This special issue of "Science Education" is designed to provide a research tool for science education researchers and students as well as information for science teachers and other educational practitioners who are seeking suggestions about science teaching objectives, curricula, instructional procedures, science equipment and materials or student assessment instruments. It consists of 3 divisions: (1) science teaching; (2) research and special interest areas; and (3) journal features. The science teaching division which contains listings of practitioner-oriented articles on science teaching, consists of five sections. The second division is intended primarily for science education researchers who are doing a literature search, and it consists of nine sections, each of which relates to a particular research or special interest area in science education. The third index division, which consists of citations in the special features of the journal, is intended for researchers carrying out historical studies in science teaching and science education. An article which contains an illustration of how questions of contemporary interest can be traced historically by using entries in this index is also included. (HM)
CUMULATIVE INDEX TO

science
education

Audrey B. Champagne
Leopold E. Klopfner
CUMULATIVE INDEX
TO
SCIENCE EDUCATION

Volumes 1 through 60
1916–1976

Audrey B. Champagne
Leopold E. Klopfer
Learning Research and Development Center
University of Pittsburgh
Pittsburgh, Pennsylvania 15260

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   Descriptions of the organization or content of science courses, programs, or syllabi; Surveys of science offerings in one or several schools, school districts, states, or countries; Curricular proposals based on rationales other than psychological theory; Discussions of the development, design, or implementation of science curricula; Discussions of factors that influence science curricula or promote changes in schools; Reports of research on science curriculum. 4

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VI. Science Education Research
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VII. Applications of Psychological Theories in Science Education
   Discussions of psychological theory in relation to science teaching; Discussions of specific psychological factors or learning processes related to student learning in science; Curricular or instructional proposals based on a rationale relying on psychological theory; Reports of research on psychological theory applied to science teaching or learning.

VIII. Evaluation of Science Programs
   Discussions of the evaluation of science curricula, courses, or programs for students in elementary school, high school, or college; Proposals for specific systematic procedures for evaluating science programs; Reports of research in science program evaluation.

IX. Science Education History
   Historical accounts about science education programs or institutions; Summaries or discussions of long-term trends or developments in science education; Biographies or biographical information about science educators; Reports of historical research.

   A. General
   B. Biographies of Science Educators

X. Science Teachers and Teacher Education
   Discussions of the professional requirements or personal needs of science teachers; Surveys of science teachers' characteristics or classroom practices; Discussions or surveys relating to science teacher shortages; Discussions or surveys relating to science supervisors; Discussions of the role of school principals in relation to science teaching; Discussions of preservice preparation programs in science for elementary, junior high, or senior high school teachers; Discussions of inservice teacher education; Descriptions of specific programs, curricula, or workshops in science education for teachers; Reports of research on science teachers, supervisors, or teacher education.
XI. Science and Society
Discussions of issues related to the interactions of science and society; Accounts about the applications of science in technology, warfare, medicine, or public health; Discussions about the philosophy of science, science and the humanities, or science and the arts.

XII. Scientific Information
Descriptions of contemporary developments in science or applied science; Information about specific science or applied science content included in elementary or high school science programs.
A. Biological Sciences and Applications
   Includes: biology, botany, zoology, nature study, domestic sciences (textiles, food), consumer education, nutrition, agriculture, forestry, fishing, ecology, conservation and environmental science.
B. Physical Sciences and Applications
   Includes: physical science, chemistry and the chemical industry, physics (mechanics, energy and heat, light, sound, electricity, atomic and nuclear physics), and applications, earth sciences (geology, physical geography, mineralogy, and meteorology), astronomy, technology (aviation, space travel, engineering, machinery).

XIII. History of Science
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D. Instructional Media, Science Equipment, and Facilities
E. Science Tests and Assessment Instruments
F. Science Education Research
G. Applications of Psychological Theories
H. Evaluation of Science Programs
I. Science Education History
J. Science Teachers and Teacher Education
K. Science and Society
L. Scientific Information
   1. Biological Sciences and Applications
   2. Physical Sciences and Applications
   3. General Science
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N. Education in General

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A. Aims and Objectives of Science Teaching
B. Science Curriculum
C. Instructional Procedures
   1. Methods and Procedures of Instruction
   2. Units of Instruction
D. Instructional Media, Science Equipment, and Facilities
   1. Textbooks for the Elementary School Student
      a. General Science (includes text series for elementary school
         grades K–8 and junior high school grades 7–9)
      b. Geography
      c. Health
      d. Nature Study and Agriculture; Science Readers
      e. Laboratory Manuals (includes workbooks and review books)
   2. Textbooks for the High School Student
      a. Biology and Applied Biology (includes agriculture, domestic
         science, and hygiene)
      b. Laboratory Manuals for Biology and Applied Biology
      c. Chemistry and Applied Chemistry
      d. Laboratory Manuals for Chemistry and Applied Chemistry
      e. Earth Science
      f. Laboratory Manuals for Earth Science
      g. Physical Science
      h. Laboratory Manuals for Physical Science
      i. Physics and Applied Physics (includes electronics, radio, and
         shop)
      j. Laboratory Manuals for Physics and Applied Physics
   3. Textbooks for the College Student
      a. Biology and Applied Biology (includes agriculture, conservation, 
         ecology, medicine, nursing, and nutrition)
      b. Laboratory Manuals for Biology and Applied Biology
      c. Chemistry and Applied Chemistry
      d. Laboratory Manuals for Chemistry and Applied Chemistry
      e. Earth Science
      f. Laboratory Manuals for Earth Science
      g. Physical Science
      h. Laboratory Manuals for Physical Science
      i. Physics and Applied Physics
      j. Laboratory Manuals for Physics and Applied Physics
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1. Biological Sciences and Applications
   Note: Listings in each of the following categories are divided into (1)
   books for children and (2) books for young adults and adults.
   a. General Botany
   b. Botany—Trees and Flowers
   c. General Zoology
   d. Zoology—Invertebrates
   e. Zoology—Reptiles and Amphibians
   f. Zoology—Aquatic Animals
   g. Zoology—Birds
   h. Zoology—Mammals
   i. Medicine and Physiology
   j. Genetics and Heredity
   k. Paleontology and Evolution
   l. General Biology
   m. Conservation
   n. Nature Study and Natural History
   o. Agriculture, Domestic Science, and Forestry

2. Physical Sciences and Applications
   Note: Listings in each of the following categories are divided into (1)
   books for children and (2) books for young adults and adults.
   a. General Physical Science
   b. Physical Science—Atomics and Structure of Matter
   c. Physical Science—Water
   d. Chemistry and Chemical Industries
   e. General Physics (includes mechanics, energy and heat, light, sound and applications)
   f. Physics—Electricity and Applications
   g. Earth Science—Geology, Physical Geography, Mineralogy
   h. Earth Science—Meteorology
   i. Astronomy
   j. Technology—Aviation, Space Travel
   k. General Technology

3. General Science (includes topics common to all sciences; e.g., research, and books about several sciences)
   a. Bibliographies and Dictionaries
   b. Books for Children
   c. Books for Young Adults and Adults

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INTRODUCTION

Our original purpose in compiling a cumulative index for *Science Education* was to provide a research tool for students of science education. That purpose did not change as the compilation project progressed, but we did learn that the sixty volumes of the journal were sources for a greater diversity of information than we at first had realized. Beginning in 1916 as the *General Science Quarterly*, the journal’s earliest primary audience was the teachers of the then recently devised General Science courses in the secondary schools and the newly evolving junior high schools. In later volumes of the journal, the audience addressed through its articles and features also included elementary school teachers, science supervisors, science education researchers, science teacher educators, high school teachers of biological and physical sciences, and college instructors of general education courses in science. Some segments of this diverse audience apparently looked to the journal for practical procedures, methods, materials, plans, and resource information for teaching science, while others probably were more concerned about the organization of science curricula and teacher preparation programs or about the systematic investigation of learning, instruction, evaluation, and other aspects of science education. The sixty volumes of *Science Education* contain copious information about all these matters, and more.

In the course of our own studies in science education, we often had occasion to draw upon the resource of information and ideas contained in *Science Education*. But doing so was laborious, for it generally involved searching through the indices of many individual volumes to find the items of interest. A single cumulative index, classified by areas that are commonly of concern to many science educators, should reduce the searching time significantly and, thereby, make the desired information more accessible. That is how we hope this cumulative index to *Science Education* will be of service to fellow students of science education. We envision that this index will be useful for (1) science education researchers who wish to have ready access to the background literature on a particular research topic; (2) teachers of science and other educational practitioners who are seeking suggestions about science teaching objectives, curricula, instructional procedures, science equipment and materials, or student assessment instruments; and (3) researchers who are carrying out historical studies of science teaching and science education in the 20th century.

The bibliographic needs of these three groups dictated what the main divisions for organizing the index would be, but the actual contents of the journal determined the sections that were included in each division. For the largest part of the journal’s existence, its contents were intended to be directly useful for educational practitioners concerned with the teaching of science. Consequently, our first division in the index contains listings of practitioner-oriented articles on science teaching. This division consists of five sections, as described in the Table of Contents. The second division is intended primarily for science education researchers who are doing a literature search, and it consists of nine sections, each of which relates to a particular research or special interest area in science education. In designating the nine areas for the sections of this division (see Table of Contents), we have sought to reflect those areas of research and interest that are prominent in science education at the present time.

The third index division, which consists of citations in the special features of the journal, will be of particular interest to researchers carrying out historical studies in science teaching and science education. While such historical studies probably would focus on
one or several topics in the sections of the first and second divisions, the journal features indexed in the third division are a valuable additional resource. The journal features include abstracts of contemporary articles appearing in other journals and periodicals; reviews of science textbooks, science trade books, and various other reference and trade books; editorials and editorial comments; and meeting announcements, reports, and minutes of meetings for several science education associations. More than 2900 abstracts appear in Volumes 14 through 33 of the journal and more than 6700 books were reviewed throughout the sixty volumes, but space considerations did not allow us to list all the abstracts and book reviews in the cumulative index. Hence, we had to make a judicious selection of abstracts and book reviews, as explained at the beginning of each of these sections. Nevertheless, the journal features division of the index is about as large as the other two index divisions combined.

A descriptive Table of Contents for this index appears on pp. iii-viii to provide the user with an overview of the organizing principles we have employed in presenting the references to articles and journal features in the sixty volumes of Science Education.

We are pleased that it has been possible to reprint in this volume (pp. xi-xxxii) our article, “A Sixty-Year Perspective on Three Issues in Science Education,” which contains an illustration of how questions of contemporary interest can be traced historically by using entries in this Cumulative Index. [This article originally appeared in Science Education 61:431-452 (1977).]

Acknowledgments

This cumulative index could not have come into existence without the efforts of an exceptional educational bibliographer, Scott D. Koziol. We are very grateful for her insightful, conscientious, and continually cheerful work on this lengthy project.

We want to express our appreciation for their helpful cooperation to the librarians in the Hillman Library, University of Pittsburgh, and in the Science and Technology Section, Carnegie Library of Pittsburgh.

For their good natured assistance on a variety of tedious clerical tasks, we are indebted especially to Alexandra Antoniewicz, Joan Donnelly, and to many other helpers. Page layouts and graphics were skillfully executed by Donna Rotman.

For accomplishing the tremendous task of typing the index, we wish to particularly thank Patricia Stanton.

A.B.C.
L.E.K.
A Sixty-Year Perspective on Three Issues in Science Education:
I. Whose Ideas Are Dominant?
II. Representation of Women.
III. Reflective Thinking and Problem Solving

AUDREY B. CHAMPAGNE and LEOPOLD E. KLOPFER
Learning Research and Development Center, University of Pittsburgh, Pittsburgh, Pennsylvania 15260

The nation's bicentennial provided the impetus for a good deal of historical reflection and for a multitude of commemorative events. Coinciding with the 200th anniversary year of the nation's birth was a memorable milestone in the life of the journal, Science Education, in that 1976 marked the completion of the publication of sixty continuous volumes.* This occasion was appropriately commemorated in Milton Pella's appreciative and reflective editorial that headed Issue 4 of Volume 60[1]. Our own contribution to the celebration of the occasion was the preparation of a cumulative index for the sixty volumes of Science Education, 1916-1976[2].

Undertaking such a mammoth bibliographic task should have a greater purpose than merely commemorating a publishing milestone. Moreover, the production of a cumulative index in itself is not the kind of research activity that we value highly. This is not meant to imply that we are unappreciative of the efforts of those conscientious persons who labor long and hard to prepare good cumulative indices that become important tools for the students in a field. Such facilitating work is clearly necessary in any field which is the object of serious study. By making available a cumulative index for Science Education, we would like to encourage students in the field of science education to become more deeply informed about their research topics and to seek more comprehensive documentation for their studies than is frequently the case at present. Another purpose for our preparing this cumulative index is to make a modest contribution toward the encouragement of historical studies in science education. We believe that historical studies which are firmly grounded in good data can provide exceedingly valuable perspectives on many issues that confront science education today.

It is not difficult to imagine how a cumulative index could be used in historical studies both as a source of data and as a route to additional data. The section titles that we em-

* No other periodical publication devoted exclusively to education in science has a comparable record. School Science and Mathematics began publication in 1901 as School Science and continues today, but it has not been exclusively devoted to science education. The Cornell Rural School Leaflet (later called Cornell Science Leaflet) was founded in 1906 and dealt only with science, but it expired with Volume 62 in 1969. Science Education began as the General Science Quarterly in 1916 and adopted its present name in 1929. The next four oldest science education periodicals, which are still being published, are Great Britain's School Science Review, begun in 1919; the Journal of Chemical Education, begun in 1923; the American Physics Teacher (now the American Journal of Physics), begun in 1933; and the American Biology Teacher, begun in 1938.

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TABLE I
Sections in the *Cumulative Index for Science Education, Volumes 1-60, 1916-1976*

**SCIENCE TEACHING**

I. Aims and Objectives of Science Teaching
II. Science Curriculum
III. Instructional Procedures
IV. Science Equipment, Materials, and Facilities
V. Science Tests and Assessment Instruments

**RESEARCH AND SPECIAL INTEREST AREAS**

VI. Science Education Research
VII. Learning Theories and Processes
VIII. Evaluation of Science Programs
IX. Science Education History
X. Teacher Education
XI. Science and Society
XII. Scientific Information
XIII. History of Science
XIV. Education in General

**JOURNAL FEATURES**

XV. Abstracts
XVI. Book Reviews
XVII. Editorials
XVIII. Science Education Associations' Affairs
XIX. Miscellaneous Information

employed to organize the *Cumulative Index for Science Education* are listed in Table I. By consulting the entries in a particular section, one can begin to investigate questions such as these: How much attention did science educators give over the 60 year period to the aims and objectives of science teaching? Which themes persisted during this time and which ideas were transitory? How much attention did science educators give in 60 years to the psychology of learning science? Which learning theories and processes were particularly emphasized? How much attention did science educators give in 60 years to problems of testing and student assessment? What solutions were devised for some student assessment problems and how well did they work? Later in this paper we will illustrate how ideas about questions like those just listed can be traced historically by utilizing entries in the *Cumulative Index for Science Education*. Before turning to that illustration, however, we would like to describe how the process of compiling the cumu-
lative index yielded some data which aided in providing a perspective on two current issues in the field of science education.

**Whose Ideas Are Dominant in Science Education?**

What children learn in schools about science is determined by many factors, not the least of which are the content and form of instruction. Educators generally control these two factors. By educators we mean, first of all, classroom teachers, plus supervisors of instruction in education agencies at various levels and staff members associated with education in colleges and universities. Educators are rarely of one mind regarding what the content and form of instruction in schools should be, and this is particularly true in science education. There is a diversity of ideas in the field, and the issue of whose ideas on science education are the most worthy remains unresolved. Although a historical study cannot settle questions of relative worth, it can shed some light on the issue by providing data concerning the sources of the ideas which have been prominent over the course of time.

As we prepared the *Cumulative Index for Science Education*, we took note of the institutional affiliations of all the authors of articles. Each time a person’s name appeared either as the sole author or as a co-author of a full article, not including journal features such as abstracts and book reviews, his or her listed affiliation was tallied under one of several categories.* The main categories are:

- **Elementary and secondary schools.** Includes all organizational combinations, e.g., middle school, junior high, academy, junior-senior high school, of grades K–12 and laboratory schools.
- **Education agencies.** Includes school district offices, intermediate units between the district and state levels, state education departments, regional and nationwide associations, and national education agencies, e.g., U.S. Office of Education.
- **Colleges and universities.** Normal schools, which are represented in the earlier volumes, are included in this category. Also included are special educational projects and institutes associated with a college or university.
- **Other.** This interesting category includes industry, medicine, business, publishers, and government agencies other than education agencies. The few authors who had no listed affiliation (less than 0.5%) were also tallied here.

For each volume year, we counted the number of authors in each institutional affiliation category and calculated percentages. The results are shown in Table II. As the data in the table reveal, in the early volumes of *Science Education*, the number of authors affiliated with elementary and secondary schools was, for the most part, larger than the number of authors from colleges and universities. The mean percentages for volumes 1–10 are, respectively, 42 and 36%. In subsequent volumes the number of practitioner authors from elementary and secondary schools never again exceeds the number of authors from

* To be precise, our tallying procedure recorded the number of authorships of articles, not the number of different authors. Thus, for any person who authored more than one article in *Science Education*, his or her affiliation was tallied once for each such authorship. This straightforward procedure was used because the purpose for recording the data was simply to obtain information about the proportions of contributions to *Science Education* from persons in several institutional affiliation categories. Since the same rule for tallying was applied to persons in all affiliation categories, the proportions derived from the number of authorships can be expected to be nearly identical with the proportions derived from the number of different authors. We chose the straightforward procedure of tallying the number of authorships and did not attempt to reduce this to the number of different authors, thereby saving much arduous and needless work.
### TABLE II
Affiliations of Authors of Articles in Science Education, Volumes 1–60, 1916–1976

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<th>Volume No</th>
<th>Number of Authors</th>
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colleges and universities. After Volume 30 (1946), the erosion of contributions to *Science Education* from practitioners in schools becomes particularly marked. Concurrently the number of college and university authors per volume markedly rises. For volumes 51–60, the mean percentage of authors from schools is less than 5%, while it is 89% for college and university authors. The shift in the institutional affiliations of *Science Education* authors between the journal's early years and the 1970s can be characterized as no less than dramatic.

Science educators affiliated with education agencies may be thought of as practitioners who are once or twice removed, depending on their agency's level, from the daily happenings in the classroom. On the whole, these practitioners have contributed a small but fairly steady percentage of authorships per volume of *Science Education* throughout its 60 years. In volumes 1–10, the mean percentage of authors affiliated with education agencies is 6%; in volumes 51–60, it is 5%. These percentages are certainly not large, but they are impressive when considered in relation to the percentages for authors who are teachers in schools. The number of persons teaching science in schools exceeds the number of science educators in various education agencies by at least a factor of 20. Yet, in the most recent ten-year period, there were about as many education agency authors of *Science Education* articles as there were teacher authors. Science educators in education agencies can hardly be considered a silent minority.

Another interesting observation that can be made from Table II concerns the extent of contributions made by authors in the “Other” category. In most of the earliest volumes of *Science Education*, there were more authors from this group than authors in education agencies. The mean percentage for volumes 1–10 is nearly 16%. Thereafter the percentage of authors per volume in the “Other” category declines, but lingers on at a respectable level in several years, notably during and after the World War II era covered by volumes 25–32 (1941–1948). However, for volumes 51–60, the mean percentage has dropped to less than 1%. We suspect that the diminution and eventual disappearance of contributions to *Science Education* from authors outside education is a reflection of the growing "professionalization" of science education. As this process proceeds, more and more professionals in the field must publish their work and their ideas, so that soon little space remains in the profession's journal for outsiders.

Our data have also shown that space in *Science Education* has been increasingly devoted to the publications of science education professionals affiliated with colleges and universities. To the extent that publication in the profession's journal is an index of whose ideas are most prominent, science educators at colleges and universities are virtually uncontested today. As measured by the ratio of publication in *Science Education*, the ideas of teachers in schools are but rarely heard. This has not always been so. Our survey of the affiliations of *Science Education* authors indicates that in former years more equity in the opportunity to express ideas prevailed among educators in colleges and universities, educators in education agencies, and educators who teach science to children in schools. Whether or not the present situation is most beneficial for the science education of these children is something to consider.

**Representation of Women in Science Education**

The recognition of women's equality and right to equal opportunities in all affairs of life is a significant issue throughout the fabric of today's society. So, too, is it a pressing
# TABLE III
Sex of Educator Authors of Articles in *Science Education*, Volumes 1–60, 1916–1976

<table>
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<th>Volume No.</th>
<th>Year</th>
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issue in the field of science education where, as in many other areas concerned with the teaching of children, women have long been well represented. But, it is the levels at which women are involved in science education that is the issue, and whether or not women have equal opportunities to influence science education other than as classroom teachers. In the process of preparing the Cumulative Index for Science Education, we were able to compile some data which provide a historical perspective on this issue. We employed the same procedure for compiling the data as was used for tallying the affiliations of authors of full articles in Science Education. Authors whose affiliation was in the “Other” category were not counted, since our interest here was on female and male representation within science education. Judging by the given name of each educator author, we recorded whether the person was female, male, or unidentified. A considerable difficulty arose in those cases where only the person’s initials and family name were listed, and we found it necessary to consult various other sources and references to reduce the number of persons in the unidentified category.* Table III displays the number and percent of female and male educator authors, and the number whose sex still remains unidentified, in each of the 60 volumes of Science Education.

According to our data, the percentage of female authors in a single volume ranges from a high of 50% to a low of 0%. The median for all 60 volumes is 13%. However, the percentages are not evenly distributed across different time periods, and they show a generally decreasing trend from the earliest ten-year period to the latest. For volumes 1–10, the mean percentage is 17%, while for volumes 51–60, it is 11%. On the assumption that being an author in the profession’s journal is an index of the degree to which an individual exerts influence on the wider field of science education, these data show that women had more opportunity to be more widely influential in the earlier years of Science Education than in the most recent years. Measured in relation to the male authors in the profession’s journal, women in science education appear to have sustained a slight loss in influence as the years have gone by.

Reflective Thinking and Problem Solving

We mentioned before that educators rarely agree on which content and form of instruction is the best, but there is one aspect of science instruction where there is a remarkable degree of agreement in the professed beliefs of today’s science educators. It is the belief that reflective thinking and problem solving have an important place in children’s learning of science in school. Nonetheless, this common belief is all too often not manifested in school practice. A contemporary issue of some magnitude in science education is this disparity between belief and practice regarding reflective thinking and problem solving. In this section, we shall attempt to provide a perspective on this issue.

