizations can match the influence of India in point of space and time covered and of variety of alien peoples affected, while yet remaining as alive today as it ever has been. India has had a genius for syncretism—a process not eagerly embraced by the Occident. The world-view of India remains laden with the imagery of mythology; it is profound though still relatively unexposed by the inroads of science. All this makes it



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hard for us to grasp. But Dr. Mukerjee would have done us less than a service had he not plunged ahead undaunted. Here it all is—from the third millennium B.C. to the mid-twentieth century A.D.; albeit not a history of culture in the broader, anthropological sense, but in the narrower one of the historian, the student of sophisticated religious systems or of art history. An appended chronology, an explanation of the half-tones of Indian mytho-religious art, and a list of books to support each chapter, will be highly valued by the earnest reader.

Also Recommended:

FIVE FAMILIES: Mexican Case Studies in the Culture of Poverty. By Oscar Lewis. Basic Books. \$5.50.

MAN'S WAY: A Preface to the Understanding of Human Society. By Walter Goldschmidt. World Publishing. \$4.

AFRICA: Its Peoples and Their Cultural History. By George Peter Murdock. McGraw-Hill. \$11.75.

Louis C. Hunter

THE COMMUNIST CHALLENGE TO AMERICAN BUSINESS. By Clarence B. Randall. Atlantic-Little, Brown. \$3.50.

This small and readable volume derives its interest primarily from the personal testimony of its businessman author. Mr. Randall writes well and, indeed, entertainingly of his conversion from the outworn economic clichés and theories which form the ideological stock-in-trade of his fellow businessmen, especially as to the relations between government and the economy. Recommended as a gift from the directors of CED to the membership of NAM.

TWENTY YEARS OF PUBLIC HOUSING: Economic Aspects of the Federal Program. By Robert Moore Fisher. Harper. \$6.50.

An excellent contribution to an understanding of a major segment of the public programs directed toward relieving the problem of adequate shelter in the American way of life. Among other things, it throws much light on why a New Deal program, launched with enthusiasm in 1937, contributed in twenty years to the elimination of only 7 per cent of the substandard housing of metropolitan areas.

BUSH AND BACKWOODS: A Comparison of the Frontier in Australia and the United States. By H. C. Allen. Michigan State. \$3.50.

A British historian examines two frontier societies in the light of the concepts of Frederick Jackson Turner and finds a number of fundamental similarities and some important differences.

FEDERAL BUDGET AND FISCAL POLICY 1789-1958. By Lewis H. Kimmel. Brookings. \$5.

If this book were read as widely as it deserved, the persisting folklore respecting the virtues of budget-balancing, perennially useful to pundits and politicians of the right, would lose much of its appeal. In the language of the dust-jacket it is indeed "a concise and stimulating book" which does place the modern concept of government's role in the economy in what for laymen, at least, will be "a fresh and helpful perspective."

PLANNING FOR FREEDOM: The Public Law of American Capitalism. By Eugene V. Rostow. Yale. \$6.

Against a general background of the inter-relations of law, economics, and ethics, the author discusses the problems of social control of the American economy in the interest of the substance of human freedom.

THE SOVIET CITIZEN: Daily Life in a Totalitarian Society. By Alex Inkeles and Raymond A. Bauer with the assistance of David Gleicher and Irving Rosow. Harvard. \$10.

So much of the discussion of international issues is marked by a black-or-white, wrong-or-right approach. This study, employing an unusual and impressive methodology, penetrates the curtains which obscure for Americans the character and quality of life and social relations in the U.S.S.R. A major conclusion of this truly illuminating study is that the daily life and attitudes of Soviet and American citizens are in certain fundamental respects astonishingly similar.

NEW ZEALAND IN THE MAKING: A Study of Economic and Social Development. \$6.75. *THE WELFARE STATE IN NEW ZEALAND.* \$8. By J. B. Condliffe. Macmillan.

To the student of American economic and social development, the experience of a sister republic down under, recorded and analysed in these companion volumes with great skill and at modest length, offers much of interest and insight.

THE NEWCOMERS: Negroes and Puerto Ricans in a Changing Metropolis. By Oscar Handlin. Harvard. \$4.

This study examines in some detail the life in and adjustment to the metropolis of New York's "newest immigrants," with generally hopeful conclusions.

Also Recommended:

EDISON: A Biography. By Matthew Josephson. McGraw-Hill. \$6.95.

THE AMERICAN ECONOMIC IMPACT ON CANADA. By Hugh G. J. Aitken et al. Duke. \$4.50.

John Cournois

A CONCISE HISTORY OF MODERN PAINTING. By Herbert Read. Praeger. \$7.50.

Lavishly and superbly illustrated, with text by a famous expert, this is a valuable book for those who want to understand the often baffling art of this century.

THE ART OF JAZZ. Edited by Martin T. Williams. Oxford. \$5.