* Sources used to find complete names of authors included, among others, the volumes of the Readers Guide to Periodical Literature and the Education Index, Library of Congress catalog cards, and published membership lists and annual meeting programs of the National Association for Research in Science Teaching. In a few instances, we made an informed inference about the person’s sex on the basis of institutional affiliation and title, e.g., a principal of a high school in the 1920s was identified as a male, since virtually no females were high school principals then. Sometimes an individual’s given name alone (e.g., Leslie) was not sufficient to make a decision about the person’s sex, and such instances were left as unidentified unless we had additional information about the person. From the names listed with the articles in the journal, the sex of some 9% of the educator authors was initially in the unidentified category. After our search, the sex of only 2.6% remains unidentified.
through a historical study that was facilitated by employing the Cumulative Index for Science Education.

Throughout the 60 volumes of Science Education, a pervasive theme is reflective thinking and its external manifestation, innovative problem solving.* It is significant that the man who made this theme pervasive in American education also authored the first article in the first volume of Science Education, which was then called General Science Quarterly. John Dewey's position is stated briefly but directly in "Method in Science Teaching[4]," that the method of science—problem solving through reflective thinking—should be both the method and valued outcome of science instruction in America's schools. This position was not challenged in the 40 subsequent volumes of the journal. In the following pages we propose to describe and analyze reflective thinking and innovative problem solving as they are represented in the volumes of Science Education; to show the extent to which John Dewey influenced this literature and the practice of science education, as it is reflected in Science Education; and to document the assertion that, even as the study of innovative problem solving and reflective thinking comes increasingly under the influence of psychology, Dewey's philosophy remains basically unchallenged. Reflective thinking continues to be regarded as a valued outcome for science education.

John Dewey contributed two articles concerning reflective thinking and problem solving to the volumes of Science Education; the first, "Method in Science Teaching," appeared in the journal twice[4]. The second time when it appeared in Volume 29, it was preceded by some reflections by its author. Dewey addressed the same theme in a second article, "The Supreme Intellectual Obligation," which appeared in Volume 18[5]. Both of these articles are devoted to discussions of the value of the method of science and the responsibility of science educators to make the method of science available to all children. "Method in Science Teaching," an address delivered before the Science Section of the National Education Association, contains a reaffirmation of John Dewey's faith in the method of science and the responsibility of science educators to make the method of science available to all children. Dewey asserted that science gives men power because it allows them to test their beliefs and that "science ... is knowledge at its best, knowledge in its there is no explicit attempt in the earlier literature of Science Education to define the type of problem to which reference is being made. Although Dewey believed in the application of reflective thinking to cognitive problems in all facets of human endeavor, we have limited our discussion to problems directly related to science. We have added the adjective innovative which Getzels[3] uses to set apart higher level cognitive problems from the lower level types of problems which do not require creative thinking for their solution.

1 In another of his Science Education articles, "Individuality in Education[6]," Dewey touches on problem solving in a brief aside. He mentions one facet of problem solving that is recognized later in the literature as having important implications for problem solving in the schools. Dewey says:

The teacher believes there is one scientific and proper method of approaching these problems.

One child does the problem in a way which diverges from the orthodox conventional method laid down by the text-book, the teacher, or the particular course of study. Instead of recognizing something valuable, something precious, something to be encouraged, the teacher frowns upon the pupil and insists on the adoption of a certain uniform method of arranging the result[6, p. 159].

Dewey asserted this faith on many occasions, both before and after the present article. For example, the book that he addressed to teachers in 1910, How We Think, revised in 1933[7], was in a sense an affirmation of Dewey's faith in reflective thinking or the method of intelligence, which "converts action that is merely appetitive, blind, and impulsive into intelligent action[7, p. 17]." See, especially, his discussion of the values of thinking in Chap. 2 of How We Think.
Consistent with his philosophy, Dewey seeks to obliterate the duality of means and ends and thus asserts that it is “important to see to it that methods of teaching [science] are such as to fulfill its true purpose[4, p. 4].” Here Dewey states unequivocally that elementary education is important in the process of educating reflective thinkers and discusses briefly the methods he believes appropriate. He urges that science teaching should be dynamic, truly scientific, because “the understanding of process is at the heart of scientific attitude[4, p. 7].” The child should be given the opportunity to construct knowledge, beginning with everyday objects and materials, and to learn from them both the ideas and the method through which they were created. Being derived as it is from the very method of the natural sciences, Dewey’s philosophy of science education was then, as it is today, most appealing to science educators. However, Dewey’s philosophy has resisted their efforts to translate it into methods of classroom practice that can be readily communicated to teachers. This is due in part to the very nature of the philosophy. Dewey’s intent to obliterate the means–end dualism and his view of intellectual activity as an integrated whole resulted in a philosophy that obstructs the kind of analysis necessary to translate it into functional methods and outcomes of sufficient simplicity to be easily communicated to practitioners. Evidence of this difficulty can be found in articles that appeared in Science Education between the years 1917 and 1935 on innovative problem solving and reflective thinking.

In the 17 volumes between Dewey’s first and second statements on this matter a handful of articles appeared in Science Education [e.g., 8–10] which suggest that several science educators had taken on the task of translating Dewey’s philosophy and method into classroom practice. It is evident from certain of their writings that, in their search for definition, they had read further into some of Dewey’s other works.* They were obviously struggling with the problem of identifying the elements and discovering the distinctions, if any, that exist among reflective thinking, scientific method, scientific problem solving, the method of intelligence, inquiry, and scientific attitude—all of which were terms Dewey used on occasion to describe the ideal of intellectual activity toward which all education should be striving.

Among the articles published in Science Education in the early 1930s, five describe attempts to measure the extent to which some facet of Dewey’s intellectual ideal has been engendered in students of science. Two articles by Ralph Horton, a chemistry teacher at New York City’s Seward Park High School, report on the attempt by Horton and his colleagues to measure outcomes of laboratory experiences other than those measured by written examinations.† The desired outcome is to train students to think, and two methodologies are tested to ascertain their relative effectiveness in producing the desired

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* For example, although the five phases of reflective thought are not mentioned in “Method in Science Teaching,” they do appear in some of the science educators’ writings. As given in Dewey’s How We Think, the phases of reflective thought are: Suggestion; Intellectualization; the Guiding Idea; the Hypothesis; Reasoning (in the narrower sense); and Testing the Hypothesis by Action [cf., 7, pp. 107–115].
† An interesting aside in this article results from Horton’s attempt to attack this problem in educational experimentation as if it were a problem in chemistry. Reasoning by analogy, he asserts that his educational problem is analogous to determining relative yield from two or more chemical reactions, but he concludes somewhat less than cynically that “attempts to apply chemical methods to educational experimentation meet with obstacles[11, p. 312].”
outcome. The problem method, which used chemistry laboratory experiences to train pupils to think through problems, was hypothesized to be superior to the demonstration method on the basis that “learning to think and to do could be achieved—if at all—only through opportunity to think and to do...” [11, p. 319]."

This study represents a sincere attempt to measure the extent to which Dewey’s ideal might be met through the use of laboratory experiences. However, analysis of the study reveals one kind of discrepancy that occurred as attempts were made to operationalize the ideal. Although Horton concludes from his data that the laboratory group performs better on his outcome measures, the instruments used as outcome measures that he describes are tests of written information, the ability to manipulate laboratory equipment, and the ability to set up laboratory apparatus to fulfill a novel combination of specifications. These are instruments that test the ability “to do,” rather than the ability to think.

The pitfall facing those who made attempts to operationalize scientific attitude and skills are also evident in the work of Florence Weller [12] of the Institute of School Experimentation at Columbia University's Teachers College. Weller attempted to answer an important question, “What are some of the attitudes and skills we can expect to develop in elementary science[12, p. 91]?” Weller’s question was and still is an important one. Not only does it represent a further attempt at definition, but it also asks what may be possible to achieve. In retrospect, Weller’s attempt at definition and operationalization was no more successful than Horton’s. Weller asserted that her instruments tested for scientific attitude and the skills of observation, conclusion, proof or verification, but it is highly unlikely that science educators would agree that they are valid tests of scientific attitude or of these skills.*

Another article during this period reports the results of a study by Sam Strauss [13] to determine the extent to which a sample of Ohio high school students exhibited scientific thinking, as that process is defined by Elliot Downing’s test, “Some Elements of Scientific Thinking.”* Downing’s instrument represents a most careful scholarly attempt to define and operationalize the concept of scientific or reflective thinking. As his source of information about the working of the minds of scientists, Downing used biographies, journals, and letters that scientists, reflecting on their work, had written. On the basis of his analysis of the reflective writings of scientists, Downing compiled a list of the steps of the scientific method,† the “hazards encountered at each, and safeguards to be observed at each step to ensure correct conclusions in thought processes[15, p. 121].” These successive steps and necessary safeguards were translated into an instrument designed to test certain of the elements and safeguards:

* The reader may wish to judge the validity of Weller's assertion. For some sample items from Weller's true-false test of attitude and from her multiple-choice test of the skills of observation, conclusion, proof, or verification, see Appendix I.
† It is interesting to note that Strauss's report of his use of Downing's test predates the report by Downing of his own studies using the instrument[14]. These studies are followed some three years later by an article[15] that describes the rationale for and the method of developing the instrument, along with the test itself, the scoring procedures, and analysis of the results.
‡ The list of successive steps and their accompanying safeguards appeared in an article by Downing in The Scientific Monthly[16]. The elements listed there and some of the safeguards are given in Appendix II.
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1. To test accuracy of observation.
2. To test ability to pick out pertinent elements from a complex situation.
3. To test ability to synthesize.
4. To test selective recall.
5. To test fertility of hypothesis.
6. Does pupil clearly define a problem before trying to solve it?
7. To test ability to hold in mind a complex of relations.
8. To test problem solving ability—all elements at once.
9. To test judgment on adequacy of data.
10. Does pupil solve a problem scientifically or by the trial and error method?
11. Does pupil suspend judgment on mooted questions?
12. Can pupil apply a rule or law?
13. Does pupil test an hypothesis by collecting facts—say, measuring the lines?
14. Is pupil aware of the danger of reasoning by analogy?
15. Can pupil arrange data in sequence to make the conclusions evident[15, p. 127]?

Strauss administered the Downing test to a sample of 1,343 students in grades 8-12 and asked six questions of the data:

Which of the elements of scientific thinking are practiced most? Which least[13, p. 90]?* [Strauss answered this question by comparing the scores students made on each of the elements and assumed that those elements on which the students scored high were practiced more than those on which students scored lower.]

Do boys think better than girls[13, p. 91]?
[There is no evidence from this administration of the test that they do.]

Does scientific thinking improve with rise in grade status[13, p. 91]?
[There is no evidence from this administration of the test that it does.]

Does scientific thinking improve with increase in chronological age[13, p. 92]?
[There is no evidence from this administration of the test that it does.]

Is there any relationship between general intelligence and the ability to think[13, p. 93]?
[There is no evidence from this administration of the test that the relationship is marked.]

The data collected by Strauss were hardly encouraging and those data collected by Downing[14,15] were no more encouraging than Strauss's. The analysis of the data Downing collected on the administration of his test to over 2,500 students in grades 8-12 led him to conclude that there is

no evidence in the data given that high school pupils acquire skill in scientific thinking as a necessary by-product of the study of scientific subjects as at present taught[14, p. 89].

* The form of this question is interesting because of its tacit acceptance of the tenet that students learn by doing, a belief about learning which Horton had stated explicitly.

† In answer to this question, Strauss found students scored highest on recognizing a problem and lowest on reasoning by analogy. Strauss's list of the elements and safeguards, in the order of decreasing scores, was:

To the extent that we can assume that information in articles which appeared in *Science Education* at this time is representative both of the commitment of science educators to the philosophy of John Dewey and of the state of practice in science teaching in America's schools, we can conclude that the commitment was strong, but that there was little evidence that attempts to translate Dewey's philosophy into practice had produced any measurable effects in the thinking ability of students.

These same two trends are evident in the *Science Education* volumes that followed Dewey's second statement at the beginning of Volume I about the use of the intellect in the manner of the scientist. Although 17 years had passed during which little progress was realized, science educators continued to pursue vigorously the goal of operationalizing Dewey's philosophy. The articles in volumes 18-60 of *Science Education* provide evidence of their endeavors. During these four decades, progress was made in analyzing into its components the complex process of scientific inquiry. Also, from among these components, elements were selected which are appropriate for instruction at various grade levels.

To aid them in identifying appropriate methods for teaching these elements, some science educators have sought guidance from several theories on the psychology of learning. Psychological theories of personality have also been brought to bear on the question of identifying factors that motivate certain individuals to seek out problems and to solve them. But, despite science educators' sophisticated research directed toward translating Dewey's philosophy into practice, there is little evidence in the literature that the desired outcome has been achieved even to a minimal degree.

In the article, "The Supreme Intellectual Obligation," John Dewey takes note of the pervasive influence of science and its technological applications in most aspects of life, and the consequences of this fact. He asserts that this situation requires the further application of knowledge and intelligence. This is the "supreme obligation of intellectual activity." Dewey continues:

> The field of education . . . has hardly been touched by the application of science. . . . the scientific attitude, the will to use scientific method, and the equipment necessary to put the will into effect, is still, speaking for the mass of people, inchoate and unformed[5, pp. 2-3].

> The concern of education should be with creating "a certain mental attitude," rather than "purveying a fixed body of information, or . . . preparing a small number of persons for the further specialized pursuit of some particular science[5, p. 3]."

> The responsibility of science cannot be fulfilled by educational methods that are chiefly concerned with the self-perpetuation of specialized science to the neglect of influencing the much larger number to adopt into the very makeup of their minds those attitudes of open-mindedness, intellectual integrity, observation, and interest in testing their opinions and beliefs that are characteristic attitudes of scientists. . . . Every course in every subject should have as its chief end the cultivation of these attitudes of mind[5, p. 3].

Dewey is especially critical of elementary education, which he views as

> the virgin field practically untouched by the influence of science. . . . So little attention is given to instilling, as a part of organic habit, trust in intelligence and eager interest in its manifestation. . . . little is done to secure full operation of what native intellectual capacity there is. . . . it is now everywhere subordinated to the acquisition of special
skills and the retention of more or less irrelevant masses of facts and principles...[5, p. 3].

The ideas presented in this opening article of Volume 18 of *Science Education* are reflected again and again in the content and themes of articles in the volumes of the journal that followed thereafter. Scientific attitude, scientific method, scientific problem solving both as method of instruction and as an outcome of instruction, and the subordination of factual knowledge to the method of the intellect—all these themes are evident in volumes 18–60 of *Science Education*.

Dewey’s article in Volume 18 is similar in certain ways to his earlier article in Volume 1, and it seems to have exerted a similar kind of influence on science educators. On the surface at least, Dewey’s admonition was quite clear and readily accepted by science educators, but the complexities of the outcomes he was suggesting for education were so great that efforts to translate them into practice continued to be frustrated. For example, eight attempts are reported in the journal to define the elements of scientific attitude.* These studies were predicated on arguments similar to the one expressed in Volume 19 by Ira Davis[17]. Education is recognized as growth through problem solving. The question is then posed, “What method will be used to develop this philosophy?” Davis says that “the purpose of science teaching is to develop the ability in an individual to solve the problems that confront him,” and that to do this, the individual will need: “(1) scientific attitude, (2) scientific method of procedure, and (3) a fund of information[17, p. 117].” But before instruction can be designed to meet any one of these three needs, the elements of each need must be defined. Thus, Davis and other science educators sensed the necessity for compiling a list of the characteristics of scientific attitude.

A most scholarly procedure for generating a valid list of the elements of scientific attitude was devised by Robert Ebel[18]. As did many other investigators, Ebel composed his preliminary list by consulting the writings of the world’s most respected scientist-philosophers. The preliminary list in Ebel’s case was refined using explicit criteria. Of what use were these lists? They were responsible for the generation of considerable scholarly discourse, and some scales and tests were developed from them. And we might hazard the guess that they were used to communicate to teachers those behaviors they should be observing in their students.

A literature on scientific method, parallel to the scientific attitude literature, also exists in *Science Education*. The scientific method studies describe how lists of the elements

* These attempts to define the elements of scientific attitude usually were made in connection with developing a scale to assess one or several elements. See the eight studies reported by Davis[17], Ebel[18], Lampkin[19], Edwards and Robertson[20], Howard and Robertson[21], Bceck[22], Baumel and Berger[23], Bileh and Zakbriades[24], and Kozlow and Nay[25]. In addition to these attempts to define the elements of scientific attitude and to assess them, the meaning of scientific attitude and its implications were often discussed (for example, see Hurd[26], Puck[27], and Bceck[22]), and several reported studies sought to determine the effect of various instructional approaches on scientific attitude (for example, see Reiner[28], Eberhard and Hunter[29], Scott[30], Wessel[31], Harvey[32], Kahn[33], and Chren[34]). It is important to distinguish scientific attitude and its elements from attitudes toward science, scientists, or science learning, a distinction that was made clear by Aiken and Aiken[35] and by Klopfer[36]. The latter category of attitudes involves an entirely different literature, which is represented in *Science Education* by Weinstock[37], Vitrogen[38,39], Schwirian[40], and other articles.

+ Ebel recognized the need for being explicit regarding criteria for refinement of the lists. He became aware of the need for an explicit methodology for the compiling of lists when he noted discrepancies among lists of elements of scientific attitude compiled by other investigators.
of scientific method were generated and used to develop tests.* There is some evidence that the tests were used to assess the extent to which classroom instruction engenders these elements in the behavior repertoire of students.† Some articles focus on scientific thinking.‡ Noteworthy among these articles are two by Mary Burmester[59,60] that describe the process she used to generate a list of behaviors involved in scientific thinking. From this list she constructed a “Test to Measure Some of the Inductive Aspects of Scientific Thinking,” which is concerned with processes that parallel those noted in both the scientific attitude and method literature.§ It is not surprising, therefore, that an issue debated in several of the attitude and method articles concerns the distinction, if any, between scientific attitude and scientific method. The issue is not resolved, some authors (for example, Keeslar[62]) asserting that attitude and method are distinct entities and others (for example, Ebel[18]) supporting the point of view that the two are essentially opposite sides of the same coin.

A large number of articles focus on the theme of problem solving.¶ For purposes of analysis it is helpful to consider these articles as falling into one of three categories: articles that focus on problem solving ability as a valued outcome of instruction,* those that focus on problem solving as a method of instruction,** and those that focus on problem solving behavior as a psychological or social phenomenon.*** The direct influence of John Dewey is most obvious, of course, in the literature on problem solving as outcome and as method.†† The ubiquitous problem of translating philosophy into practice is evident also in this literature. As was true for the notions of scientific attitude and scientific method, con-

* Notable among these tests is the instrument designed by John G. Read, which was a nonverbal test of the ability to use scientific method[41]. Other tests and lists of elements of scientific method were reported by Fruchey[42], Haupt[43], and Keeslar[44].
† See, for example, the studies by Teichman[45], Reiner[46], and Atkin[47].
‡ In addition to the two discussed in the text, the scientific thinking articles include contributions by Ca-hoon[48], Dunning[49–51], Mason[32], Perlman[53], Monaghan[54], Kastrinos[55], George[56,57], and Charen[58].
§ Interestingly enough, Kaplin[61] used Burmester’s “Test on Some Aspects of Scientific Thinking” as a means of providing instruction on elements of scientific method.
¶ For most of the articles on this theme, the article’s title clearly indicates that the article is concerned with an aspect of problem solving. However, in the last 15 years or so, terms such as inquiry, discovery, process, or task frequently appear in the titles of articles whose focus is on some aspect of problem solving. These variations in terminology are due, in part, to science educators’ changing perspectives on problem solving, but also to considerable sloppiness in the use of terms by authors. In grouping together the articles in Science Education that focus on the theme of problem solving, we have been guided, not by an article’s title, but by its content. Two nicely written discussions that reflect science educators’ changing perspectives in the mid-1960s can be found in articles by Lahti[63] and Fischler[64]. Similarly, the discussions by Esler[65] and Wilson[66] reflect the perspectives of the mid-1970s.
* Articles that focus on problem solving as outcome include those by Lampkin[67–69], Jacobson[70], Meder[71], Hurd[121], Otten and Montgomery[72], Novak[73], Butts[74], Aylesworth[75], Mahan[76], Bills[77], Mccormack[78], and Dietz and George[79].
** In addition to the articles cited in the text, those that focus on problem solving as method include contributions by Bingham[80,81], Henshaw[82], Michals[83], Aylesworth[84], Dean[85], Lanquis and Stull[86], Mark and Saltstrom[87], Saadeh[88], Johnson et al.[89], and Anderson et al.[90].
†† Articles in this category began to appear in Science Education in the 1950s and are represented by studies discussed by Solomon[91], Carpenter[92], and Weiss[93]. For more recent articles which focus on problem solving behavior as a psychological phenomenon, see the citations in footnotes on p. 445.
†‡ Because of Dewey’s means–end philosophy, explicit statements of any distinction between problem solving as method and as outcome are practically nonexistent in the Science Education literature.
siderable effort apparently was exerted by science educators in seeking to define the "problem solving objective." The most comprehensive listing of the components of this objective was published in Volume 40 in an article by Ellsworth Oburn[94]. However, the work of defining the component cognitive, perceptual, and manipulative skills involved in problem solving is continuing up to the present day in research reported in the most recent volumes of Science Education.

The lack of practical information on how to engender problem solving behavior in students as a result of classroom practice was recognized in the 1949 report of the NARST Committee on Research in Secondary School Science[95]. The committee did not question the desirability of the objective to develop problem solving abilities, nor did they do more than to recognize the need to translate the philosophy into classroom practice. There is no recognition given in this report to articles, like those by Wood[96], Silberg[97], and Oburn and Montgomery[72], describing the techniques by which individual practitioners had attempted to develop problem solving abilities in students in their own classrooms. These "This-is-how-I-did-it" articles do not seem to be a very effective means of exerting even a moderate influence on others in the field.

The influence of the scientific study of education movement is evident in the problem-solving-as-method literature. Beginning with the 1938 report by Burnett[98], several experimental studies are reported that compare the effectiveness of the problem solving method with other methods of instruction.* Indicative also of the more scientific approach to the study of education is the trend—notable in the latest volumes of Science Education—for science educators to study problem solving within the framework of social and psychological theory. There are just a few articles that relate social and personality variables to problem solving.† These articles are reflections of more extensive work in other disciplines investigating problem solving in the context of business and technology and the application of psychoanalytical theory to the understanding of problem solving behavior. However, a more pronounced trend in the last decade or so has been the application of certain psychological theories.

Articles in volumes 56–60 of Science Education illustrate the trend toward the application of psychological theories of development and learning to problem solving in science education. This trend has resulted in better definition of the component skills of problem solving. The component skills are defined in the cognitive developmental terminology of Jean Piaget as mental operations overtly manifested in the ability to conserve or to exclude irrelevant variables. In the learning theoretical terms of instructional psychologists, these component skills are called process skills (e.g., observation, description, measurement). Articles describing empirical studies conceived in the context of both the cognitive developmental§ and the learning theoretical§ frameworks have contributed to a better definition of the component skills of scientific problem solving. The better definition of problem solving skills makes it possible to design specific in-

* Representative of these Method A vs. Method B type of studies are the papers by Barnard[99], Dawson[100], Neal[101], Pas[102], Nasca[103], and Mahan[104].
† This group includes articles; by Chess[105], Wash[106], Blesser[107], Thorsland and Novak[108], and Mayfield[109].
§ Studies conducted within the Piagetian framework were reported by Lengel and Buell[110], Raven[111], Lawson et al.[112], Lawson and Renner[113], Raven and Polanski[114], and Lawson[115].
‡ This framework is the background for articles by Newport[116], Tomera[117,118], Brederman[119], and Quinn and George[120].
structional activities and materials that foster these skills. In this sense, science education research studies guided by psychological theories contribute to improving and refining the use of problem solving as an instructional method. At the same time, the better definition of problem solving skills makes it possible to devise more precise and more focused procedures for assessing problem solving behavior as an outcome of science instruction. It is evident, then, that nearly 60 years after John Dewey’s first article in Volume 1 of *Science Education*, science educators continue to hold in high esteem the method and outcome which Dewey advocated.

Some Perspectives

We have attempted to encapsulate the rich literature of *Science Education* devoted to reflective thinking and innovative problem solving in the perspective of certain aspects of the philosophy of John Dewey. Despite the commitment of science educators to the philosophy of John Dewey and the extensive efforts they have expended to make it a practical reality, the fact remains that little of the philosophy is evident in practice. Analysis of this situation in the context of the literature of *Science Education* suggests that, even though considerable attention was given to several different issues related to reflective thinking and problem solving, two issues were never explicitly addressed.

One issue is the extent to which it is reasonable to expect that the outcomes which Dewey suggests can be realized. With respect to this issue, it is important to consider that the kind of intellectual behavior Dewey values is not common. The science educators who attempted to add definition to the method of intelligence turned to the writings of a handful of the world’s greatest scientist-philosophers. Although these lists were modified before being passed on to classroom teachers, one might expect that most teachers would be discouraged by the mere act of reading such an imposing list. How, a teacher might ask, can I be expected to teach children to engage in this kind of intellectual behavior when I don’t possess many of the necessary requisites myself? How many of the science educators who were active in promulgating these objectives ever inventoried their own intellectual behavior?

The second issue concerns values. The outcomes Dewey proposes have clear personal value for Dewey and, on the basis of the literature in *Science Education*, they also have personal value for the majority of the science educators who contributed to the journal over the years. But, to what extent are they valued by the greater society, the school, and teachers? Translating philosophy and theory into practice requires more than just making method and objectives explicit. The appropriateness of the objectives for the intended learners and the extent to which the society and the school value the outcomes are issues of comparable importance.

Appendix I: Sample Items from Weller’s Test

**Attitude Items** (True-False):
1. Finding a four leaf clover brings good luck.
2. A person dies because a star falls.
3. To go to sleep while looking at the moon causes nightmares.
4. Muskrats build houses higher than usual if the winter is to be a severe one.
Skills Items:
1. You can find out whether the sun is in different parts of the sky at different times of the day by
   a. reading about it.
   b. asking your teacher.
   c. asking your father or mother.
   d. looking to see for yourself.
2. If you notice that the sun is in a different part of the sky at different times of the day it is because
   a. either the sun or earth moves, or both move.
   b. somebody moves it.
   c. it is drawn across the sky by the sun god.
   d. it is so far away.
3. You could prove whether your answer in number 2 is right by
   a. talking it over with another boy or girl.
   b. asking a man who studies about the sun and stars.
   c. doing an experiment.
   d. deciding for yourself.
1. If it is a clear day on February 2 and the ground hog sees its shadow
   a. there will be bad weather for 40 days after that time.
   b. we may or may not have bad weather.
   c. it is a sure sign of rain.
   d. we will have good weather for 40 days after that time.
2. If it does rain for 40 days after the ground hog has seen its shadow
   a. it is a sure sign that it must always do it every year.
   b. it may just have happened that year.
   c. it is a good weather forecast.
   d. it will certainly happen again next year.
3. You can best prove your answer to number 2 by
   a. asking the keeper of the zoo.
   b. noting for several years whether or not we have had bad weather after the ground hog saw his
      shadow.
   c. asking your father or mother.
   d. looking it up in a science book[12, pp. 93-94].

Appendix II: Elements and Some Safeguards used by Downing

<table>
<thead>
<tr>
<th>Elements of Scientific Thinking</th>
<th>Safeguards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purposeful observation</td>
<td>a. must be accurate;</td>
</tr>
<tr>
<td></td>
<td>b. must be extensive;</td>
</tr>
<tr>
<td></td>
<td>c. must be done under a variety of conditions.</td>
</tr>
<tr>
<td>Analysis—Synthesis</td>
<td>d. The essential elements in a problematic situation must be picked out.</td>
</tr>
<tr>
<td></td>
<td>e. Dissimilarities as well as similarities must be regarded. Danger of analogy.</td>
</tr>
<tr>
<td>Selective recall</td>
<td>f. Exceptions are to be given special attention. Selective interpretation.</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>g. A wide range of experience is necessary.</td>
</tr>
<tr>
<td>Verification by inference and</td>
<td>h. All possible ones must be considered (Fertility of suggestion.)</td>
</tr>
<tr>
<td>experiment</td>
<td>i. Inferences must be tested experimentally.</td>
</tr>
<tr>
<td></td>
<td>j. Only one variable is permitted.</td>
</tr>
</tbody>
</table>
Reasoning by:

1. method of agreement
2. method of difference
3. method of residues
4. method of concomitant variation
5. joint method of agreement and difference
6. method of agreement and difference

Judgment

k. Data must be cogently arranged.
l. Judgment must be passed on the adequacy of the data.
m. Judgment must be passed on the pertinency of data.
n. must be unprejudiced;
o. must be impersonal;
p. must be suspended if data are inadequate [16, pp. 231-232]

References*


* Almost all the articles cited in this paper appeared in the journal, Science Education, so that only the volume, pages, and year are given for these entries. The actual name of the journal was General Science Quarterly from Volume 1, Issue 1 (October, 1916)-Volume 13, Issue 3 (March, 1929), and it has been Science Education since then. Full citations are given for references outside this journal.
"Teaching chemistry for scientific method and attitude development," 37:81-84 (1953)
33. Kahn, P., "An experimental study to determine the effect of a selected procedure for teaching the scientific attitudes to seventh and eighth grade boys through the use of current events in science," 46:115-127 (1962).
78. McCormack, A. J., "Effects of selected teaching methods on creative thinking, self-eval-
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105. Chess, E. G., "The manner in which two samples of ninth-grade general science students analyze a number of selected problems." 46:127-133 (1962).


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I. AIMS AND OBJECTIVES OF SCIENCE TEACHING

includes:

Discussions of general aims of instruction in science; Statements or discussions of purposes and objectives of science programs or courses; Proposals of methods for achieving particular objectives.

Agin, Michael L. Education for Scientific Literacy: A Conceptual Frame of Reference and Some Applications 58:403-415
Ahrens, H. J. Edward SEE Hunter, George W.
Axtell, George E. Why Teach Science? 34:152-164
Aylesworth, Thomas G. The Need for Problem-Solving 49:156-162
Baker, Woolford B. Science Teaching and the World of Tomorrow 34:7-15
Barnard, J. Darrell The Yearbook As It Relates to Science Instruction in the Secondary Grades 31:300-303
Bate, Langston Fairchild Orientation in Chemistry 19:170-172
Bernal, J. D. Science Teaching in General Education 29:233-240
Blanc, Sam S. Review of the General Goals in Science Teaching 36:49-52
Blough, Glenn O. The Yearbook As It Relates to Science Instruction in the Elementary Grades 31:304-307
Boulos, Sami I. A New Look on the Goals of Teaching Science 48:195-199
Burmester, Mary Alice Behavior Involved in the Critical Aspects of Scientific Thinking 36:259-263
Burmester, Mary Alice and Noll, Victor H. A Synthesis and Evaluation of Objectives for a Course in College Biology 38:143-150
Butzow, John W., Jr. and Linz, L. William A Model for Determining the Objectives of Science Education 57:15-16
Caldwell, Otis W. Regarding Attitudes 20:207-211
Clark, Bertha M. Aims and Purposes of General Science 4:291-295
Conklin, Edwin G. The Aims of Science Teaching 21:1-4
Croxton, Walter C. Major Aims in Science Teaching 19:149-152
Croxton, Walter C. What Can the Elementary School Contribute in a Continuous Science Program? 23:5-9
Davis, Ira C. Science in Functional Living 32:136-138
Downing, Elliot R. The Aims of Science Teaching and Changing Enrollment 2:251-254
Ebel, Robert L. What Is the Scientific Attitude? 22:1-5, 75-81
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includes:

Descriptions of the organization or content of science courses, programs, or syllabi;
Surveys of science offerings in one or several schools, school districts, states, or countries;
Curricular proposals based on rationales other than psychological theory; Discussions of the development, design, or implementation of science curricula; Discussions of factors that influence science curricula or promote changes in schools; Reports of research on science curriculum.

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JOURNAL FEATURES

XV. ABSTRACTS

includes:

Short accounts of articles published in the contemporary periodical literature; Descriptions of the contents of contemporary non-book publications relevant to science education.

This section of the index gives references to abstracts in Science Education of articles which appeared in other periodicals. In each index entry, the reference to the abstract in Science Education is given at the end and is preceded by an asterisk (*). For example, the format of a typical index entry is


The reference at the end of this entry locates the abstract of Bayles' article in Science Education, volume 16, page 248. The index entry also shows that the full article appeared in School Science and Mathematics, volume 31, pages 1048-1055, and was published in December 1931. To save space, we have used abbreviations in giving the titles of the periodicals in which the articles appeared. A guide to these abbreviations follows.

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The abbreviations used for months:

Ja = January
F = February
Mr = March
Ap = April
My = May
Je = June
Jl = July
Ag = August
S = September
O = October
N = November
D = December

To prepare this section of the index, copies of all the abstracts that appeared in volumes 14 through 33 of Science Education were pasted on cards, and these cards were sorted into 14 main categories, corresponding to the 14 sections in the first two divisions of the index. These same categories constitute the 14 major subsections (A through N) of the present section. However, it was not possible to list references to all 2900 abstracts in this section due to space limitations.

We sought to include in the index references to abstracts of the more significant articles. Our principal criteria for inclusion were the apparent importance of the contribution to science education that the article made, the length of the article (with the longer pieces more likely to be included), and the extent of contemporary interest associated with the article's theme or its author. For articles meeting these criteria, the references to their abstracts in Science Education will be found under the opposite subsections below.

(Any scholar who may have a need for references to the abstracts which we have omitted in any subsection should communicate with us. We would be glad to make copies available at cost of the cards containing the omitted abstracts. Anyone requesting such copies should note that, while some abstracts were omitted in every category, there are several hundred omissions in each of these subsections: C, D, L1, L2, N.)
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Sinnott, Edmund W. Buildings, Equipment, and Textbooks Used by Teachers of Biology in Secondary Schools: Data from a Questionnaire. Am Biology Teacher 3:261-266; My '41. *25:48


Science Articles in Current Periodicals.

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Hurd, A. W. Some Aspects of the Education of Teachers of Science in State Teachers Colleges and Normal Schools. Ed Admin & Supervision 20:35-44; Ja '34. *18:120


K. Science and Society


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Bok, Bart J. and Mayall, Margaret W. Scientists Look at Astrology. Sci Mo 52:233-244; Mr '41. *26:102


Bragg, Sir William Address of the President of the Royal Society. Sci 92:93-98; Ag '40. *25:56

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James, F. Cyril Science and Society. Sci Mo 53:51-60; Ji '41. *25:404

Kaempfert, Waldemar Atomic Energy—Is It Nearer? Sci Am 147:79-81; Ag '32. *16:511

Kamm, Oliver Chemistry and the Quest for Health. J Ch Ed 9:1719-1729; O '32. *16:508-509


Lindsay, R. B. Causality in the Physical World. Sci Mo 37:330-337; O '33. *17:337


Rice, Stuart A. Standards of Living as Functions of Science and of Social Organization. Sci 90:167-172; Ag '39. *24:115


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Abel, John J. On Poisons and Disease and Some Experiments with the Toxin of the Bacillus Tetani. Sci 79:63-70; Ja '34. *18:180


Andrews, Roy Chapman Consider the Dinosaur. Sci Am 156:149-152; Mr '37. *21:257


Andrews, Roy Chapman Wolf of Mongolia. Natural History 34:625-637; N '34. *19:39


Bogert, Harston T. Your Nose Knows. Sci Mo 39:345-353; 0 '34. *19:34


Brooks, Major Allan Far-Flying Wild Fowl and Their Foes. Nat Geo 66:487-528; O '34. *19:34


Cannon, Walter B. Problems Confronting Medical Investigators. Sci 94:171-179; Ag '41. *25:56

Chamberlain, Charles Joseph. The Age and Size of Plants. Sci Mo 35:401-491; O '32. *17:73

Chapman, Frank M. A Season's Bird Guests. Natural History 34:16-30; Ja-F '34. *18:181

Chapman, Frank M. My Florida Bird Guests. Natural History 34:523-537; 0 '34. *19:33

Chapman, Lucie and Wendell Beaver. Natural History 34:554-566; 0 '34. *19:33


Chute, Walter H. Net Results from Oceania. Nat Geo 79:347-362; Mr '41. *26:103


Clark, James L. The Big Tom of Beaver Dam Wash. Natural History 44:83-93; S '39. *24:15


Colbert, Edwin H. Mammoths and Men: The Origin of the Elephant; An Ancient Death Trap. Natural History 45:96-105; S '40. *25:56


Cottrell, F. G. Complete Control of Plant Growth. Sci L 12:904-908, 954-957; Mr 9, 16 '39. *23:225


Duncan, David D. Fighting Giants of the Humboldt. Nat Geo 79:373-400; Mr '41. *26:103
Effert, Virginia S. The Story of Spices. Natural History 41:214-222; Mr '38. *22:353
Ewing, Henry E. Affield with the Spiders. Nat Geo 64:163-194; Ag '33. *17:338
Fowler, Frederick Hall Week-Ends With the Prairie Falcon. Nat Geo 67:611-626; My '35. *19:187
Freeman, Lloyd Man's Oldest Ally, the Dog. Nat Geo 69:247-274; F '36. *20:228
Furnas, C. C. Chemicals from the Farm. Sci Digest 9:15-24; F '41. *25:288
Gregg, H. Raymond The Magnificent Rodent. Sci Mo 67:73-82; Ag '48. *32:372
Gregory, William K. Grandfather Fish and His Descendants. Natural History 48: 156-165; 0 '41. *26:104
Gray, Zane The Great Mako. Natural History 34:221-234; My-Je '34. *18:182
Hopkins, Sir Frederick Gowland Some Chemical Aspects of Life. Sci 78:219-231; S '33. *17:337
Lefebvre, R. Neumann Green Gold. Natural History 41:325-343, 393; My '38. *22:322
Leonard, Donald D. The Story of Silk. Natural History 35:221-236; Mr '35. *19:187
Lillington, Claude Our Parasites: The Tapeworm. Hygeia 12:720-732; Ag '34. *19:35
Lutz, Frank E. How About the Tent Caterpillar? Natural History 37:149-158; F '36. *20:227
Mann, William M. and Lucile Q. Man's Closest Counterparts. Nat Geo 78:213-236; Ag '40. *25:56
Mann, W. M. Stalking Ants, Savage and Civilized. Nat Geo 66:171-192; Ag '34. *19:33
McCoy, C. M. and Crowell, Mary F. Pro-longing the Life Span. Sci Mo 39: 405-414; N '34. *19:188

13?
Miner, Roy Waldo Marauders of the Sea. Nat Geo 68:185-207; Ag '35. *19:192
Miner, Roy Waldo The Kingdom of the Tides. Natural History 34:361-376; J-1-Ag '34. *19:33
Murphy, Robert Cushman Birds of the High Seas. Nat Geo 74:226-235; Ag '38. *23:110
Murphy, Robert Cushman Conservation's Silver Lining. Natural History 46: 294-303; D '40. *20:288
Murphy, Robert Cushman Whitney Wing. Natural History 44:98-106; S '39. *24:50
O'Reilly, John South Florida's Amazing Everglades. Nat Geo 77:115-142; Ja '40. *25:287
Palmer, E. Laurence Are They Vermin? Cor RSL 31:3-32; N '37. *22:38
Palmer, E. Laurence Creeping, Sprawling, Climbing Plants. Cor RSL 32:3-32; Mr '39. *23:345
Palmer, E. Laurence Farm-Forest Facts. Cor RSL 33:3-32; N '39. *24:172
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Palmer, E. Laurence Wildfire. Cor RSL 41:3-32; Fall '47. *32:284
Passmore, Lee California Trapdoor Spider Performs Engineering Marvels. Nat Geo 64:195-211; Ag '33. *17:338
Ross, Helen B. Apple Tree Animals. Cor RSL 3-32; Spring '48. *32:286
Schlaikjer, Erich M. The Living Dead. Natural History 41:203-211; Mr '38. *22:321
Shoemaker, Lois Meier and Shoemaker, Morris B. The Mammals of New Jersey. Dept of Public Instruc, Trenton *25:56
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Symposium: Youth and Old Age. Sci L 11: 30-34, 29-30; Mr '38. *22:320
Taylor, Norman Come and Expel the Green Pain. Sci Mo58:176-184; Mr '44. *28:293
Trelease, Sam F. Bad Earth. Sci Mo 54: 12-28; Ja '42. *26:105
Wetmore, Alexander and Brooks, Major Allan The Eagle, King of Birds, and His Kin. Nat Geo 64:43-95; Jl '33. *17:338
White, John R. Among the Big Trees of California. Nat Geo 66:219-232; Ag '34. *19:34

2. Physical Sciences and Applications

Browne, C. A. Observations upon the Essential Oil Industries of Foreign Lands. J Ch Ed 11:131-141; Mr '34. *18:180


Crowther, J. C. And Now the Neutron. Sci Am 147:76-78; Ag '32. *16:511


Ellis, Brooks F. The Master Key to Oil. Natural History 38:369-379; D '36. *21:164


Fisher, Clyde Where a Comet Struck the Earth. Natural History 34:754-763; D '34. *19:36


Mather, Kirtley F. The Liquid State. Natural History 42:142-150; F '36.


Read, Thomas T. Gold and Silver. Natural History 34:612-624; N '34. *19:34
Reed, John C. The Fiery Floods that Formed the Inland Empire. Natural History 47:200-210; Ap '41. *26:105
Russell, Henry Norris Fading Belief in Life on Other Planets. Sci Am 150:296-297; Je '34. *16:248
Rutherford, Lord The Transmutation of the Atom. Sci Mo 38:15-23; Ja '34. *18:122
Schaeffer, Harold F. Philately Serves Chemistry. J Ch Ed 11:259-266; My '34. *16:246
Shapiro, H. L. Mystery Island of the Pacific. Natural History 35:365-377; My '35. *19:187
Simpich, Frederick Today's World Turns on Oil. Nat Geo 79:703-748; Je '41. *26:105
Smith, Paul A. Lands Beneath the Sea. Sci Mo 53:393-409; N '41. *26:105

Stevens, Albert W. Photographing the Eclipses of 1932 from the Air. Nat Geo 62:581-596; N '32. *17:72
Symposium: Copper. Sci L 10:3-21; Mr '37. *22:40, 319
Symposium: Iron and Steel. Sci L 11:2-18; Mr '38. *22:320

Talman, Charles Fitzhugh. Drought on a Wet Planet. Natural History 34:567-577; 0 '34. *19:36


Tesla, Nikola. Possibilities of Electro-Static Generators. Sci Am 150:132-134, 163-166; Mr '34. *18:181


Willis, H. L. Some Further Facts Suggesting that Our Sun Is a Variable Star. Popular Astronomy 56:370-378; Ag '48. *33:71


3. General Science


Corwin, Charles Irwin. Stamps Tell the Story of Science. Pop Sci 125:34-37; 0 '34. *19:34


Schaeffer, Harold F. General Science as Portrayed on Stamps. Education 56:385-388; Mr '36. *21:47

M. History of Science


Conklin, Edwin C. A generation's progress in the study of evolution. Sci 80: 147-156; Ag '34. *18:180
Davis, Mary Houston and Rose, Elizabeth. Can education share in social reconstruction? Social Frontier 1:11-12; 0 '34. *19:81
Douglass, Harl R. The effects of state and national testing on the secondary school. Sch Rev 42:497-509; 5 '34. *18:244

Parker, G. H. Anthony Van Leeuwenhoek and his microscope. Sci Mo 37:434-441; N '33. *18:50
Transeau, Edgar N. The golden age of botany. Sci 95:53-58; Ja '42. *27:152
Webb, Hanor A. How the last two elements were found. Sch Sci 32:475-486; My '32. *16:426

N. Education in General

Briggs, Thomas H. A vision of secondary education. T Col R 34:1-17; 0 '32. *17:69
Conant, James B. Should we have a democratic nation fight a war and still stay free? Sch and Society 54:313-315; 0 '41. *26:159
Davis, Mary Houston and Rose, Elizabeth. Lamar making theories work. High Sch J 25:251-260; 0 '42. *27:77
Hutchins, Robert M. Ethics, Politics and Education. Sch and Society 54:257-261; O '41. *26:158
Kilpatrick, William H. The Philosophy of the New Education. Sch and Society 54:481-484; N '41. *26:158
Symposium: Education for the Gifted. T Col R 42:375-460; F '41. *25:401
Watson, Goodwin and Flaser, Edward M. Education for Critical Thinking. Advanced Sch Digest 6:29-33; D '40. *25:346
Zinsser, Hans None of My Business: Or Thoughts of a Biologist on Education. Sch and Society 38:685-693; N '33. *18:48
XVI. BOOK REVIEWS

includes:
Short reviews of recently published books relevant to science education.