A series of essays by several authors on the origins, meaning, and importance of jazz as an art form, including an essay by so

completely classical a musician as Ernest Ansermet written in 1919, prophesying the status it has assumed today as a legitimate expression of American creative endeavor.

MOZART AND HIS TIMES. By Erich Schenck. Translated from the German by Richard and Clara Winston. Knopf. \$10. *MOZART AND HIS MUSIC.* By John N. Burk. Random House. \$4.75.

Dr. Schenck's is a scholarly, thoroughly documented volume which students of the musical prodigy should appreciate no end. The minutiae of Mozart's progress to fame are faithfully recorded. The author's efforts to explain the miracle come to no conclusion. Mr. Burk's volume is readable and heart-warming, and his analyses of Mozart's music have the merit of informed simplicity.

ENGLISH ART, 1800-1870. By T. S. R. Boase. Oxford. \$11.50.

Volume ten of the eleven-volume Oxford History of English Art, this is lavish in illustrations and has an exhaustive bibliography and an adequate index.

FILM: An Anthology. Edited by Daniel Talbot. Simon and Schuster. \$8.50.

As a history and running chronological commentary on aspects of the film, supplied by writers of reputation, this could scarcely be bettered.

HANDEL'S DRAMATIC ORATORIOS AND MASQUES. By Winton Dean. Oxford. \$20.20.

The scholarship and labor which have gone into this book must excite admiration. Such thoroughness and patience inevitably suggest a labor of love. The work is authoritative and definitive.

A HISTORY OF MODERN ARCHITECTURE. By Juergen Joedicke. Praeger. \$10.

For those interested in new architecture in this country and abroad, this book is indispensable. Fifty years' growth is recorded, lucidly, not over-technically. The illustrations are many and superb.

GREEK CIVILIZATION, Volume II. By André Bonnard. Translated from the French by A. Lytton Sells. Macmillan. \$6.

This second volume, covering the period "from the Antigone to Socrates," is a fascinating exposition of Greek drama and other arts, and should prove of equal interest to the scholar and general reader.

Also Recommended:

JEAN SIBELIUS. By Harold E. Johnson. Knopf. \$5.

THE LIVING THEATRE. By Elmer Rice. Harper. \$5.50.

FROM BAROQUE TO ROCOCO. By Nicolas Powell. Praeger. \$10.

THE EROTIC SCULPTURE OF INDIA. By Max-Pol Fouchet. Criterion. \$8.50.


PRINCIPLES OF CHINESE PAINTING. By George Rowley. Princeton. \$7.50.

MODERN GERMAN DRAMA. By H. F. Garten. Essential. \$6.

THE ART OF WILLIAM BLAKE. By Anthony Blunt. Columbia. \$6.95

AN INTRODUCTION TO ANGLO-SAXON ARCHITECTURE AND SCULPTURE. By E. A. Fisher. Praeger. \$7.50.

PAINTING IN XVIII CENTURY VENICE. By Michael Levey. Doubleday. \$6.50.



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HIGHER MATHEMATICS AT LOWER LEVELS

(Continued from page 3)

the calculations. Today, how many people survey fields, or do anything else requiring the numerical solution of triangles? The argument of non-utility would be spurious if the subject had any intrinsic value, but the *numerical* part of trigonometry does not have. The four to six weeks saved are urgently needed elsewhere: for example, on a further study of the *meaning* of the logarithmic and trigonometric functions. In freshman math in college we spend time on this subject; but we never open a book of tables of sines and cosines, or logarithms.

We hear much talk these days, from people interested in education, about "the new mathematics." By this they mean some of the branches like probability and statistics (although strictly speaking these are not new), mathematical logic, topology, game theory, set theory, abstract algebra, foundations of mathematics, operations research, linear programming, and the theory of digital computers. These topics *are* new. What is more, some of them are easy enough so that anyone can understand them, or at least understand what they are about. But there is a popular misconception that is resented by some mathematicians: the implication, through the word "new," that these are the only contemporary working fields. Much is being done in these branches, to be sure; but measured in terms of actual research output, more than twice as much is being done every month and every year in the exploita-

tion and development of classical mathematics.

Let me close with this thought. The curriculum in mathematics is not, in the long run, established by any commission, any state board, or any group that sets itself up deliberately as a curriculum committee. Such bodies may implement or accelerate changes in the curriculum, but ultimately the changes are directed and effected by the needs of science and of society. The pressures are there, and they must be met. If, by improving and streamlining our high-school mathematics program, we can create a vacuum or a partial vacuum in the twelfth grade, something is going to rush in to fill it. I have tried to indicate my reasons for thinking that it is going to be elementary classical analysis—that is, calculus—perhaps not this year or next, but sooner than you think. ■ ■ ■

Key Notes

A gift of \$10,000 to the Alpha chapter of Virginia at the College of William and Mary has been made by John D. Rockefeller, Jr., an honorary member of the chapter since 1938. Mr. Rockefeller made the donation without stipulating how it is to be used, but said that he hopes it will be spent on a scholarly program that the chapter's resources would otherwise not permit. The chapter plans to use the income of the gift for annual awards to members of the faculty for research or travel.