The index entries for this Book Reviews section have been categorized similarly to those in the Abstracts section. The 15 main subsections into which the entries are categorized parallel to the 14 sections of this index's first two divisions and includes a Miscellaneous category for reviews of books dealing with topics not falling into any category used in the index. However, the more than 6700 book reviews which appeared in Science Education are far from evenly divided among the 15 main subsections, so we broke down the large subsections into appropriate subdivisions. An overview of all the subdivisions we have used can be found in the descriptive Table of Contents at the front of the index.

After preparing cards for all book reviews, we found that there were many more entries than could be accommodated in the available space for this section of the index. Consequently, we made a selection of entries of reviews to include in the index, using as our primary criterion the relevance of the book reviewed to science teaching or to a research or special interest area of science education. One result of applying this criterion is that we have included entries in the index for all science textbooks which were reviewed in the 60 volumes of Science Education.

In selecting entries for the index, we chose to exclude entries of reviews from subsection L, Scientific Information, if the review indicated that the book’s perspective of its subject matter was not scientifically sound. For example, we deleted entries for reviews of books that describe the behavior of animals in anthropomorphic terms. We also excluded from this subsection most entries of reviews of books which dealt with technical or technological topics. For instance, few reviews are included for books on photography or radio. Many book reviews which we categorized under subsection N, Education in General, and subsection O, Miscellaneous, were not entered in the index; the entries remaining in each of these subsections simply represent the various topics of the several hundred books whose reviews we categorized there.

(Any scholar who may have a need for references to the book reviews whose entries we excluded from subsection L, N, or O should communicate with us. We would be glad to make copies available at cost of the cards containing references to the omitted book review entries.)
A. Aims and Objectives of Science Teaching

Blough, Glenn O. and Blackwood, Paul E. Science Teaching in Rural and Small Town Schools. '49 33:301-2
Cohen, Bernard and Watson, Fletcher G. General Education in Science. '52 36:307
Craig, Gerald S. Science in Childhood Education. '44 29:54

Gardner, P. L. (Editor) The Structure of Science Education. '75 60:427-28
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Bailey, Edna W. Science in Junior High School. '21 6:418
Beauchamp, Wilbur L. Instruction in Science. '32 19:194
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Burnett, R. Will Combating Prejudice Through Science Teaching. '52 36:256
Caldwell, Otis W. Science Teaching in the Gary Public Schools. 4:299
Cobb, Walter F. Chalk Talks on Health and Safety. 10:432
Craig, Gerald S. Elementary Science. 12:496
Craig, Gerald S. A New Science Program for Elementary Schools. '34 18:252
Curtis, Francis D. A Synthesis and Evaluation of Subject Matter Topics in General Science. '29 13:184
Department of Public Instruction, Commonwealth of Pennsylvania Courses of Study in Science. '32 18:56
Dressel, Paul L. and Mayhew, Lewis B. Science Reasoning and Understanding. '54 39:170
Fitzpatrick, Frederick L. Biology for Public School Administrators. '34 20:467
Geer, Edith S., Waite, Evangeline and Rotter, George E. Science for Nebraska Elementary School Children. '50 36:195-6

Gillson, Margery Stewart Developing a High School Chemistry Course Adapted to the Differentiated Needs of Boys and Girls. '37 22:45
Heiss, Elwood D. An Investigation of Content and Mastery of High School General Science Courses. '32 16:429-30
Heller, R. (Editor) New Trends in Biology Teaching. '71 56:972
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Humby, S. R. and James, E. J. F. Science and Education. '42 27:50
Hurd, Archer Willis Building a Curriculum for Professional Schools with Special Reference to Nursing. '46 31:182
Hurd, Archer W. Costs and Other Problems in Schools of Nursing. '51 36:307
Hurd, Archer Willis What the Testing Program in the Schools of Nursing Has Taught Us. '46 31:182
Hurd, Paul D. (Editor) New Curriculum Perspectives for Junior High School Science. '70 57:100-1
Hurd, Paul DeHart New Directions in Teaching Secondary School Science. '69 54:391
Johnson, Philip G. The Teaching of Science in Public High Schools. '50 35:54
Joseph, E. D. The Teaching of Science in Tropical Primary Schools. '53 39:167
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Kilander, H. F. Health Instruction in the Secondary Schools. '52 38:181
Kilander, Holger Frederick Science Education in the Secondary Schools of Sweden. '31 16:257
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Lampkin, Richard H. Variability in Recognizing Scientific Inquiry. '49 34:222-3
Leovenguth, J. C. General Science Syllabus. 8:451
Lewis, June E. and Potter, Irene C. The Teaching of Science in the Elementary School. '70 56:227
Lockard, J. David (Compiler) Report of the International Clearinghouse on Science and Mathematics Curricular Developments. '67 51:402
Martin, Michael Concepts in Science Education. '72 57:352
Martin, W. Edgar The Teaching of General Biology in the Public High Schools of the United States. '52 37:349
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Ragan, William B. Modern Elementary Curriculum. '53 38:104
Rogers, Lola Eriksen Science Teaching in the Public Junior High School. '67 51:413
Science Masters' Association Elementary Science, Nature Study and Practical Work. 8:376
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State Department of Education, Sacramento, California Suggested Courses of Study in Science for Elementary Schools. '32 18:57
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Althouse, Rosemary and Cecil Main, Jr. Science Experiences for Young Children. 60:431
Anderson, O. Roger Teaching Modern Ideas of Biology. '73 57:556
Andress, J. Mace Health Education in Rural Schools. 3:237
Arey, Charles K. Science Experiences for Elementary Schools. '42 27:79-80
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Arnold, Herbert J. The Selection, Organization, and Evaluation of Localities Available for Unspecialized Field Work in Earth Science in the New York City Region. '36 21:224
Arthur, Paul Lecture Demonstrations in General Chemistry. '39 25:406
Astell, Louis A. and Odell, Charles W. High School Science Clubs. '32 16:526
Baer, Marian E. Without Fire: A Book of Experiments. '46 31:108
Balchin, W. G. U. and Richards, A. W. Practical and Experimental Geography. '52 38:317
Bauer, W. W. and Edgley, Leslie Your Health Dramatized. '39 23:227
Beakley, John C. and others The Source Book of Marine Sciences. '70 56:277-78
Beeler, Nelson F. and Branley, Franklyn M. Experiments in Optical Illusion. '51 36:199
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Bingham, N. Eldred Teaching Nutrition in Biology Classes. '39 23:351
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Burnett, R. Will (Editor) Selected Science Teaching Ideas of 1992. '53 37:348
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Stevens, R. A.
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Individualized Science—Like It Is. '72 58:136

Troyer, Donald L., Kellogg, Maurice G. and Anderson, Hans O.
Sourcebook for Biological Sciences. '72 57:108-9

van Klooster, Henry S.
Lecture Demonstrations in Physical Chemistry. '71:143

Vinal, William Gould
Nature Recreation. '54 42:271

Vinal, William Gould
The Outdoor Schoolroom for Outdoor Living. '52 37:292

Weisbruch, Fred T.
Lecture Demonstration Experiments for High School Chemistry. '51 37:350

Wine, Madeline M., Nesterberg, Virginia and Anderson, Ronald D.
The Laidlaw Science-Readiness Charts. '67 51:411

Woodring, Maxie Nave, Oakes, Mervin E. and Brown, H. Emmett
Enriched Teaching of Science in the High School. '41 26: 216

Zim, Herbert S.
Science for Children and Teachers. '53 37:286

Zim, Herbert S.
This Is Science. '45 30:178-9

Bibliography of Science Teaching in Secondary Schools 10:432

Conservation—Natural Resource Use Workshop Reports of Field Experiences. '52 37:278

Earth and Space Guide for Elementary Teachers; Teaching Guide for the Earth and Space Science Course. 51:413

Experiments with Water; Experiments with Air; Experiences with Fuels and Fires; Experiences with Heat; Experiences with Magnetism and Electricity; Experiences with Sound; Experiences with Light and Color. '50, '51 37:141


Food and Nutrition. '45 31:120


Guide to Tillamook Burn Replanting Project. '52 37:350

How to Organize a Science Club. 23:397

Science and the Young Child. '36 21:52
Science for Today's Children. '53 39:92
Science in Everyday Living. '48 33:83; 33:306; 36:197
Science Objectives and Devices for Their Evaluation; Teacher's Chart for the Selection of Available Elementary Science Books; How Can I Detect the Gifted Science Student?; Science Vocabulary at the Ninth Grade Level; Magnetism and Electricity; Simple Machines; Heat, Light, and Sound; Microscopic Slide Kit; Chemistry; Universe; Sound; and Weather, Air, Water, and Their Relationships. '37:268

Science Teaching Techniques--XI. '64 51:BC
The Sky Book. '31 16:527
A Source Book of Science Experiences for Elementary School Children; Kindergarten and Primary Grades; Volume One for Intermediate Grades; Volume Two for Intermediate Grades. '49 36: 196-7
Teaching Aid Bulletins for Elementary Science. '38 23:54

2. Units of Instruction

Atkin, J. Myron and Burnett, R. Will Air, Winds, and Weather; Electricity and Magnetism. '58 44:154-55
Baxter, Tompse and Young, Bess M. Ships and Navigation. '33 18:191
Bee, Lowell R. Weather and the Weatherman. '53 39:118
Connor, William H., Cross, Burnett, Evans, Hubert and Tannenbaum, Harold Electric Power and Social Policy. '51 37:140
Crary, Ryland W., Evans, Hubert M., Gotlieb, Albert and Light, Israel The Challenge of Atomic Energy. '48 33: 316
Davis, Lillian B. Prevention of Communicable Diseases. '31 17:350
De Leon, Benjamin The Story of the Thermometer. '46 30:319
Edge, Rosalie Our Nation's Forests. '38 23:113
Evans, Everett Conservation of South Dakota's Natural Resources. '53 38: 413
Hand, Harold C. (Editor) Living in the Atomic Age. '48 32:44
Lumley, Ellsworth D. Eagles; Hawks. '35 20:109-110
Lumley, Ellsworth D. Owls. '37 22:326
Persing, Ellis C. (Editor) The Book of Knowledge Science Series. 11:134
Phillips, M. V. Physical Geography: Interpreting the Physical Features of the Earth. '66 14:397

Rose, Mary S. and Bosley, Bertlyn Our Cereals--A Nutrition Unit for the Fourth, Fifth, and Sixth Grades of the Elementary School. '38 23:57
Wittick, Eugene C. The Development of Power. '39 23:238
The Atom and You. '50 36:61
Compton's Pictured Teaching Unit-Materials. '35 21:171
The Earth and Its Neighbors; Pets; Birds; Suggestions for Science Observations and Experiences in the Elementary School; Spring Season; Suggestions for Science Observations and Experiences in the Elementary School: Autumn and Winter. 36:196
Eyesight Conservation. 9:208
Food and Nutrition. '55 40:244
Forests and the Natural Water Cycle. '57 41:345
Learning about Atomic Energy. '50 36:61
Practical Problems in Physical Science. '40 26:216
Safety in General Science. '48 33:310
Science Creates a Modern Industry. '47 32:292

D. Instructional Media, Science Equipment, and Facilities

1. Textbooks for the Elementary School Student

Barber, F. D. First Course in General Science. 1:240
Barber, Fuller, Prior and Adams Science for Beginners. 6:417
Barber, Fuller, Prior and Adams. Lessons in Science. '22 8:533
Barnard, J. Darrell, Stenlinder, Celia, Spock, Benjamin, Braidford, Margaret and Atkin, J. Myron The Macmillan Science--Life Series. '62 51:408

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Beauchamp, Wilbur L., Mayfield, John C. and Hurd, Paul DeHart. Science Is Explaining 7 and 8. '63 52:(3)IBC


Beauchamp, Wilbur L., Melrose, Mary and Carroll, Franklin B.

Carroll, Franklin B.

Carpenter, Harry A. and Wood, George C.

Caldwell and Meier

Caldwell and Eikenberry

Caldwell, Otis and Curtis, Francis D.

Caldwell, Otis and Elkenberry, W. L. Elements of General Science. '24:101

Caldwell and Elkenberry Elements of General Science with Experiments. '11:60

Caldwell and Elkenberry General Science. '3:51

Caldwell and Meier Open Doors to Science. '10:354


Carpenter, Harry A. and Wood, George C. Our Environment: Its Relation to Us. '33 18:186

Carroll, Franklin B. Interpreting Science; Understanding Our Environment; Understanding Our World; Understanding the Universe. '39 23:395

Carroll, Franklin B. Interpreting Science Series: Understanding Our Environment; Understanding Our World; Understanding the Universe. '47 32:292-93

Carroll, Franklin B. Interpreting Science Series. '52 37:346

Clark, Bertha M. An Introduction to Science. '28 12:566

Clement, A. G., Collister, M. C. and Thurston, E. L. Our Surroundings. 12: 494

Clement, Arthur C., Collister, Morton C. and Thurston, Ernest L. Our Surroundings. '31 18:189

Corwin, Mae Johnson and Corwin, Walling. Junior High School Science. '31 18:54

Corwin, Walling and Corwin, Mae Johnson. The Science of Plant and Animal Life. '31 16:253

Coulter, John G. Elementary Science. 3: 52


Craig, Gerald S., Burke, Agnes, Baldwin, Sara E., Hurley, Beatrice D., Condry, Margaret G. and Johnson, Goldie. Pathways in Science (6 vols.). '32 16:429

Davis, Ira C., Burnett, John and Gross, E. Wayne. Science: A Story of Observation and Experiment; Books 1 and 2. '54 39:236

Davis, Ira C. and Sharpe, Richard W. Science: A Story of Discovery and Progress. '47 31:274


Dobling, Thomas J., Freeman, Kenneth, Lacy, Nan and Tippet, James S. Understanding Science Series. '56 41:336

Flinch, Lewis. General Science, First Course. 1:242-43

Fall, Delos. Science for Beginners. 2: 308; 2:415


Fischler, Abraham S., Lowery, Lawrence F. and Blanc, Sam S. A Modern Approach, Books 1-6 and Teacher's Editions. '66 51:408

Fowler, George W., Collister, Morton C. and Thurston, Ernest L. Science and You; Living with Science. '52 37:345


Hessler, John C. Junior Science, Book I. '44:476
Hessler, John. The First Year of Science. 1:243-44
Hodgdon, D. R. Elementary General Science. 2:470
Hodgdon, D. R. Junior General Science. '58
Humphries, Pauline A. and Hoosey, Gertrude Romance of the Airman. '31 16:256
Hunter, Geo. W. and Whitman, W. G. Civic Science in the Community. 6:418
Hunter, G. W. and Whitman, W. G. Civic Science in the Classroom. 5:184
Hunter, George W. and Whitman, Walter G. Doorways to Science. '47 31:274
Hunter, George W. and Whitman, Walter G. My Science Problems; Science in Our Social Life; Science in Our World of Progress. '35 19:136-37
Knox, Warren, Stone, George, Meister, Morris and Noble, Doris The Wonderland of Science Book One, Book Two, and Book Three. '40 24:353
Lake, Charles H. General Science. 2:359
MacCracken, Helen Dolman, Decker, Donald G. and Ballou, Mildred T. Elementary General Science Series, Books I-III. '39 24:176
Meister, Morris Living in a World of Science, I-IV. '30-31 15:276
Meister, Morris Living with Science Series, Books I-III. '39 24:176
Nichols, M. Louise Science for Boys and Girls. 9:280
Oxenhorn, Joseph M., Idelson, Michael N. and Greenleaf, Peter Pathways in Science. '68-'71 56:282
Parker, Bertha Morris Basic Science Education Series. Matter and Molecules; The Science of Building; How We Are Built. '47 33:303
Paterson, Alice J. Studies in Science. 4:476
Pease, Clara A. A First Year Course in General Science. 1:245-46
Pieper and Beauchamp Everyday Problems in Science. 10:358
Pieper, Charles John and Beauchamp, Wilbur Lee Everyday Problems in Science: Revised Edition. '33 17:342
Powers, Samuel Ralph, Neuner, Elsie Flint, Bruner, Herbert Bascom and Bradley, John Hodgdon Adventuring in Science Series. '46 31:181
Reed, W. Maxwell The Earth for Sam. '30 17:259
Reh, Frank and Wheat, Frank M. Science and Life, Books 1-6. '38-'39 23:395
Rohan, Ben J. Exploratory Science, A Means of Life Guidance. '31 16:257
Rowell, Percy E. Elementary General Science, Book I. 1:246
Rowell, Percy E. Introduction to General Science with Experiments. '13 1:246
Schneider, Herman and Nina Let's Find Out. '46 31:116
Schneider, Herman and Nina This Is Science in Action. '65 50:48C
Smith Everyday Science Projects. 10:434
Smith, Herbert A., Biechen, Milo K. and Sernig, John Science 1-6 (Teacher's Edition). 51:411
Smith, Paul E. and Wood, George C. Carpenter and Wood's Our Environment Series. '52 37:341
Smith, Victor C., Clarke, Katherine and Henderson, Barbara Elementary Science Series, Books 1-9. '56 41:240; 41:336
Smith, Victor C., Clarke, Katherine and Henderson, Barbara Science for Modern Living Series, Books 1-9. '51 36:60; 36:193
Smith, Victor C. and Jones, W. E. General Science. '55 41:83
Smith, Victor C. and Trafton, Gilbert H. Science in Modern Life Series. '42 27:45
Smith, Victor C. and Vance, B. B. Science for Everyday Use. '54 39:237
Snyder, William H. First Year Science. 1:246-47
Snyder, William H. Everyday Science. 4:297
Stout, A. B. Gardening. 6:568
Trafton, Gilbert H. Science of Home and Community. 4:475
Trafton, Gilbert H. Science of Home and Community. 10:588
Sears, H. First Year Science. 1:246-47
Sears, H. Everyday Science. 4:297
Trafton, Gilbert H. Science of Home and Community. 4:475
Trafton, Gilbert H. Science of Home and Community. 10:588
Sec. XVI
Washburne, Carlton W. Common Science. 5:49
Webb and Didcock Early Steps in Science. 9:278
Weed, Henry T. and Rexford, Frank A. Useful Science. '31 18:252
Weed, Henry T. and Rexford, Frank A. Useful Science, Book II. '31 17:256
Wong, Harry K. and Dolmatz, Melvin S. Physical Science: Ideas and Investigations in Science. '71 56:588
Wood, George C. and Carpenter, Harry A. Our Environment. '34 19:42
Wood, George C. and Carpenter, Harry A. Our Environment: How We Use and Control It. '46 31:276
Unit Studies in the Natural Sciences. '33 20:235

b. Geography

Atwood, Wallace W. and Thomas, Helen Goss Neighborhood Stories; Visits in Other Lands; The American Nations; Nations Overseas; The United States in the Western World. '45 32:382
Barrows, Harlan H., Parker, Edith Putnam and Sorenson, Clarence Woodrow Our Big World; The American Continents; Old World Lands. '46-'47 31:109; 32:294
Chamberlin, James F. Home and World Series. 8:376; 8:600
Dryer, Charles R. Elementary Economic Geography. 2:415
Emerson, Phillip The Geography of New England. 7:143
Hanna, Paul R. and Kohn, Clyde F. Cross-Country. 50 34:340
Knowlton, P. A. First Lessons in Geography 9:65
Knowlton, P. A. Introduction to World Geography. 12:419
Jordan, David Starr High Lights of Geography. 10:356
Long, Forest E. and Halter, Helen Social Studies Skills. '54 39:171
Miller, George J. (Editor) Activities Geography. '37 22:232
Packard and Sinnott Nations as Neighbors. 10:360
Ridgley, Douglas C. and Ekblaw, Sidney E. Problems in Economic Geography. '38 23:174
Sauer, Carl Man in Nature, a First Book in Geography. '39 24:357
Smith, J. Russell Our Country and Northern Neighbors; Our European Neighbors; Other World Neighbors; Our Industrial World. '34 21:53
Stull, DeForest and Hatch, Roy W. Our World Today Geographics Series. '48 32:391
Weinberg, Louis, Scott, Zenas E. and Holston, Evelyn T. The World We Live In. '32 18:123-24
Whipple, Gertrude and James, Preston E. Our Earth; Using Our Earth; Our Changing Earth; Living on Our Earth; At Home on Our Earth; Neighbors on Earth; Our Earth and Man. '55 41:337
Winslow, L. L. Elementary Industrial Arts. 6:569

b. Health

Bigelow, Maurice A. and Broadhurst, Jean Health for Every Day. 9:140
Bigelow, Maurice A. and Broadhurst, Jean Health in Home and Neighborhood. 9:140
Brown, Bertha M. Health in Home and Town. 2:471
Brownell, Clifford Lee and Evans, Ruth Broad Streets. '53 38:109
Brownell, Clifford Lee, Ireland, Allen Gilbert, Giles. Helen Fisher and Towne, Charles Franklin Health and Safety Series. '35 23:55
Charters, W. W., Smiley, Dean P. and Strang, Ruth M. Your Health and Growth Series. '55 41:338
Corwin, Walling and Corwin, Mae Johnson The Science of Human Living: Health Series. '31 16:253
Davison, Alvin Health Lesson; Revised. 9:206
Gregg, F. M. and Rowell, H. G. Health Studies (2 vols.). '32 17:253
Merideth, Florence I. The Health of Youth. 13:56
O'Shea, M. V. and Kellogg, J. H. The Everyday Health Series: Building Health Habits; Book 2, Keeping the Body in Health. '21 6:497
Overton, Frank Personal Hygiene. 8:631
Overton, Frank General Hygiene. 8:531
Ritchie, John W. Sanitation and Physiology. '17 2:471
Wheat, Frank Merrill and Fitzpatrick, Elizabeth T. Everyday Problems in Health. '33 17:346
Williams, Dorothea M. Building Health. '52 37:345
Williams, Dorothea M. Building Health. '56 41:342
Williams, Jesse F. Person Hygiene Applied. 7:71

Beaty, John Y. The River Book. 31:115
Beaty, John Y. The Mountain Book. '44 31:115
Beauchamp, Wilbur L., Crampton, Gertrude and Gray, William S. Guidebook for Look and Learn. '35 27:80
Beauchamp, Wilbur L., Crampton, Gertrude and Gray, William S. All Around Us and How Do We Know (Teachers Edition). '35 30:177
Bloch, Marie Albert the Electrical Mouse. '53 39:76
Clarke, Francis E. Our Animal Books Series. '37 22:328
Colvin, Carl and Stevenson, J. A. Farm Projects. 7:73
Douglas, Lewis M. Stories of Outdoor Science. '33 18:255
Engleman, F. E. and Salmon, Julia Air Ways. '31 16:434-35
Fisher, Clyde and Langham, Marion L. Nature Science: Book 1, World of Nature; Book 2, Ways of the Wild Folk; Book 3, Our Wonder World; Book 4, In Field and Garden. '34 19:137
Gehrs, John H. Agricultural Nature Study, Book I. '29 14:468

Book Reviews

Charters, W. W., Smiley, Dean P. and Strang, Ruth M. Your Health and Growth Series. '55 41:338
Corwin, Walling and Corwin, Mae Johnson The Science of Human Living: Health Series. '31 16:253
Davison, Alvin Health Lesson; Revised. 9:206
Gregg, F. M. and Rowell, H. G. Health Studies (2 vols.). '32 17:253
Hallock, Grace T., Allen, Ross L. and Thomas, Eleanor Health for Better Living Series. '54 43:84
Merideth, Florence I. The Health of Youth. 13:56
O'Shea, M. V. and Kellogg, J. H. The Everyday Health Series: Building Health Habits; Book 2, Keeping the Body in Health. '21 6:497

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Beaty, John Y. The River Book. 31:115
Beaty, John Y. The Mountain Book. '44 31:115
Beauchamp, Wilbur L., Crampton, Gertrude and Gray, William S. Guidebook for Look and Learn. '35 27:80
Beauchamp, Wilbur L., Crampton, Gertrude and Gray, William S. All Around Us and How Do We Know (Teachers Edition). '35 30:177
Bloch, Marie Albert the Electrical Mouse. '53 39:76
Clarke, Francis E. Our Animal Books Series. '37 22:328
Colvin, Carl and Stevenson, J. A. Farm Projects. 7:73
Douglas, Lewis M. Stories of Outdoor Science. '33 18:255
Engleman, F. E. and Salmon, Julia Air Ways. '31 16:434-35
Fisher, Clyde and Langham, Marion L. Nature Science: Book 1, World of Nature; Book 2, Ways of the Wild Folk; Book 3, Our Wonder World; Book 4, In Field and Garden. '34 19:137
Gehrs, John H. Agricultural Nature Study, Book I. '29 14:468

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overton, frank general hygiene. 8:531
Ritchie, John W. Sanitation and Physiology. '17 2:471
Wheat, Frank Merrill and Fitzpatrick, Elizabeth T. Everyday Problems in Health. '33 17:346
Williams, Dorothea M. Building Health. '52 37:345
Williams, Dorothea M. Building Health. '56 41:342
Williams, Jesse F. Person Hygiene Applied. 7:71

Beaty, John Y. The River Book. 31:115
Beaty, John Y. The Mountain Book. '44 31:115
Beauchamp, Wilbur L., Crampton, Gertrude and Gray, William S. Guidebook for Look and Learn. '35 27:80
Beauchamp, Wilbur L., Crampton, Gertrude and Gray, William S. All Around Us and How Do We Know (Teachers Edition). '35 30:177
Bloch, Marie Albert the Electrical Mouse. '53 39:76
Clarke, Francis E. Our Animal Books Series. '37 22:328
Colvin, Carl and Stevenson, J. A. Farm Projects. 7:73
Douglas, Lewis M. Stories of Outdoor Science. '33 18:255
Engleman, F. E. and Salmon, Julia Air Ways. '31 16:434-35
Fisher, Clyde and Langham, Marion L. Nature Science: Book 1, World of Nature; Book 2, Ways of the Wild Folk; Book 3, Our Wonder World; Book 4, In Field and Garden. '34 19:137
Gehrs, John H. Agricultural Nature Study, Book I. '29 14:468
Gehrs, John H. Nature Study, Book II. '30 15:70
Gordon, Eva L. and Hall, Jenny Nature Stories for the Children. '26-'27 12:570
Hallock, Grace T. After the Rain. 12:422
Heal, Edith and Others The Story of the World Series. '30 16:331-32
Holden, E. S. The Sciences, Revised Edition. 11:212
Howard, Ethel K. How We Get Our Food. '39 24:179
Huber, Miriam et al.; Arey, Charles K. Aviation Readers Series. '43-'44 30:179
Lent, Henry B. Straight Up; Straight Down. '45 30:178
McIntosh, D. C. and Orr, D. M. (Editors) First Problems in Agriculture. '34 19:43
McKay, Herbert In Search of Science: Book I, Air, Wind and Rain; Book II, Looking-Glasses and Candles; Book III, Noises, The Sun and the Moon. '38 24:353
Moseley, Edward L. Trees, Stars, and Birds. 3:239
Nicol, Lucille, Levenson, Samuel M. and Kahn, Teressa The Nature Hour: Fifth Year-Spring; Fifth Year-Autumn and Winter; Sixth Year-Spring; Sixth Year-Autumn and Winter. '35 20:51
Parker, Bertha M. and Cowles, Henry C. The Book of Plants. 10:354
Parker, Bertha Morris Aviation Readers Series. '46 31:105
Patch First Lessons in Nature Study. 11:66
Patch, Edith M. and Howe, Harrison E. Science at Home. '34 19:89

Patterson, Alice J. Nature Study and Health Education Series. '26-'28 12:570; 13:117

Persing, Ellis C. and Wildman, Edward E. Elementary Science by Grades, Book 4. '29 14:386

Phillips, Mary G. and Wright, Julia M. Nature by Seaside and Wayside Series. '36 21:50

Reh, Frank Science Related to Life: Book I, Water, Air and Sound; Book II, Heat and Health; Book III, Magnetism and Electricity; Book IV, Light, Forces and Machines. '32 18:55

Schackelford, Frederick H. Earth and Sky Trails. '34 20:233

Shirling, A. E. Outdoor Adventures. '28 13:186

Stone, George and Noble, Doris The Wonderworld Readiness. '48 32:378

Thomas, Roy H. Living Things Around Us. '28 17:259

Thorn, Samuel A. and Brouillette, Jeanne Let's Go; Let's Try. '53 39:85

Thorn, Samuel A. and Duncan, Carl D. Let's Learn How. '56 43:85

Trafton, Gilbert N. Nature Study and Science. 12:419


W.P.A. Writer's Program Children's Science Series. '40 24:178; 24:353; 25:171

Wyler, Rose (Editor) Everyday Science Series. '53 37:284

Keystone Primary Series. 21:170

Nature Activity Readers. '31-'37 15:197; 22:50

New Science Reading Adventures Books 1, 2, 3, 4, 5, and 6. '65 51:398

Trails Today Series. '32 18:53

Laboratory Manuals (includes workbooks and review books)


Blackwood, Paul E. Experience in Science. '50 34:325

Blackwood, Paul E. Experiences in Science. '55 40:78

Boyer, Philip A., Clark, Arthur S., Gordon, Hans C., Schilling, John Experiences in General Science. '45 30:105

Boyer, Philip A., Clark, Arthur S., Gordon, Hans C., Schilling, John Experiences in General Science '46 30:105

Boyer, Philip A., Clark, Arthur S., Gordon, Hans C., Schilling, John Experiences in General Science. '46 30:105

Caldwell, L. L. and McAtee, Veva 20th Century Workbook in General Science. '30 20:235

Carpenter, H. A. and Wood, George C. Science Discovery Book. '23 18:167


Craig, Gerald S. et al. Science for You: Books One Through Seven. '65 52:312

Davis, Ira C. Directed Study Guide and Manual. '36 21:120

Davis, Jerome F., Hutchings, Verne and Sharp, Clarence P. A Directed Study Guide in General Science. 22:327

Doss, Leona, Townsend, Rebecca and Townsend, Katherine Steck-Vaughn Health Series: Growing Up, Growing Everyday, Steps to Health, Coloring Health, and Health for Every Child. '51 3412

Editors of Scholastic Magazines. Map Skills Project, Book I; Map Skill Projects, Book II. '64 50:48C

Essler, Evelyn A. The World We Live In: Book Four, Book Five, Book Six. '45 32:288-89

Fiedler, Evelyn A. The Where We Live In: Book Seven. '47 32:289


Hudspeth, Jack and Hudspeth, Frances H. Elementary Science Workbooks and Handbooks for Teachers. '33-'40 23:55; 24:177, 24:353

Hudspeth, Jack and Steel, Mary The World About Us: Life on Our Earth; Teacher's Manual for Life on Our Earth; Teacher's Manual for the World About Us. '48 33:302-03

Hupfer, George W. and Whitman, Walter G. Laboratory Exercises for My Own Science Problems (7th year); Laboratory Exercis for Science in Our World of Progress (9th year). '35 20:48

Lamb, Dr. Joe, Parker, F. W. and Brown, B. P. Laboratory Manual for Science 3, 4, 5, and 6. '66-'67 51:412


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Ruchlis, Hy Teacher's Manual for Classroom Laboratory 1-6. '66 51:410
Snyder, W. H. Manual and Notebook to Everyday Science. '55:50
Steel, Mary and Hudspeth, Jack Do You Know? '46 31:105; 32:288
Steel, Mary and Hudspeth, Jack Things Around Us. '47 32:288
Vinal, W. G. Tree Calendar, Key and Checklist: Bird Calendar, Key and Checklist. '37 22:50
Watkins, Ralph K. and Perry, Winifred Workbooks for Science in Our Modern World. '40 24:354
W. M. Welch Scientific Company Elementary Experiments in Science. '55 41:345

2. Textbooks for the High School Student
a. Biology and Applied Biology (includes agriculture, domestic science, and hygiene)
Adell, James C., Dunham, Orra Olive and Welton, Louis E. Explorations in Biological Science. 22:326
Anderson, C. L. and Langton, C. V. Health Principles and Practices. 49:114
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Burnett, R. Will To Live in Health. '46 31:38
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Clemensen, Jessie Williams and LaPorte, William Ralph Your Health and Safety. '46 30:323
Clemensen, Jessie Williams and LaPorte, William Ralph Your Health and Safety. '52 37:344-45
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Conn, H. W. Bacteria, Yeasts, and Molds in the Home. '32 17:61
Corwin, Walling and Corwin, Mae Johnson Living Things. '34 20:186
Craig, Edna and Stone, George K. Guide to High School Biology. '38 22:221
Curtis, Francis D., Caldwell, Otis W. and Sherman, Nina Henry Everyday Biology. '40 24:353
Curtis, Francis D., Caldwell, Otis W. and Sherman, Nina Henry Teacher's Manual and Key for Biology for Today. '34 19:43
Curtis, Francis D. and Urban, John Biology in Daily Life. '49 34:324
Davison, Alvin Human Body and Health; Revised. 9:206
Day, Chapin W. and Ritchie, Margaret Studies and Activities in Biology. '42 27:45
Diehl, Harold S. and Laton, Anita D. Health and Safety for You. '54 39:168
Dowd, Mary T. and Dent, Alberta Elements of Foods and Nutrition. '37 22:216
Downing, Elliot R. and McAtee, Veve M. Living Things and You. '40 24:353
Duggar, John F. Southern Field Crops. 9:280
Eiseman, Louis and Tanzer, Charles Biology and Human Progress. '53 39:237
Engle, T. L. Psychology. '45 22:281
Enlows, Harold F. (Editor) American Red Cross First Aid Textbook. '37 22:325
Fenton, Carroll Lane and Kambly, Paul E. Basic Biology for High Schools. '47 32:216
Fenton, Carroll Love and Kambly, Paul E. Basic Biology for High Schools. '53 37:340
Fitzpatrick, Frederick L. and Bain, Thomas D. Living Things. '53 37:339
Fitzpatrick, Frederick L. and Horton, Ralph E. Biology. '35 19:136
Gehrs, John H. Soils and Crops. 9:67
Goff and Mayne First Principles of Agriculture, revised. 3:53
Grant, Charlotte L., Cady, H. Keith and Neal, Nathan A. American High School Biology. '48 33:311
Grant, Charlotte L., Cady, H. Keith and Neal, Nathan L. High School Biology. '52 37:340
Gruenberg, B. C. Biology and Human Life. 9:280
Gruenberg, Benjamin C. Elementary Biology. 5:187
Gruenberg, Benjamin C. and Bingham, N. Eldred Biology and Man. '44 28:296
Hanger, Ernest O. and Lowe, Paul S. Directed Studies in Biology. '37 23:234
Harris, F. S. and Stewart, George The Principles of Agronomy. '30 15:71
Hausrath, Alfred H., Jr. and Harms, John H. Consumer Science. '39 24:358
Hegner, Robert W. Practical Zoology. '31 16:435
Homes Life and Evolution. 10:508
Hodgson, R. R. Farm Management. '39 23:227
Hunter, George W. Life Science. '41 26:216
Hunter, George W. New Essentials of Biology. 7:297
Hunter, George W. New Civic Biology. 11:138
Hunter, George W. Problems in Biology. '31 16:331
Hunter, George W. and Hunter, F. R. Biology in Our Lives. '49 33:312
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Kirkpatrick, T. Bruce and Huettinger, Alfred Fundamentals of Health. '41 26:55
Laurie, Alex and Kiplinger, D. C. Commercial Flower Forcing. '48 32:378
Linville, Harry R. The Biology of Man and Other Organisms. 8:375
Lippitt, Louisa C. Hygiene and Home Nursing: A Practical Text for Girls and Women. '34 19:37
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Mank, Helen G. The Living World. '33 18:27
McIntosh, Daniel Cobb and Orr, Don Mathis Practical Agriculture for High Schools. '37 22:47
Meier, W. H. D. The Study of Living Things. 7:141
Meier, W. H. D. and Shoemaker, Lois Meier Essentials of Biology. '38 22:323
Meredith, Florence L. Health and Fitness. '46 32:381
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Moon, Truman J. and Mann, Paul B. Biology. '38 23:175
Moore and Halligan Plant Production. 4:297
Obourn, Ellsworth S., Heiss, Elwood D. and Montgomery, Gaylord C. Science in Everyday Life. '53 37:337
Peabody, J. E. and Hunt, A. E. Biology and Human Welfare. '33 19:87
Pieper, Charles J., Beauchamp, Wilbur L. and Frank, Orin D. Everyday Problems in Biology. '32 16:512
Pieper, Charles J., Beauchamp, W. L. and Frank, O. D. Teacher's Guidebook for Everyday Problems in Biology. '34 18:186
Pool, R. J. and Evans, A. T. First Course in Botany. '28 12:567
Pratt, H. S. Vertebrate Zoology, revised edition. 10:350
Rice, Edward Lorans An Introduction to Biology. '35 20:51
Ritchie, John W. Biology and Human Affairs. '41 25:407
Ritchie, John W. Biology and Human Affairs. '48 32:378-80
Robbins, Wilfred W. and Isenbarger, Jerome Practical Problems in Botany. '36 20:111
Rogers, J. Speed, Hubbell, Theodore H. and Byers, C. Francis Man and the Biological World. '52 38:312
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Smith, Ella Thea Exploring Biology. '54 39:239
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Transeau, Edgar N. Science and Plant Life. '36 21:119
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Walters, Henry J. The New Agriculture. 9:63
Walton, Everett P. and Foss, Philip E. Social Biology. '36 21:119
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Wells, Harrington and Wells, Patrick H. General Biology. '56 42:184
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Wheat, Frank Merrill and Fitzpatrick, Elizabeth T. General Biology. '32 16:513-14
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Wong, Harry K. and Dolmatz, Melvin S. Biology: Ideas and Investigations in Science. '71 55:588
Worthen, Edmund L. Farm Soils. '41 26:52

b. Laboratory Manuals for Biology and Applied Biology

Abramoff, Peter and Thompson, Robert C. Investigations of Cells and Organisms, A Laboratory Study in Biology. '68 55:587
Adell, James C. and Welton, Louis E. A Laboratory Course in Biology. '51 36:313-14
Auerbach, Bernard and Tedesco, A. Edward Fundamental Activities in Chemistry. '47 34:270
Beauchamp, Wilbur L. A Study Book in Biology. '34 18:251
Biological Sciences Curriculum Study Research Problems in Biology: Investigations for Students. '65 52:521
Blaisdell, J. G. Exercise and Review Book in Biology. 9:140
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Burton-Dipitz, Russel An Elementary Manual of Physiology. 6:569
Bush, George L., Dickle, Allan and Runkle, Ronald C. Activities to Accompany a Biology of Familiar Things. '39 24:405
Chicago Zoology Teachers Zoology Manual. '31 16:527
Craig, Edna and Stone, George L. Experiences in Life Science. '42 26:216
Curtis, Francis D. Workbook to Accompany Curtis and Urban’s Biology in Daily Life. '49 34:324
Davis, Ray E. and Davis, Ira C. Combined Laboratory Manual and Workbook in Biology. '38 23:235
Dodge, Ruth A. Smallwood, Reveley, and Bailey’s Elements of Biology; Greene, Robert A. Greene and Bailey’s Problems in Biology to Accompany Elements of Robert. '52-53 37:342
Downing, E. R. and McAtee, Veva M. Problem-Solving in Biology. '34 19:40
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DuShane, Carl Graham and Regeney, David Experiments in General Biology. 50 34:326
Fitzpatrick, Frederick L. and Horton, Ralph H. Students Manual in Biology. '35 20:48
Gilman, Phil R. and Peterson, Vincent R. Biology in Review. '49 34:327
Greene, Robert A. and Bailey, Guy A. New Laboratory Manual. '48 32:380
Grunenberg, Benjamin C., Snyder, Emily Eveleth and Miller, Jesse V. A Workbook for Students of Biology. '46 31:184
Harrer, Edwin L. and Remley, Chelsey G. Fundamental Activities in Biology. '47 33:312
Hunter, George W. Laboratory Problems in Biology. '32 16:513
Hunter, George W. New Laboratory Problems in Civic Biology. '27 12:565
Hunter, George W. and Kitch, Loran W. Activities in Life Science. '42 26:217
Hunter, George W., Mork, Gordon M. A. and Hunter, F. R. Workbook for Biology in Our Lives; Manual and Key for Biology in Our Lives and Workbook. '50 37:342
Jaffe Chemical Calculations. 11:63
Jaffe Chemical Calculation. 11:60
Kinsey, Alfred C. Workbook in Biology. '34 19:40
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Lawson, Chester A., Lewis, Ralph W., Burmester, Mary Alice and Hardin, Garrett Laboratory Studies in Biology: Observations and Their Implications. '55 41:249
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Meier, W. H. D. and Meier, Dorothy Biology Notebook. '31 16:333-34
Mavor, James W. and Clark, Leonard B. A Laboratory Manual in General Biology. '36 21:58
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Mendel Graded Exercises in Chemistry. 11:62
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Otto, James H. and Blanc, Sam S. Biology Investigations. '51 36:62
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Sanders, Edwin F. and Goldstein, Philip Practical Biology Workbook. '49 33:312
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Snyder, Emily B. and Duddleston, Joseph J. Biology Demonstrations and Assignment Book. '32 18:255
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Ahrens, Maurice R., Bush, Norris F. and Easley, Ray K. Living Chemistry. '49 34:269-70
Bayles, Ernest E. and Mills, Arthur L. Basic Chemistry. '47 32:44-45
Biddle, Harry C. and Bush, George L. Dynamic Chemistry. '36 21:50
Black and Conant Practical Chemistry. 5:49
Bogert, L. Jean Fundamentals of Chemistry. '53 38:318
Bradbury, Robert H. A First Book in Chemistry. '38 24:296
Brauer, Oscar L. Chemistry and Its Wonders. '38 22:328
Brauer, Oscar L. Exploring the Wonders of Chemistry. '38 23:354
Brownlee, Raymond B., Fuller, Robert W., Hancock, William J. and Whitsit, Jesse E. Chemistry in Use. '39 25:231
Brownlee, Fuller, Hancock, Sohon, and Whitsit Elementary Principles of Chemistry, revised edition. '26 12:570
Brownlee, Raymond B., Fuller, Robert W., Hancock, William J., Sohon, Michael D. and Whitsit, Jesse E. Elements of Chemistry. '46 31:276
Brownlee, Raymond B., Fuller, Robert T., Whitsit, Jess E., Hancock, William J. and Sohon, Michael D. Elements of Chemistry. '50 35:58
Brownlee, Raymond B., Fuller, Robert W., Whitsit, Jesse E. Hancock, William J. and Sohon, Michael Elements of Chemistry, Teacher's Manual for Elements of Chemistry. '54 39:238
Brownlee, Raymond B., Fuller, Robert W., Hancock, William J., Solton, Michael D. and Whitsit, Jesse E. First Principles of Chemistry. '31 16:173
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Dull, Charles E., Brooks, William O. and Metcalfe, H. Clark Modern Chemistry. '54 39:239
Dyer, Walter S. A Practical Survey of Chemistry. '41 26:52
Fletcher, Smith and Narraway Beginning Chemistry. '29 13:286
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Hogg, John C., Alley, Otis E. and Bickel, Charles L. Chemistry, a Course for High Schools. '45 30:172
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Howard, Russell S. Units in Chemistry. '38 24:240
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Jaffe, Bernard New World of Chemistry. '47 32:216
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Long, Ernestine M. J. Living Chemistry. '40 25:113
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Price, William Evans and Bruce, George H. Chemistry and Human Affairs. '46 30:301
Rawlins, George M. and Struble, A. H. Chemistry in Action. '48 32:379
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Weaver, Elbert C. and Foster, Lawrence S. Chemistry for Our Times. '54 39:238
Wilson, Sherman R. and Mullins, Mary R. Applied Chemistry. '39 23:97
Wilson, Sherman R. and Mullins, Mary R. Applied Chemistry. '47 32:46
Wilson, Sherman R. Descriptive Chemistry.