A third volume of orations is being considered as a companion-piece to the two volumes of *Representative Phi Beta Kappa Orations* published in 1915 and 1927, respectively. William T. Hastings, historian of the United Chapters, has collected over a hundred Phi Beta Kappa addresses delivered between 1910 and 1959. Senators William C. DeVane, Frederick Hard, and Whitney J. Oates will help Mr. Hastings select the thirty-five or forty orations to be included in the volume.

Two blackened coins turned up unexpectedly in old United Chapters correspondence files not long ago. They accompanied a letter to the editor of *THE KEY REPORTER*, which read in part:

In 1904 a new idea hit me. Columns of words seemed marching along, their meaning somehow revealed by their appearance or shape. For the thirty-two years since that time I have been trying to re-arrange those columns. For the ten figures 1 2 3 4 5 6 7 8 9 0, known and used internationally but without international names, I have worked out the names zab zac zad zaf zag zal zam zaq zar and zax. Pronounce *c* as *sb* and *q* as *ng*. Or the letters may be used singly, as the year 1492—bfrc. If we take *w* for 00 and *y* for 000, *bwy* will be 100,000 and *ly,yyy* will be six trillions. The number 888, which Cicero wrote as DCCCLXXXVIII, will be *qqq*.

The coins, alas, were neither denarii nor even pieces of eight, but were two ordinary dimes covering a subscription to *THE KEY REPORTER*, at that time (*brcl*) in its first year of publication.

Winter 1959-60:

The Quest of Excellence • Albert Guérard

Insects in the Diet • Marston Bates

A Reappraisal of Charles Darwin • Francis Huxley

A Critical Look at Psychology • Stanley Edgar Hyman

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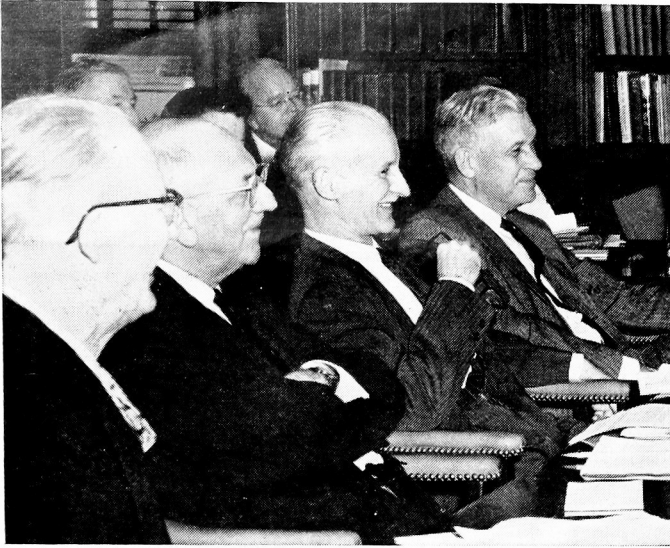
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Briskness without Solemnity characterizes most meetings of the Senate, and this one appears to have been no exception. From left to right: Senators Raymer McQuiston, Marten ten Hoor, Richard D. Mallery, and John W. Dodds.

Other Senate Action :

- The Senate also voted to accept the invitation of the Alpha of Vermont chapter at the University of Vermont to hold the triennial meeting of the Phi Beta Kappa Council on its campus in 1964. Meetings of the Council are held alternately in the East and in the Middle or Far West. The twenty-sixth Council in 1961 will meet on the campus of the University of Utah in Salt Lake City.
- For the Committee on Qualifications Senator Edward C. Kirkland reported that ten institutions applying for a chapter have been selected for study and will be visited this year. At its next meeting the Senate will discuss the final report of the committee and decide which institutions to recommend to the 1961 Council for a charter.
- Senator John W. Dodds reported to the Senate on the thriving Visiting Scholar Program, and announced that a grant of \$25,000 has been made to Phi Beta Kappa by the Ford Foundation to help support the program, \$5,000 to be used this year, and the balance next year.

THIRD BOOK PRIZE (Continued from Page 1)

lifted the restriction for a three-year trial period, after consulting the directors of university presses, a majority of whom thought that their books would not be at any disadvantage in competition with books from the commercial publishers. In practice, the university presses have since submitted the lion's share of the entries, and the prize has continued to go to their books. This year, for example, twenty-two university presses submitted

thirty-four of the forty-four entries; six trade publishers sent in the remaining ten. The origins of the entries for the Science Award, on the other hand, form something like a mirror-image of those for the Gauss prize. Twenty-seven of the forty-two entries were submitted by nineteen commercial publishers; the balance by seven university presses. The prize-winning entry, *Darwin's Century*, was published by Doubleday.

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Higher Mathematics at Lower Levels
By C. Stanley Ogilvy
 Senate Establishes Third Book Prize

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