Des Jardins, Russell T. Vitalized Chemistry in Graphicolor. '46 30:322
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Dinsmore, Ernest L. Chemical Calculations. '27 18:195-96
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Dragoo, A. W. and K. L. General Shop Electricity. '36 20:106
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Smery, Frederick B., Miller, Elizabeth W. and Boynton, Charles E. Applied Chemistry. '28 17:256
Fernellus, W. Conrad, Garrett, Alfred Benjamin Quill, Laurence L. Fundamentals of Chemistry for the Laboratory. 34:326
Fliedner, Fred J. Chemistry Workbook. '32 18:119
Francis, Charlotte A., Morse, Edna C. and Chadwick, Helen Rohr Laboratory Manual. '56 41:259
Hogg, John C., Alley, Otis E., Bickel, Charles L. Workbook for Chemistry. '45 30:172
Horton, Ralph E. Laboratory Manual in Chemistry. '37 22:17
Jacques, Agnes F. Laboratory Chemistry for Girls. 8:451
Johnston, Joseph E. Basic Units in Chemistry. '47 33:313
Long, Ernestine M. J. Living Chemistry. '39 25:114
Markham, Edwin C. and Reiley, Charles N. A Laboratory Manual for General Chemistry. '54 40:164
McCormack, J. W. and Davis, M. W. Chemistry Laboratory Notebook. '33 18:195

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McGill, M. V. and Bradbury, G. M. Chemistry Workbook and Laboratory Guide. '33 18:255
McGill, M. V. and Bradbury, G. M. Chemistry Guide and Laboratory Exercises. '35 19:196-97
McGill, Martin V. and Bradbury, G. M. New Chemistry Unit and Review Tests. '39 24:407
Mendel and Brundage Chemistry Experiment Sheets. 10:429
Mendel, Martin and Brundage, Milton B. Chemistry Experiment Sheets. '26 18:195
Meyer, Lillian Hoagland Laboratory Manual for Introductory Chemistry. '57 38:320
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Oppe, Greta Chemistry. '63 47:37
Powers, Samuel Ralph and Johnson, Ruth Maude Workbook in Chemistry. '31 16:81
Price, William E. Laboratory Chemistry. '47 32:226

E. Earth Science

Brown, Howard E. The Earth. '47 32:216
Brown, Robert M. and Thorp, Mary Tucker Directed Geography Study, Book III. '34 21:52
Caudle, Frederick L. Workbook in Elementary Meteorology. '45 29:217
Finch, Vernon C. Trewartha, Glenn T. and Shearer, M. H. The Earth and Its Resources. '48 32:382
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Fletcher, Gustav L. and Wolfe, Caleb Woe Earth Science. '53 37:347
Huntington, Ellsworth, Benson, C. Beverly and McMurtry, Frank M. Living Geography. '32 16:515-16

Huntington, Ellsworth and Cushing, Sumner W. Principles of Human Geography. 5:185
Namowitz, Samuel N. and Stone, Donald B. Earth Science: The World We Live In. '53 30:329
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Whitbeck, R. H. High School Geography. '29 14:468

F. Laboratory Manuals for Earth Science

Alter, Binsmore Introduction to Practical Astronomy. '33 18:56
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G. Physical Science

American Education Publications Science Unit Pamphlets. '66 51:398
Barnard, J. Darrell and Edwards, Lon The New Basic Science. '56 41:25
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Davis, Ira C., Burnett, John and Gross, E. Wayne *Science: A Study of Progress and Discovery. '52 37:386


Eby, George S., Waugh, Charles L., Welch, Herbert E. and Buckingham, Burdette H. *The Physical Sciences. '50 34: 325


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Cownell, Herbert *Laboratory Lessons in General Science*. 1:240-41

Cownell, Eikenberry and Glenn *Elements of General Science Laboratory Problems*. 9:206


Clement, A Student's Laboratory Manual and Workbook in General Science. 10:430

Collister, M. C. and Thurston, E. L. *A Student Laboratory Guide*. '28 13:56

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Eckert, Theodore and Others *Laboratory Guide for the Physical Sciences*. '50 34: 327

Fowler, George W. and Thurston, Ernest L. *A Laboratory Guide in General Science*. '37 33:312

Haun, Robert Ray *A Laboratory Manual for the Physical Science Course; A Guide to the Study of the Physical Sciences*. 1:240-47


Hunter, George W. and Whitman, Walter G. *Workbook for Problems in General Science*. '32 17:74


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Black, N. Henry and Davis, Harvey N. Practical Physics, revised. 7:71
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Fuller, Brownlee and Baker. Elementary Principles of Physics. '25 13:184
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Fuller, Robert W., Brownlee, Raymond B. and Baker, D. Lee. Elements of Physics. '46 31:276
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Henney, Keith and Richardson, Glen A. Principles of Radio. '52 38:323
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Krausko's, Konrad B. Fundamentals of Physical Science. '30 43:83
Marcus, Abraham. Physics for Modern Times. '52 37:34.
Book Reviews

Mersereau, Samuel Foster. Materials of Industry. 9:136
Mersereau, Samuel Foster. Materials of Industry. 16:514
Millikan, Gale and Pyle. Elements of Physics. 11:212
Millikan, Gale, and Pyle. Elements of Physics. 11:212
Merchant, F. W. and Chant, C. A. Elements of Physics. 9:136
Neblette, C. B., Brehm, Frederick W., and Coyle, James P. New Elementary Physics. 36:20:182-83
Neblette, C. B., Brehm, Frederick W., and Coyle, James P. New Elementary Physics. 36:20:182-83
Nelson, Ole A. and Winans, John G. Aids for High School Physics. 7:218
Nelson, Ole A. and Winans, John G. Aids for High School Physics. 7:218
Siskind, Charles S. Physics for Secondary Schools. 11:212
Siskind, Charles S. Physics for Secondary Schools. 11:212
Shrewsbury, J. B. An Approach to Radio. 47:32:303
Shrewsbury, J. B. An Approach to Radio. 47:32:303
Slab, Edgar P. Elementary Electricity. 47:32:303
Slurzburg, Morris and Osterheld, William. Principles of Electricity for Radio and Television. 50:34:328
Slurzburg, Morris and Osterheld, William. Principles of Electricity for Radio and Television. 50:34:328
Smith, Howard O. Fundamentals of Physics and Applications. 56:41:259
Stewart, Oscar M. Cushing, Burton L. Physics for Secondary Schools. 41:25:406
Suffern, Maurice Grayle. Basic Electrical Principles. 49:36:336
Van Valkenburgh, Nooger and Neville, Inc. Basic Electricity. 55:41:257
Van Valkenburgh, Nooger and Neville, Inc. Basic Electronics. 55:41:257
Weld and Palmer. A Textbook of Modern Physics. 10:360
Wellman, William R. Elementary Industrial Electronics. 48:32:304
Whitlock, T. G. Elementary Applied Aerodynamics. 31:18:596
Whitman, W. G. Household Physics. 8:600
Whitman, Walter G. Household Physics. 32:16:512
Whitman, Walter G. Household Physics. 39:24:55
Whitman, Walter G. and Peck, A. P. Physics. 46:30:301
Willard, Lester R. Fundamentals of Electricity. 43:29:54
Willoughby, George A. Practical Electricity for Beginners. 7:139
Wright, Forrest B. Electricity in the Home and on the Farm. 35:21:219

j. Laboratory Manuals for Physics and Applied Physics

Black, N. Henry. New Laboratory Experiments in Practical Physics. 29:14:366
Black, N. Henry. New Laboratory Experiments in Practical Physics. 9:140
Bueh, Mahlon H. and Schuler, Frederick W. Physics Workbook. 39:25:114
Burdick, A. J. and Dudleston, M. S. Physics Experiments and Problems. 32:18:188
Carleton, Robert H., Williams, Harry H., Bueh, Mahlon H. and Schuler, Frederick W. Physics Activities. 50:34:269
Carleton, Robert H., Williams, Harry H., Bueh, Mahlon H. and Schuler, Frederick W. Physics Activities. 54:39:236
Cavanagh and Westcott. Laboratory Problems in Physics. 9:64

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Chapman, Seville How to Study Physics. '46 34:335
Coburn, Walter E. High School Electricity Manual. '32 18:125
Cushing, Burton A. Laboratory Guide and Workbook. '37 22:329
Cushing, Burton L. Directed Studies for the Physics Laboratory. '32 17:247
Davis, Ira C. and Holley, Clifford Physics Guide. '50 34:269
Delano, R. B. Applied Electricity. 9: 206
Frank, Nathaniel H. Introduction to Electricity and Optics. '50 34:329
Fuller, Robert W., Brownlee, Raymond B., Baker, D. Lee New Laboratory Experiences in Physics. '45 50:106
Good, F. F. Laboratory Projects in Physics. 6:343
Henderson, William D. Physics Guide and Laboratory Exercises with Accompanying Tests. '33 18:123
Henderson, W. B. Physics Guide and Laboratory Exercises. '36 21:171
Henderson, W. D. Physics Guide and Laboratory Exercises. '45 30:106
Henderson, W. D. Physics Laboratory Manual. '30 17:247

3. Textbooks for the College Student
a. Biology and Applied Biology (includes agriculture, conservation, ecology, medicine, nursing, and nutrition)

Allen, Shirley W. An Introduction to American Forestry. '38 23:293
Allen, Shirley W. Conserving Natural Resources. '55 39:253
Amberson, William R. and Smith, Dietrich C. Outline of Physiology. '48 32:384
Andrews, William A. (Editor) A Guide to the Study of Environmental Pollution. '72 57:555
Arey, Leslie B. Developmental Anatomy. '40 25:111
Arrow, L. Earle and Logan, Marie C. An Introduction to Physiological and Pathological Chemistry. 49: 114
Atwood, William H. and Heiss, Elwood D. Educational Biology. '20 12:567
Atwood, William H. and Heiss, Elwood D. Educational Biology. '33 18:126
Bailey, E. H. S. and Bailey, H. S. Food Products. '28 13:52

Idelson, Michael N. Mastery Units in Physics. '36 21:170
Idelson, Michael N. Mastery Units in Physics. '47 33:312-13
Ingersoll, Leonard, Rose, Martin, Nile Jay and Rouse, Theodore Alton A Laboratory Manuscript of Experiments in Physics. '53 38:324
Lehmann, Herbert G. Shop Projects in Electricity. '35 20:52
Masson, Louis T. Physics Made Easy. '38 23:227-28
Miller, Fred F. Progressive Problems in Physics. '39 24:60
Miller, Fred R. Progressive Problems in Physics. '33 18:27
Miller, Fred R. Progressive Problems in Physics. '49 34:270
Nelson Physics Experiment Sheets. 16: 506
Packard, John C. Every-day Physics. 2:359
Powers, Samuel Ralph and Brown, H. Emmett Workbook in Physics. '32 17:74
Reed, Henry R., Wagner, T. C. Gordon and Corcoran, George F. Electrical Communications Experiments. '52 38:324
Ruchlis, Hyman and Lazarus, Arthur Experiences in Physics. '53 37:343
Sears, Frederick E. Laboratory Manual of Physics. '31 17:248
Stewart, Frank E. Basic Units in Physics. 47 33:313
Brown, Werner. Bacterial Genetics. '53
38:314
Brown, William H. The Plant Kingdom. '35
20:50-51
Buchanan, Estelle D. and Buchanan, Robert.
Earle. Bacteriology for Students in
General and Household Science. '38
22:379
Buchanan, Robert E. and Buchanan, Estelle.
Bacteriology. '51 35:231
Buffalo, Neil D. and Throneberry, J. B.
Principles of Biology. '67
Burrows, William, Gordon, Francis Byron,
Porter, Richard Janvier and Moulder.
James William Jordon-Burrows Text-
book of Bacteriology. 49 34:208
Burton-Opitz. An Elementary Manual of
Entomology. '42 38:314
deCoursey, Russell Myles. The Human Or-
ganism. '55 41:249
DeRobertis, E. D. P., Nowinski, W. W. and
Saez, Francisco A. General Cytology.
'48 36:31
DeRobertis, E. D. P., Nowinski, W. W. and
Saez, Francisco A. General Cytology.
'54 38:328
Dodson, Edward O. A Textbook of Evolu-
tion. '52 38:316
Eastwood, Cyril G. A Handbook of Hygiene
for Students and Teachers. '36 22:
105
Eaton, J. Theodore H. Comparative Anatomy
of the Vertebrates. '35 35:231
Elkenberry, W. L. and Waldron, R. A. Ed-
cational Biology. '30 14:568
Eisenberg, Arthur A. and Huntly, Mable F.
Principles of Bacteriology. '35 20:
49
Elliot, Alfred M. Zoology. '52 38:314
Elliot, Alfred M., Ray, Charles, Jr. and
Davis, Edward L. Biology. '65 49
Epstein, Emanuel. Mineral Nutrition of
Plants: Principles and Perspectives.
72 56:569-70
Etheridge, Maude Lee. Health Facts for
College Students. '42 27:47
 Etheridge, Maude Lee. Health Facts for
College Students. '47 32:227
Etke, William. College Biology. '50 34:
327
Evans, C. Lovatt and Hartridge, H. Star-
ing's Principles of Human Physiology.
'36 21:123
Fasten, Nathan. Introduction to General
Zoology. '41 26:52
Fasten, Nathan. Principles of Genetics and
Eugenics. 20:117
Fenton, F. A. Field Crop Insects. '52
23:315
Frobisher, Martin, Jr. Fundamentals of
Bacteriology. '40 24:403
Fuller, Harry J. and Tippey, Oswald. College
Botany. '49 34:335
Gardiner, Mary S. The Principles of Gen-
eral Biology. '52 38:313
'47 32:227
Gardiner, Victor R. Basic Horticulture.
'51 35:60
Gebbatt, Louis P. and Anderson, Dean A.
Microbiology. '65 49:498
Gehrs, John H. Live Stock and Farm Mechanics. '75
Gibbs, R. Darnley Botany: An Evolutionary Approach. '50 34:327
Goin, Coleman W. and Goin, Olive E. An Introduction to Herpetology. '71 56: 290
Goin, Coleman Jr. and Olive B. Man and the Natural World. '70 55:586
Greer, Ernest A. Microbiology: An Introduction. '59 40:163
Greaves, Joseph E. and Greaves, Ethelyn C. Elementary Bacteriology. '28 12:566
Greaves, Joseph E. and Greaves, Ethelyn C. Elementary Bacteriology. '40 24:403
Greaves, Joseph and Greaves, Ethelyn O. Elementary Bacteriology. '46 31:39
Guyer, Michael F. Animal Biology. '41 26:52
Guyer, Michael F. Animal Biology. '48 32:382
Guyer, Michael F. and Lane, Charles E. Animal Biology. '64 49:498
Hagan, Harold R. Embryology of the Viviparous Insects. '51 36:311
Hall, Thomas S. and Moog, Florence. Anatomy. '56 41:253-54
Hammen, Carl Schott Elementary Quantitative Biology. '72 57:103-04
Hargis, Garrett Biology: Its Human Implications. '49 34:339
Haupt, Arthur W. Botany. '46 31:192
Haupt, Arthur W. An Introduction to Botany. '56 42:193
Haywood, Herman E. The Structure of Economic Plants. '38 23:233
Hegner, Robert W. College Zoology. '36 21:55
Hegner, Robert W. College Zoology. '42 27:46-47
Hegner, Robert W. and Stiles, Karl A. College Zoology. '51 35:231
Heilbrun, L. V. An Outline of General Physiology. '37 22:44
Henrici, Arthur T. The Biography of Bacteria. '39 23:356
Hickman, Cleveland P. Integrated Principles of Zoology. 49:114
Hilliard, Curtis M. Textbook of Bacteriology and Its Applications. 12:493
Hilliard, Curtis M. A Textbook of Bacteriology and Its Applications. '36 21:58
Hober, Rudolph, Hitchcock, David I., Batesman, J. B. Goddard, David R., Fenn, Wallace D. Physical Chemistry of Cells and Tissues. '45 30:173
Holman, Richard M. and Robbins, Wilfred W. A Textbook of General Botany for Colleges and Universities. '34 20:48
Holman, Miriam M. and Robbins, Wilfred W. Elements of Botany. '40 25:109
Hough, J. Swank and Madge H. The Human Meridian. '29 13:266
Hovanitt, William Textbook of Genetics. '53 38:314
Howard, William H. A Textbook of Physiology. '33 20:182
Hunter, George W., Walter, Herbert E. and Hu. A. George W. III Biology. '37 22:43
Hyman, Libbie H. Comparative Vertebrate Anatomy. '42 27:46
James, W. O. An Introduction to Plant Physiology. '33 18:195
Jean, Frank Covert, Harrah, Ezra Clarence, Herman, Fred Louis and Powers, Samuel Ralph Man and His Biological World. '52 38:311
Johnson, John C. Educational Sociology. '30 16:252
Jordan, Edwin O. and Burrows, William Textbook of Bacteriology. '41 26:52
Kilander, H. F. Nutrition for Health. '51 36:314
Kimber, Diana Clifford, Stackpole, Caroline E. and Leavell, Lutie C. Textbook of Anatomy and Physiology. '55 41:259
Korn, Robert W. and Korn, Ellen J. Contemporary Perspectives in Biology. '51 56:433-34
Kostycher, S. Chemical Plant Physiology. '31 15:198
Kostycher, S. Plant Respiration. 12:419
Krueger, Walter W. The Fundamentals of Personal Hygiene. '40 24:404
Langton, Clair V. Orientation in School Health. '41 26:109
Lawrence, George H. M. An Introduction to Plant Taxonomy. '55 39:248
Lawrence, George H. M. Taxonomy of Vascular Plants. '51 36:311
Leach, W. James Functional Anatomy of the Mammal. '52 38:314
Levitt, Jacob Plant Physiology. '54 39:249
Lucas, Miriam Scott Elements of Human Physiology. '50 35:55
Marshall, Clyde An Introduction to Human Anatomy. '35 21:123
Marshall, Clyde An Introduction to Human Anatomy. '39 24:120
Marshall, Clyde and Lazier, Edger L. An Introduction to Human Anatomy. '55 40:164
Mavor, James Watt General Biology. '36 21:58
Mavor, James Watt General Biology. '41 26:54
Mavor, James Watt General Biology. '52 38:313

Sec. XVI
Book Reviews

Maximow, Alexander A. and Bloom, William A. Textbook of Physiology. '46 32:383
Macleod, J. R. R. Physiology and Biochemistry in Modern Medicine. 11:216
Matsen, F. A., Myers, Jack and Hrackman, Norman Pre-medical Physical Chemistry. '49 34:206
McCullough, L. S. Laboratory Manual, General Bacteriology. '46 31:192
McFarland, Joseph Biology: General and Medical. 5:49
McGuigan, F. J. A Textbook of Insect Pests of Farm, Garden and Orchard. '41 25:354
McKee, Maud A. Dietetics and Nutrition. '30 15:71
Peterson, William H. and Strong, F. M. General Biochemistry. '53 30:320
Petitt, Lincoln Coles Introductory Zoology. '52 49:80
Plunkett, Charles Robert Outlines of Modern Biology. '30 16:334-35
Poole, Raymond J. The Foundations of Plant Science. '40 25:111-12
Pratt, Henry Sherring A Course in Vertebrate Zoology. '38 22:2
Pyenson, Louis L. Elements of Plant Protection. '51 36:311-12
Quayle, Henry J. Insects of Citrus and Other Subtropical Fruits. '36 24:56
Ranson, Stephen Walter The Anatomy of the Nervous System. '43 28:185
Ranson, Stephen Walter and Clark, Sam Lillard The Anatomy of the Nervous System: Its Development and Function. '47 32:227
Reese, Albert M. Outlines of Economic Zoology. 9:138
Renner, George T. Conservation of National Resources. '42 27:46
Rice, Thurman B. A Textbook of Bacteriology. '35 21:124
Rice, Thurman B. A Textbook of Bacteriology. '50 23:176
Rice, Thurman B. A Textbook of Bacteriology. '54 32:227
Riley, Herbert L. An Introduction to Genetics and Cytogenetics. '48 32:227
Roth, Wilfred W. and Weiser, T. Elliott Botany: An Introduction to Plant Science. '50 34:327
Robbins, Wilfred W., Weiser, T. Elliott Botany: An Introduction to Plant Science. '57 25:111-12
Roberts, Alfred S. Man and the Invertebrates. '41 26:109
Romer, Alfred Sherwood The Vertebrate Body. '55 40:164
Romer, Alfred Sherwood The Vertebrate Body. '55 40:164
Rosen, Mary Swartz Foundations of Nutrition. '38 22:277
Ross, Herbert H. A Textbook of Entomology. '48 33:80
Sarle, William Bowen, Frazier, William and Frazier, Phyllis Biochemistry. '56 32:228
Scheer, Bradley T. Comparative Physiology. '48 32:228
Sherman, Henry C. Chemistry of Food and Nutrition. '36 21:55
Sherman, Henry C. Chemistry of Food and Nutrition. '41 26:54
Sherman, Henry C. Chemistry of Food and Nutrition. '46 31:39
Sherman, Henry C. Chemistry of Food and Nutrition. '52 38:319
Sherwood, Noble Pierce Immunology. '36 20:188
Shull, A. Franklin Principles of Animal Biology. '34 22:4
Sinnott, Edmund W. Botany. '35 21:56
Sinnott, Edmund S. and Wilson, Katherine S. Botany: Principles and Problems. '55 39:256
Skinner, H. Clay, Smyth, Thomas and Sinnott, Edmund W. Microbiology and Immunology. 20:188
Smith, Gilbert M., Overton, James B., Smith, Alice Lorraine. Principles of Microbiology. 49:113
Smith, Gilbert M., Gilbert, Edward M., Bryan, George S., Evans, Richard I. and Stauffer, John F. A Textbook of General Botany. '53 38:313
Smith, Alice Lorraine Carter's Principles of Microbiology. 49:114
Smith, Alice Lorraine. Microbiology and Pathology. '64 49:12C
Smith, Gilbert M., Gilbert, Edward M., Bryan, George S., Evans, Richard I. and Stauffer, John F. A Textbook of General Botany. '53 38:313
Stackpole, Caroline E. and Leavell, Luth. An Introduction to General Biology. '29 38:326
Stackpole, Caroline E. and Leavell, Luth. Clemson Textbook of Physiology. '53 38:326
Stanford, E. E. Man and the Living World. '51 35:231
Stevens, W. C. Plant Anatomy. 9:64
Stiles, Karl A. Handbook of Microscopic Comparisons of Tissues and Organs. '46 32:51
Stiles, Percy Goldthwait Human Physiology. '39 24:120
Stiles, P. G. Nutritional Physiology. 3:230
Straubbaugh, Perry D. and Weimer, Bernal R. General Biology. '47 32:53-54
Straubbaugh, Perry D. and Weimer, Bernal R. General Biology. '52 38:313
Strömsten, Frank A. Mammalian Anatomy. '37 22:105
Sturtevant, A. H. and Beadle, G. W. An Introduction to Genetics. 52:520
Swanson, Carl F., Merz, Timothy and Young, William J. Cytogenetics. '67 52:515-16
Swingle, D. B. Plant Life. '35 21:49
Tanner, Fred Wilbur and Tanner, Fred Wilbur, Jr. Bacteriology. '48 32:303
Taylor, Clara Mae, MacLeod, Grace and Rose, Mary Swartz. Foundations of Nutrition. '56 41:259
Taylor, Clara Mae, MacLeod, Grace and Swartz, Rose Mary. Foundations of Nutrition. '64 52:514
Thimann, Kenneth V. The Life of Bacteria. '55 41:252
Threadgold, L. T. The Ultrastructure of the Animal Cell. '68 53:181
Thomas, Meinon, Rauson, S. L. and Richardson, J. A. Plant Physiology. '56 42:94
Thorne, D. W. and Peterson, H. B. Improved Soils. '49 34:335
Todd, James Campbell and Sanford, Arthur. Hawley's Clinical Diagnosis by Laboratory Methods. '43 27:80
Transeau, E. N., Sampson, H. C. and Tiffany, L. H. Textbook of Botany. '40 24:357
Turner, C. Donnell General Endocrinology. '48 32:383
Turner, C. Donnell General Endocrinology. '55 40:164
Turner, Clair E. Personal and Community Health. '39 15:72
Ullrich, Fred T. Our Farm World. '29 13:186
Vilée, Claude A. Biology: The Human Approach. '50 34:327
Wallace, George J. An Introduction to Ornithology. '55 39:248
Walker, Herbert Eugene. Genetics. '38 22:277
Wedberg, Stanley E. Microbes and You. '54 38:326
Welchert, Charles K. Representative Chordates. '59 36:747
Weimer, Bernal R. Man and the Animal World. '51 35:230
Weisz, Paul B. Biology. '54 38:313
Whaley, W. Gordon, Breland, Osmond P., Heimsch, Charles, Phelps, Austin and Rabideau, Glenn S. Principles of Biology. '54 38:312
Wheat, Frank M. and Fitzpatrick, Elizabeth M. Advanced Biology. '29 14:468
White, E. Grace General Biology. '33 18:191
Wiggers, Carl J. Principles and Practice of Electrocardiography. '29 14:470
Williams, Jesse F. A Textbook of Anatomy and Physiology. '29 14:570
Williams, Jesse Feiring A Textbook of Anatomy and Physiology. '39 24:120
Williams, Jesse F. Personal Hygiene Applied. '41 26:55
Williams, Jesse Feiring Personal Hygiene Applied. '37 22:325
Williams, Jesse Feiring Personal Hygiene Applied. '37 22:325
Woodruff, L. L. Animal Biology. '32 17:81
Woodruff, L. L. Animal Biology. '38 22:329
Book Reviews

Woodruff, Lorande Loss. Foundations of Biology. '36 21:55
Woodruff, Lorande Loss. Foundations of Biology. '41 26:54
Woodruff, Lorande Loss and Baitsell, George Alfred. Foundations of Biology. '51 35:230-31
Youmans, W. B. Human Physiology. '54 39:248
Young, Clarence W. and Stebbins, G. Ledyard. The Human Organism and the World of Life. '51 35:230

b. Laboratory Manuals for Biology and Applied Biology

Adamstone, F. B. and Shumway, Waldo A. Laboratory Manual of Vertebrate Embryology. '47 32:54
Atwood, William H. Comparative Vertebrate Dissections. '47 32:54
Breland, Osmond P. Manual of Comparative Anatomy. '53 38:315
Bruner, Henry Lane. Laboratory Directions in College Zoology. '38 22:277
Constable, Frederick H. A Concise Summary of Elementary Organic Chemistry. '29 14:388
Courneya, Armand Joseph. Simplified Chemistry Experiments. '50 34:326
Curtis, Winterton C. and Guthrie, Mary J. Laboratory Directions in General Zoology. '48 33:80
Dean, H. L. Laboratory Experiments in Biology of Plants. '49 34:206
Dean, H. O. Laboratory Experiments in Biology of Plants. '44 29:280
Doolson, F. W. and Berry, A. J. First Principles of Chemistry. '12:418
Drew, Gillman A. A Laboratory Manual of the Invertebrate Zoology. '50 34:280
Eddy, Samuel, Oliver, Clarence P. and Turner, John P. Atlas of Outline Drawings for Vertebrate Anatomy. '55 41:255
Eikenberry, W. L. Problems in Botany. '47 474
Elliot, A. M. Laboratory Guide for Animal Biology. '46 30:320
Emerson, Fred W. and Shields, Lora Mangum. Laboratory and Field Experiments in Botany. '43 34:335
Evans, A. T. A Laboratory Manual for First Course in Botany. '28 12:567
Gates, Frank C. Field Manual of Plant Ecology. '49 34:336
Gebhardt, Louis P. and Anderson, Dean A. Laboratory Instructions in Microbiology. '65 49:4N
Goldstein, Philip and Metzner, Jerome. Experiments with Microscopic Animals. '71 57:90
Gray, Peter. Handbook of Basic Microtechnique. '52 36:311
Gribble, Lloyd Raymond. Comparative Anatomy Laboratory Manual. '50 34:339
Hack, J. W. D. Chemical Reactions and Their Equations. '28 14:388
Harrison, Bruce M. The Dissection of the Cat. '56 41:259
Harrison, Bruce M. Manual of Comparative Anatomy. '49:4N
Hoshaw, Robert W. and Kurtz, Edwin B. Prerequisite Competencies for Plant Morphology. '71 56:435
Iyman, L. H. A Laboratory Manual for Comparative Vertebrate Anatomy. '65 6:501
Jones, Roy W. and Wallen, J. E. Biological Science Notebook. '54 39:183
Kaplan, Eugene H. Problem-Solving in Biology. '68 53:178
King, Barry Griffith and Roser, Helen. An Anatomy and Physiology Laboratory Manual and Study Guide. '42 28:185
King, Barry Griffith and Roser, Helen. An Anatomy and Physiology Laboratory Manual and Study Guide. '48 32:227
Leach, W. James. Functional Anatomy of the Mammal. '46 32:51
Lee, Addison E. and Breland, Osmond P. Laboratory Studies in Biology. '54 38:312
Lewis, Sir Thomas. Exercises in Human Physiology. '45 32:55
Matheson, Robert. A Laboratory Guide in Entomology for Introductory Courses. '39 24:405
Mavor, James W. Laboratory Exercises in General Biology. '42 22:164
Mavor, James W. Laboratory Exercises in General Biology. '52 38:313
McClung, L. S. General Bacteriology Laboratory Manual. ’52 38:315


Moment, Gardiner B. and Crouse, Helen V. Foundation of Biology. ’53 38:314

Park, Orlando, Allee, W. C. and Shelford, V. E. A Laboratory Introduction to Animal Ecology and Taxonomy. ’39 23:352

Patten, Bradley M. Embryo of the Pig. 11:216

Patten, Bradley M. Embryology of the Pig. ’48 33:81

Peltier, George L., Georgia, Carl E. and Lindgren, Lawrence F. Laboratory Manual for General Bacteriology. ’52 38:315

Pratt, Henry S. A Course in General Biology. ’18 12:568

Pratt, H. S. A Laboratory Course in General Zoology. 12:420


Sager Laboratory Guide for General Botany. 11:66


Stiles, Karl A. Handbook of Microscopic Tissues and Organs. ’39 25:113

Stiles, Karl A. Laboratory Explorations in General Zoology. ’43 28:185

Stiles, Karl A. Laboratory Explorations in General Zoology. ’49 34:208

Stiles, Karl A. Laboratory Explorations in General Zoology. ’55 41:253

Stroebbe, Maurice A. Environmental Science Laboratory Manual. ’72 56: 578-79


Todd, James Campbell, Sanford, Arthur Hawley and Stilwell, George Giles Clinical Analysis by Laboratory Methods. ’48 32:383

Unger, W. Byers and Moritz, C. E. A Laboratory Manual for Elementary Zoology. ’49 34:206


Walker, Warren F. Vertebrate Dissection. ’54 38:328

Weimer, Derral R. and Core, Earl L. A New Manual for the Biology Laboratory. ’52 38:315

Wilder, Inez W. Laboratory Studies in Mammalian Anatomy. 8:603

Williams, Samuel H. A Laboratory and Field Guide to Biology. ’38 23:176

Wolfson, Albert and Ryon, Arnold The Earthworm. ’55 40:163

Zoethout, W. D. Laboratory Experiments in Physiology. ’34 20:50

Abernethy, John Leo Principles of Organic Chemistry. ’49 34:208

Alexander, Jerome Colloid Chemistry. ’29 14:488

Babor, Joseph H. Basic College Chemistry. ’46 31:39

Babor, Joseph A., Estabrooke, W. L. and Lehman, Alexander Elements of General Chemistry. ’31 16:254

Baldwin, Ernest Dynamic Aspects of Biochemistry. ’47 32:226

Barber, Harvey H. and Taylor, T. Ivan Semimicro Qualitative Analysis. ’42 26:110

Barber, Harvey Hubbard and Taylor, L. Ivan Semimicro Qualitative Analysis. ’53 38:321

Barker, John W. and Glasoe, Paul K. First Year College Chemistry. ’51 36:312

Barrett, W. H. Elementary Organic Chemistry. 7:298

Baughman, Imo P. Elementary Chemistry with Practical Applications. ’37 22:326

Beery, Pauline G. Chemistry Applied to Home and Community. 8:375

Billman, John H. and Cleland, Elizabeth S. Methods of Synthesis in Organic Chemistry. ’54 40:80


Black, Newton Henry and Conant, James Bryant New Practical Chemistry. ’36 20:181-82

Bogert, L. Jean Fundamentals of Chemistry. ’41 26:52

Bogert, L. Jean Fundamentals of Chemistry. ’46 32:53


Brewster, Ray Q. Organic Chemistry. ’53 38:320

Brinkley, Stuart R. Introductory General Chemistry. ’32 16:435

Brinkley, Stuart R. Introductory General Chemistry. ’38 22:276; 23:177

Brinkley, Stuart R. Principles of General Chemistry. ’41 26:54

Brockman, C. J. Qualitative Analysis. ’30 15:68-70

Bronsted, J. N. Physical Chemistry. ’38 22:276
Book Reviews

Cheronis, Nicholas D. Organic Chemistry. '41 25:407-08
Clark, George L., Nash, Leonard K. and Fischer, Robert B. Quantitative Chemical Analysis. '49 34:240
Conant, James Bryant The Chemistry of Organic Compounds. '34 19:186
Conant, James Bryant The Chemistry of Organic Compounds. '39 24:295
Conant, James Bryant and Blatt, Albert Harold The Chemistry of Organic Compounds. '52 38:320
Conant, James Bryant Organic Chemistry. '36 20:233
Conant, James Bryant and Blatt, Albert Harold Fundamentals of Organic Chemistry. '50 34:328
Culver, G. E. and Rogers, T. A. Organic and Food Chemistry. '29 14:388
Currens, F. H. The New Qualitative Analysis. 8:601
Currier, Arnold J. and Rose, Arthur General and Applied Chemistry. '40 32:383
Curtman, Louis J. A Brief Course in Qualitative Chemical Analysis. '36 21:118
Curtman, Louis J. Qualitative Chemical Analysis. '38 22:276
Curtman, Louis J. Introduction to Semimicro Qualitative Chemical Analysis. '34:328
Curtman, Louis J. and Edmonds, Sylvan M. Calculations of Qualitative Analysis. '40 24:405
Cantarow, Abraham and Schepartz, Bernard Book Reviews. ‘54 39:246
Cartledge, G. H. Inorganic Physical Chemistry. 9:65
Cartledge, C. H. Introduction to Theoretical Chemistry. '29 13:186
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Francis, Charlotte A. and Morse, Edna C. Fundamentals of Chemistry and Applications. '39 23:397
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McPherson and Henderson An Elementary Study of Chemistry. 9:64
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Meldrum, William Buell and Gucker, Frank Thomson, Jr. Introduction to Theoretical Chemistry. '36 21:58
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Mellon, M. G. Methods of Quantitative Chemical Analysis. '37 22:46
Mellor, J. W. Elements of Inorganic Chemistry. '30 14:662
Meyer, Lillian Haagland Introductory Chemistry. '51 35:231-32
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Book Reviews

Myseis, Karol J. and Copeland, Charles S. Introduction to the Science of Chemistry. '52 30:319
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Noyes, Arthur A. and Swift, Ernest H. A Course of Instruction in the Qualitative Chemical Analysis of Inorganic Substances. '42 22:164
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Partington, J. R. A College Course of Inorganic Chemistry. '39 24:403
Partington, J. R. A Textbook of Inorganic Chemistry. '50 34:328
Partington, J. R. A Text-Book of Inorganic Chemistry. '37 27:102
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Porter, C. W. The Carbon Compounds. '38 22:156
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Adams, Roger and Johnson, John R. Laboratory Experiments in Organic Chemistry. '49 34:208
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Babor, Joseph A. and Johnson, John R. Laboratory Experiments in Organic Chemistry. '49 24:06
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Barker, John W. and Glasoe Laboratory Manual for First Year College Chemistry. '52 38:321
Barker, John W. and Glaseo Laboratory Manual for First Year College Chemistry. '52 38:321
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Brent, W. E. Study Units in General Chemistry. '36 21:59
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Briscoe, Herman T., Hunt, Herschel and Whitacre, Francis M. A Laboratory Manual of General Chemistry. '36 21:221
Burlage, Henry M. et al. Laboratory Manual for Introduction to Pharmacy. '56 41:260
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Dietrich, Harold G. and Kelsey, Erwin B. Laboratory Manual to Accompany Introductory General Chemistry. '38 23:177
Deming, H. G. and Arenson, S. B. Exercises in General Chemistry and Qualitative Analysis, Fifth Edition. '45 29:220
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Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
Francis, Charlotte A. and Sisler, Harvey Hall Semimicro Qualitative Analysis. '51 35:60
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Robertson, G. Ross. Laboratory Practice of Organic Chemistry. '54 38:328
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Black, Newton Henry An Introductory Course in College Physics. '48 32:382
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Brown, E. H. Structural Analysis Volume I. '67 52:11B
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Editorial Staff of Popular Science. Monthly Wonders Through the Microscope. '34 1:211

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Lefebure, Major Victor. *The Riddle of the Rhine.* 6:499
Leith, C. K. *World Minerals and World Politics.* '31: 16:171
Leyton, Conel J. *Life as Revealed by the Microscope: An Interpretation of Evolution.* '69: 56:279
Leyson, Captain Burr W. *Atomic Energy in War and Peace.* '51: 35:301
Lilienthal, David E. *TVA: Democracy on the March.* '53: 38:247
Manning, Eva. *Travels and Flowers.* '56: 41:171
Manning, Eva. *Mr. Gould's Tropical Birds.* '56: 41:171
Mettler, Jacques. *A Man and His Science.*
Pollick, Philip Careers in Science. '45 30:55
Poole, Lynn Science the Super Sleuth. '54 43:282
Popper, Sir Karl The Logic of Scientific Discovery. '65 49:498
Potter, Robert D. The Atomic Revolution. '46 30:303
Potter, Van Rensselaer Biotechnics: Bridge to the Future. '71 56:440-41
Rapoport, Anatol Operational Philosophy. '53 38:431
Reichenbach, Hans Atom and Cosmos. '33 17:252
Reiser, Oliver L. Philosophy and the Concepts of Modern Science. '35 21:59
Report of the New York State Health Commission to His Excellency, the Honorable Franklin D. Roosevelt, Governor of the State of New York Public Health in a New York State. '32 17:82
Rickelt, H. (Editor), Walcott, Mary Wyatt Platt, Dorothy Falcon Willard. '47 41:171
Rorty, Richard N. Philip Tobias ed. '47 32:117-18
Ruska, Werner Atoms, Men and Stars. '39 23:354
Schlegel, Adolf Inquiry into Science. '45 67:242-43
Singer, Erwin What Is Life? '45 34:334
Sears, Paul B. Charles Darwin: The Naturalist as a Cultural Force. '50 22:46
Selsam, Millicent E. The Plants We Eat. '36 22:46
Selsam, Millicent E. Plants that Heal. '37 23:354
Scheckel, Thomas O. Trees. '36 22:46
Sherrington, Charles Man on His Nature. '41 26:112

L. Scientific Information
1. Biological Sciences and Applications
Note: Listings in each of the following categories are divided into: (1) Books for Children, (2) Books for Adults.
a. General Botany (Books for Children)

Blough, Glenn O. Discovering Plants. '60 52:79
Cosgrove, Margaret Plants in Time. '67 52:90
Dickinson, Alice The First Book of Plants. '53 39:73
DuPuy, William Atherton Our Plant Friends and Foes. '31 15:272; 16:93
DuPuy, William Atherton Wonders of the Plant World. '31 15:272; 16:93
Earle, Olive... The Strangler Fig and Other Strange Plants. '67 52:95
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MacDougall, D. T. The Green Leaf. '30 15:74
Miner, Irene The True Book of Plants We Know. '53 38:117-13

Murrill, William Alphonso Familiar Trees; Flowers. '46 31:110
Podendorf, Ira The True Book of Weeds and Wild Flowers. '35 41:350
Schneider, Herman and Nina Plants in the City. '51 35:200
Selsam, Millicent E. Milkweed. '67 52:94
Selsam, Millicent E. Plants that Heal. '62 52:85
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Skinner, B. F. Science and Human Behavior. '53 38:436
Slaughter, Frank G. The New Science of Surgery. '46 31:340
Spicer, Edward N. Human Problems in Technological Change. '65 51:447
Slovack, Morris J. Associative Evolution. '51 36:310
Sullivan, J. W. N. The Limitations of Science. '31 20:184
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Symposium: George Westinghouse Centennial Science and Life in the World. '46 31:327
Toffler, Alvin Future Shock. '71 56:438-40
Toulmin, Stephen The Philosophy of Science. '53 38:253
Ward, Harold (Editor) New Worlds in Medicine. '46 31:339
Weaver, Warren (Editor) The Scientists Speak. '47 32:222
Weinberg, Edward R. and Homer, William A. Science in Action. '31 19:85
Wendt, Gerald Science for the World of Tomorrow. '39 24:176
Werkmeister, W. H. A Philosophy of Science. '40 25:235
Whitehead, Alfred North Essays in Science and Philosophy. '47 31:337
Whyte, L. L. The Next Development of Man. '50 34:362
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<td>Marian J. Wild Flowers of Spring; Wild Flowers of Summer and Late Autumn.</td>
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<td>Gulliver, J. M. and Noailles, R. H.</td>
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Cheyney, E. G. *What Tree Is That.* '30 16:251
Clements, Edith S. *Flowers of Prairie and Woodland.* '47 32:258
Felt, Ephraim Porter. *Our Shade Trees.* '38 23:230
Fry, Walter and White, John R. *Trees.* '38 23:230
Green, George Rex. *Trees of North America.* Vol. 1—The Conifers. '33 17:343
Green, George Rex. *Trees of North America.* Vol. 2—The Broadleaves. '33 17:343
Heslop-Harrison. *New Concepts in Flowering-Plant Taxonomy.* '56 41:258
Hough, Romey G. *Handbook of the Trees of the Northern States and Canada.* '47 32:255
Jaques, H. F.* How to Know the Trees.* '40 26:50
Jegar, Edmund C. *Desert Wild Flowers.* '40 25:113
King, Julius. *Wild Flowers at a Glance.* '35 20:113
King, Julius. *Talking Leaves.* '34 20:113
Matthes, F. Schuler. *Familiar Flowers of Field and Garden.* '37 23:113
McFarland, J. Horace. *Modern Roses III.* '47 33:78
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Quick, Arthur Craig. *Wild Flowers of the Northern States and Canada.* '39 24:413
Rosendahl, C. O. and Butters, F. K. *Trees and Shrubs of Minnesota.* '29 20:185
Sitwell, Sacheverell. *Old Fashioned Flowers.* '50 34:342
Stefferud, Alfred. *How to Know the Wild Flowers.* '50 34:342
Thurman, William B. *Some American Trees.* '35 20:114

C. General Zoology (Books for Children)

Beatty, John Y. and Allen, J. C. *On Our Farm.* '32 18:195
Blough, Glenn O. *After the Sun Goes Down.* '56 43:284
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Boulenger, E. G. *Infants of the Zoo.* '34 20:185
Bridges, William. *Zoo Pets.* '55 41:348
Brown, Vinson. *How to Make a Miniature Zoo.* '56 41:347
Bullough, William and Helena. *Introducing Animals.* '54 42:82
Bullough, William and Helena. *Introducing Animals with Backbones.* '55 42:82
Chace, Lynwood M. *Look at Life!* '40 25:176
Colby, C. B. *The First Book of Animal Signs.* '66 52:(1)10C
Dawson, Mildred A. *Farm Animals.* '46 31:100
Ditmars, Raymond L. *Strange Animals I Have Known.* '31 16:519
Ditmars, Raymond L. and Bridges, William. *Wild Animal World: Behind the Scenes at the Zoo.* '37 23:56
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Erickson, Phoebe. The True Book of Animals of Small Pond. '53 38:12
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Fenton, Carroll Lane. Animal Masquerade. '54 43:378
Fenton, Carroll Lane. Animals Under Your Feet. '53 39:86
Fenton, Carroll Lane. Parade of the Animal Kingdom. '35 22:162
Fox, Charles Philip. Childs and Hess. Odd Pets. '51 37:283
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Green, Ivah. How Fast Can It Go? '67 52:80
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Hegner, Robert. Parade of the Animal Kingdom. '35 22:162
Hogner, Dorothy. Childs and Hess. Odd Pets. '51 37:283
Holme, Bryon. A Book of Animals. '40 25:171-72
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Mason, George F. Animal Clothing. '55 43:364
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Mason, George F. Animal Weapons. '49 33:380
Merriam, Eve. Small Fry. '65 49:498
Morgan, Ann Haven. Farm Animals. '54 39:75
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Neurath, Marie. Too Small to See. '56 44:155
Palazzo, Tony and Fox, Robin. A Passel of Possums and Other Farm Families. '68 52:510
Pinnier, Erna. Curious Creatures. '53 39:89
Podendorf, Ila. Pets. '54 39:74
Purcell, John Wallace. The True Book of African Animals. '54 39:75
Sander, Lenore. Animals That Work for Man. '63 49:95
Selsam, Millicent. All About Eggs. '52 37:271
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Shuttlesworth, Dorothy. Animal Camouflage. '66 52:101
Thorne, Diana. 101 Favorite Animals and Birds. '53 39:84
Weill, Ann. Animal Families. '46 31:115
Wilson, Robert. Collegiate Dictionary of Zoology. '64 52:517
Poignant, Axel. Animals of Australia. '67 51:406
Seton, Ernest Thompson. Wild Animals I Have Known. '45 32:47
Schoosmith, F. H. Life in the Animal World. '30 23:35
Van den Borkhoudt, P. Secret Life of Small Animals. '57:244
Waddington, C. H. Animals Develop. '52:89
d. Zoology – Invertebrates (Books for Children)

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Bough, Glenn O. Discovering Insects. ’67 52:506
Conklin, Gladys I Like Butterflies. ’52 176
Earle, Olive L. Crickets. ’56 41:362
Fenton, Carroll Lane and Pallas, Dorothy Constance Insects and Their World. ’56 43:375
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Hogner, Dorothy Childs Earthworms. ’53 39:78
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King, Eleanor and Pressels, Wellmer Insect People. ’37 24:358
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Marcher, Marion W. Monarch Butte. ’54 39:84
McIntire, Alta Butterflies and Moths. ’38 24:178
McClung, Robert M. Green Darner. ’56 41:363
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McClung, Robert M. Sphinx. ’49 33:379-80
Podendorf, Ila The True Book of Insects. ’54 39:74
Potzger, J. E. and Whitney, Margaret Esther Insects and Some of Their Relatives. ’52 507
Rarig, Frances H. The Ant Queen’s Home and Other Stories. ’32 18:125
Schatz, Albert and Riedman, Sarah R. The Story of Microbes. ’52 39:90
Sears, Paul McCutcheon Firefly. ’56 43:377
Selsam, Millicent E. Microbes at Work. ’53 39:71
Stepp, Ann A Silkworm Is Born. ’72 57:243
Teale, Edwin Way The Boys Book of Insects. ’39 24:298
Tibbets, Albert B. The First Book of Bees. ’52 38:113-14
Verrill, A. Hyatt Strange Insects and Their Stories. ’37 21:217
Zarchy, Harry Butterflies and Moths. ’58 52:83-84
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Carpenter A Naturalist in East Africa. ’10:590
Curran, C. H. Insects of the Pacific World. ’45 30:246
Dethier, Vincent G. Chemical Insect Attractants and Repellents. ’47 32:226
Duncan, Carl L. and Pickwell, Gayle The World of Insects. ’39 26:111; 27:44
Duncan, Winifred The Private Life of the Protozoa. ’50 34:329
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Eltringham, H. Butterfly Lore. 8:531
Flint, W. P. and Metcalf, C. L. Insects: Man’s Chief Competitors. ’32 17:343
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Hegner, Robert Big Fleas Have Little Fleas. ’38 22:379
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Hutchins, Ross E. The Ant Realm. ’57 51:406
Imms, A. D. Insect Natural History. ’51 36:311
Imms, A. D. Social Behavior in Insects. ’31 16:334
Jahn, T. L. and Jahn, Frances F. How to Know the Protozoa. '50 34:325-26
Jaques, H. E. How to Know the Insects. '36 22:159
Kluyver, A. J. and Van Niel, C. B. The Microbe's Contribution to Biology. '56 41:2158
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Morley, Derek Wragge The Evolution of an Insect Society. '55 41:245
Nichols, David and Cooke, John A. L. The Oxford Book of Invertebrates. '71 56:434-35
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Richards, O. W. The Social insects. '53 38:246
Schwartz, George I. Life in a Drop of Water. '70 57:91-92
Smith, Kenneth M. The Virus, Life's Enemy. '40 25:291
Stromsten, Frank A. Davison's Mammalian. '47 32:227
Sutherland, Louis The Life of the Queen Bee. '46 30:169
Swain, Ralph B. The Insect Guide. '48 33:309

Van Frisch, Karl Bees, Their Vision, Chemical Senses, and Language. '71 57:242
Von Frisch, Karl The Dance Language and Orientation of Bees. '67 53:181
Weed, Clarence M. Insect Ways. '30 16:174
Wellhouse How Insects Live. 11:65
Wichterman, Ralph The Biology of Paramaecium. '53 38:315
Insect Facts. '54 39:183
Our Insect Friends and Foes and Spiders. '35 22:160

e. Zoology – Reptiles and Amphibians (Books for Children)
Adrian, Mary The American Alligator. '67 52:100
Ballard, Lois The True Book of Reptiles. '57 41:368
Bevans, Michael H. The Book of Reptiles and Amphibians. '56 43:283
Bronson, Wilfred S. Turtles. '45 30:179
Chenery, Janet The Toad Hunt. '67 52:88
Collins, Henry Hill, Jr. Turtles. '62 51:414
Ditmars, Raymond L. The Book of Living Reptiles. '36 22:50
Harris, Louise Dyer and Harris, Norman Oyer Slim Green. '55 43:83
Hogner, Dorothy Childs A Book of Snakes. '66 52:102
Hogner, Dorothy Childs Frogs and Polliwags. '56 43:83
Hoke, John The First Book of Snakes. '52 38:114
Loutscher, Alfred The Curious Snakes of the World. '65 50:96
McClung, Robert M. Black Jack: Last of the Big Alligators. '67 52:94
Morris, Percy A. Boy's Book of Frogs, Toads, and Salamanders. '57 41:368
Sears, Paul McCutcheon Tree Frog. '54 43:377
Staff of the Federal Writers' Project, Works Progress Administration in the City of New York. Reptiles and Amphibians. '39 24:178
Zim, Herbert S. Alligators and Crocodiles. '52 37:270-71
Zim, Herbert S. Frogs and Toads. '50 34:266-67
Zim, Herbert S. Snakes. '49 33:380
Zim, Herbert S. and Smith, Hobart M. Reptiles and Amphibians. '54 39:69

e. Zoology – Reptiles and Amphibians (Books for Adults)
Curran, C. H. and Kauffeld, Carl Snakes and Their Ways. '37 22:161
Ditmars, Raymond L. North American Snakes. '39 24:413
Ditmars, Raymond L. Reptiles of the World. '33 18:53
Pope, Clifford H. Amphibians and Reptiles of the Chicago Area. '44 29:279
Pope, Clifford H. The Reptile World. '55 41:244
Pope, Clifford. Snakes Alive and How They Live. '37 22:214
Savage, Jay M. Lizards, Snakes and Turtles of the Western U.S. and Canada. '49 34:270
f. Zoology — Aquatic Animals (Books for Children)

Andrews, Roy Chapman All About Whales. '54 41:359
Adrian, Mary Fiddler Crab. '53 39:84
Beaty, John Y. The Ocean Book. '46 31:119
Broekel, Ray The True Book of Tropical Fishes. '56 41:365
Buehr, Walter Harvest of the Sea. '55 41:364
Darling, Louis Seals and Walruses. '55 41:363
Dudley, Ruth H. Sea Shells. '53 39:78
Earle, Olive L. The Octopus. '55 41:361-62
Engleman, F. E., Salmon, Julita and McKenny, Wilma Scales and Fins. '38 27:48
Gouday, Alice E. Here Come the Whales. '56 43:278
Hanson, S. E. G. and Wells, Marjorie E. Ponds, Pools, and Puddles. '40 25:175
Lane, Ferdinand C. All About the Sea. '56 41:300
McClung, Robert M. Horseshoe Crab. '67 52:94

f. Zoology — Aquatic Animals (Books for Adults)

Abbott, R. Tucker How to Know the American Marine Shells. 52:80
Borgman, Griffith and Lillian Home Aquarium Handbook. '57 41:344
Brown, Alison Leadley Ecology of Fresh Water. '71 56:282-83
Brown, E. S. Life in Fresh Water. '56 41:344
Coates, Christopher W. Tropical Fishes as Pets. '33 10:197
Cousteau, Jacques-Yves and Diale, Philippe Life and Death in a Coral Sea. '71 57:89-90
Curtis, Brian The Life Story of the Fish. '38 24:358
Firth, Frank E. The Encyclopedia of Marine Resources. 54:392
Godfrey, J.E., Jr. Fresh Water Fish: Salt Water Fish. 33:304
Johnson, Myrtle E. and Snook, Harry J. Sea Shore Animals of the Pacific Coast. 12:453

McClintock, Theodore The Under Water Zoo. '38 23:57
Mellanby, Helen and Eastham, L. E. S. Animal Life in Fresh Water. '38 24:236
National Geographic Society (Edited by LaGorce, John Oliver) The Book of Fishes. '39 25:410
Nichols, John T. and Bartsch, Paul Fishes and Shells of the Pacific World. '45 30:246
Perry, Louise M. and Schwengel, Jeanne S. Shells of the West Coast of Florida. '55 41:250-51
Richards, Horace G. Animals of the Seashore. '38 23:355
Smith, B. Webster The World Under the Sea. '40 25:178
Verrill, A. Hyatt Wonder Creatures of the Sea. '40 25:178
Allen, Arthur A. The Golden Plover and Other Birds. '39 23:231
Ashbrook, Frank G. The Blue Book of Birds of America; The Red Book of Birds of America; The Green Book of Birds of America. '31 18:126
Bayne, C. S. Getting to Know the Birds. '44 30:54
Beecher, W. J. A Child's Book of Birds. '68 52:511
Boulton, Rudyerd Traveling with the Birds. '33 20:187; 31:116
Coevering, Jack Van Real Boys and Girls Go Birding. '39 24:180
Crosby, Alexander L. Canada Geese. '66 51:104
Darling, Louis Penguins. '56 41:363
Dilger, William C. Finding Out About Birds. '67 52:505
Earle, Olive L. Birds and Their Nests. '52 37:276
Earle, Olive L. Birds of the Crow Family. 52:95
Earle, Olive L. Robins in the Nest. '53 37:292
Earle, Olive L. The Swans of Willow Pond. '55 41:362
Evans, Edna H. Bill and the Bird Band. '40 26:111; 27:44
Fenton, Carroll Lane and Pallas, Dorothy Constance Birds and their World. '57 39:87
Friskey, Margaret Birds We Know. '54 39:77
Garellick, May What's Inside? '55 43:281
Hartmann, Newton H. Queer Birds. '34 20:87
Henry Marguerite Birds at Home. 31:117
Hiser, Iona Selbert From Scales to Fancy Feathers. 52:91-92
Hutchins, Ross E. The Last Trumpeters. '67 52:91
Kauffman, John Fishhawk. '67 52:97
Kenly, Julie Closson Wild Wings. '33 18:56
King, Julius Birds. Books I, II, and III. '34 20:235

Allen, Arthur A. American Bird Biographies. '35 19:139
Lemmon, Robert S. The Birds Are Yours. '51 37:275
Lewellen, John Birds and Planes: How They Fly. '53 38:111
McClung, Robert M. Red Bird. '68 52:506
McClung, Robert M. Ruby Throat. '50 33:367
McClung, Robert M. Vulcun: The Story of a Bald Eagle. '55 41:363
McClung, Robert M. Whooping Crane. 52:94
McIlhenny, E. A. The Autobiography of an Egret. '39 25:175
Munn, Ian Johnny and the Birds. '55 41:351
Pierce, Georgia Junior Science Book of Bird Life. '67 52:509-10
Pistorius, Anna What Bird Is It? '45 30:179
Potzger, J. E. and Friesner, Gladys M. Birds: Book One; Birds: Book Two; Birds: Book Three. 52:507
Ripper, Charles L. Diving Birds. '67 52:95-96
Ripper, Charles L. Hawks. '56 41:364
Roberts, Thomas Sadler Bird Portraits in Color. '34 20:188
Roberts, Thomas Sadler Two Hundred Ninety-Five American Birds. '36 20:188
Sears, Paul McCutcheon Barn Swallow. '55 41:352
Selsam, Millicent E. Egg to Chicks. '46 31:116
Shankland, Frank North and Peat, Fern Bisel Birds. '32 18:198
Verrill, A. Hyatt Strange Birds and Their Stories. '38 23:355
Wheeler, Ruth Leliah The Story of Birds of North America. '65 52:80-81
Williamson, Margaret The First Book of Birds. '51 38:114-15
Zim, Herbert S. Homing Pigeons. '49 33:303
Zim, Herbert S. Owls. '50 34:266
Zim, Herbert S. Parakeets. '53 39:69
Zim, Herbert S. and Gabrielson, Ira N. Birds. '49 37:270

Allen, Arthur A. American Bird Biographies. '35 19:139
Burgess, Thornton W. Bird: You Should Know. '33 15:189
Byers, Emma F. Out of Doors: with Birds. 24:358
Coble, Mary F. and Life, Cora S. Introduction to Ornithological Nomenclature. '32 17:61
Dubkin, Leonard The Murmur of Wings. '44 30:246
Dugdale, Vera Album of North American Birds. '67 52:92
Dupuy, Wm. Atherton Our Bird Friends and Foes. '40 25:177
Griscom, Ludlow Modern Bird Study. '45 30:256
Hausman, Leon Augustus The Bird Book. '55 41:343
Hausman, Leon Augustus Birds of Prey of Northeastern North America. '48 32:222
Henderson, Junius The Practical Value of Birds. 12:493

h. Zoology – Mammals (Books for Children)

Adrian, Mary Gray Squirrel. '55 43:376-77
Ashbrook, Frank G. Furry Friends. '30 20:231
Barry, Robert Animals Around the World. '57 52:79-80
Berrill, Jacquelyn Wonders of the Monkey World. '67 52:91
Breedon, Stanley The Life of the Kangaroo. '57 51:406
Bronson, Wilfrid S. The Chipel-Tooth Tribe. '39 24:179
Bronson, Wilfrid S. Coyotes. '46 31:109
Brown, Margaret Wise Young Kangaroo. '55 43:280
Burns, William A. Horses and Their Ancestors. '54 41:347
Davis, George An Animal Tour. '46 31:107
Davis, Joseph A. Finding Out About Mammals. '57 52:505-506
Earle, Olive L. Camels and Llamas. '61 52:95
Earle, Olive L. Nice at Home and Afield. '57 41:362
Goudie, Alice E. Here Come the Bears. '54 39:86
Goudie, Alice E. Here Come the Deer. '55 43:278
Hogner, Dorothy The Cat Family. '56 43:84
Hornblow, Leonora and Arthur Animals Do the Strangest Things. '64 49:498

Herrick, Francis Hobart Wild Birds at Home. '35 19:137-38
Lincoln, Frederick The Migration of American Birds. '39 24:180
National Geographic Society The Book of Birds. Vols. 1 and 2. '39 25:410
Nice, Margaret Morse The Watcher of the Nest. '39 27:47
Palmer, E. Laurence Aids to Knowing Natural Science. The Birds. '44 30:178
Peterson, Alvin M. Wild Bird Neighbors. '40 26:111; 27:44
Pettingill, Olina Sewall, Jr. A Guide to Bird Finding West of the Mississippi. '53 38:250
Rowan, William The Riddle of Migration. '31 17:77
Sutton, George Miksch The Watcher of the Nest. '39 27:47
Walter, H. E. and A. H. Wild Birds in City Parks. 11:138
Wing, Leonard W. Natural History of Birds. '38 23:237-38
Book Reviews

Schmidt, Karl Patterson and Weber, Walter Alois Homes and Habits of Wild Animals. '34 20:188
Schwartz, Elizabeth and Charles Cotton-tail Rabbit. '57 43:377
Stowell, Thora and Burgess, Thornton W. The Book of Animal Life. '37 22:217
Thorne, Diana Dogs; Baby Animals. '32 18 98
Werner, Jane Animal Friends. '53 39:68
Williams, Garth Baby Animals. '56 41:355
Williamson, Margaret The First Book of Mammals. '57 43:280
Zim, Herbert S. The Big Cats. '55 41:360
Zim, Herbert S. Elephants. '46 31:106
Zim, Herbert S. Golden Hamsters. '51 36:200
Zim, Herbert S. Monkeys. '55 41:360-61
Zim, Herbert S. Rabbits. '48 32:294
Zim, Herbert S. and Hoffmeister, Donald F. Mammals. '55 40:244

i. Zoology – Mammals (Books for Adults)

Gailey, John Wendell The Mammals of Virginia. '46 32:222-23
Gunderson, Harvey L. and Beer, James L. The Mammals of Minnesota. '53 38:324
Ingles, Lloyd Glenn Mammals of California. '47 32:47
McCay, Clive M. Nutrition of the Dog. '49 34:206
Moore, Clifford B. Ways of Mammals in Fact and Fancy. '53 39:89
Palmer, Ralph S. The Mammal Guide. '54 39:253
Pincus, Gregory The Eggs of Mammals. '36 21:118
Wells, Eric F. V. Lions--Wild and Friendly. '34 18:280
Winge, Ojvind Inheritance of Dogs. '50 34:329

ii. Medicine and Physiology (Books for Children)

Ben Meyr, Evi Your Own True Story. '40 25:177
Bibby, Cyril How Life Is Handled On. '47 34:275
Butterfield, Frances W. From Little Acorns: The Story of Your Body. '51 37:148
Cheesman, Evelyn The Growth of Living Things. '32 17:260; 17:347
Eisenberg, Philip and Miriam The Brave Gives Blood. '54 39:76
Froman, Robert The Many Human Senses. '66 51:414
Gamow, George Mr. Tompkins Learns the Facts of Life. '54 39:244
Gilbert, Margaret Shea Biography of the Unborn. '38 23:294
Boldin, Augusta Straight Hair, Curly Hair. '66 52:102
Guttmacher, Alan Frank Life in the Making. '33 18:198
Novikoff, Alex From Head to Foot, Our Bodies and How They Work. '46 32:221-22
Pemberton, Lois The Stork Didn't Bring You. '48 34:275
Perry, John Our Wonderful Eyes. '55 43:282
Schneider, Herman and Nina How Your Body Works. '59 33:320
Schweinitz, Karl De Growing Up. '53 39:82
Wright, Helena The Story of Sex. '32 17:162
Zim, Herbert S. Blood. '68 52:506
Zim, Herbert S. Our Senses and How They Work. '56 41:361
Zim, Herbert S. What's Inside of Me? '52 37:270
i. Medicine and Physiology (Books for Adults)

American Pocket Medical Dictionary. '53 38:316
Ashmow, Isaac The Human Brain. '65 52:514
Boos, William F. The Poison Trail. '40 25:291
Boyd, William An Introduction to Medical Science. '37 21:259
Causey, David Uninvited guests. '32 16:432
Dent, John Yerbury The Human Machine. '37 21:219
Donnison, C. P. Civilization and Disease. '38 24:55
Erb, Russell C. The Common Scents of Smell. '68 52:512
Estabrooks, G. H. Man, the Mechanical Misfit. '37 25:56
Fishbain, Morris Fundamentals of Medicine. '37 21:124
Hoerr, Normond L. and Osol, Arthur (Editors) Blakiston's Illustrated Pocket Medical Dictionary. '52 38:316
Hoskins, R. G. The Tides of Life. '33 21:259
Hoskins, R. G. and Eggleton, P. The Stuff We're Made Of. '38 24:236
Menkin, Val The Chemistry of Inflammation. '40 25:296
Moncrief, R. W. The Chemical Senses. '46 31:38
Reidman, Sarah R. Your Blood and You. '52 38:182
Rosebury, Theodore Experimental Air-Borne Infection. '47 33:78
Seeman, Bernard Your Sight. '68 52:509
Von Eulenburg-Wiener, Renee Fearfully and Wonderfully Made. '38 22:338
Wilson, Notta K. and Weissman, S. A. Modern Medicine. '42 27:51
Wright, W. D. The Perception of Light. '39 24:236
Zinsser, Hans Lice and History. '38 23:298

j. Genetics and Heredity (Books for Adults)

Auerbach, Charlotte The Science of Genetics. '64 52:508
Boyer, Samuel H., IV. Papers on Human Genetics. 52:515
Cook, Robert C. and Burks, Barbara S. How Heredity Builds Our Lives. '46 30:324
Dunn, L. C. Genetics in the 20th Century. '51 35:302
Glass, Bentley Genes and the Man. '43 28:55
Goldschmidt, Richard B. Understanding Heredity. '52 38:247
Goldstein, Philip Genetics Is Easy. '47 32:225
Hurst, C. C. Heredity and the Ascent of Man. '37 22:103
Hoerr, Normond L. and Osol, Arthur (Editors) Blakiston's Illustrated Pocket Medical Dictionary. '52 38:316
Hoskins, R. G. The Tides of Life. '33 21:259
Kermack, W. O. and Eggleton, P. The Stuff We're Made Of. '38 24:236
Menkin, Val The Chemistry of Inflammation. '40 25:296
Moncrief, R. W. The Chemical Senses. '46 31:38
Reidman, Sarah R. Your Blood and You. '52 38:182
Rosebury, Theodore Experimental Air-Borne Infection. '47 33:78
Seeman, Bernard Your Sight. '68 52:509
Von Eulenburg-Wiener, Renee Fearfully and Wonderfully Made. '38 22:338
Wilson, Notta K. and Weissman, S. A. Modern Medicine. '42 27:51
Wright, W. D. The Perception of Light. '39 24:236
Zinsser, Hans Lice and History. '38 23:298

j. Genetics and Heredity (Books for Children)

Andrews, Roy Chapman All About Dinosaurs. '41:360
Bloch, Marie Halun Dinosaurs. '55 41:352
Brown, Stanley B. and Brown, Barbara M. The Story of Dinosaurs. '58 44:152
Burnett, R. Will Life Through the Ages. '47 32:120
Clark, Mary Lou The True Book of Dinosaurs. '55 41:350
Darling, Lois and Louis Before and After the Dinosaurs. '52 97
Dickinson, Alice The First Book of Prehistoric Animals. '54 39:73
Ditmars, Raymond L. and Carter, Helene Prehistoric Animals. '34 20:187
Fenton, Carroll Lane Prehistoric World. '54 39:87
Fenton, Carroll Lane Life Long Ago. '37 22:217
Froman, Robert Billions of Years of You. '67 52:83
Holden, Raymond Famous Fossil Finds. '66 52:91
Johnson, Gaylord How Father Time Changes the Animals' Shapes. '39 27:4a
Novikoff, Alex Climbing Our Family Tree. '46 30:179
Robinson, W. W. Beasts of the Tar Pits. '32 17:257
Scheele, William E. The First Mammals. '55 41:344
Verrill, A. Hyatt Strange Prehistoric Animals and Their Stories. '48 32; 375
Whitnall, Harold O. A Parade of Ancient Animals. '36 21:171
Wyler, Rose and Ames, Gerald Life on the Earth. '53 38:243
Zim, Herbert S. Dinosaurs. '51 39:70

Andrews, Roy Chapman Meet Your Ancestors. '45 30:99-101
Beutner, R. Life's Beginning on the Earth. '38 23:294
Blum, Harold F. Time's Arrow and Evolution. 52:89
Bradley, John Hodgdon, Jr. Parade of the Living. '30 16:83-84
Cain, A. J. Animal Species and Their Evolution. 52:90
Clark, Austin H. The New Evolution: Zoogenesis. '30 14:660
Colbert, Edward H. The Dinosaur Book. '45 30:249
Fenton, Carroll L. The World of Fossils. '33 19:37
Heidenreich, Franz Apes, Giants, and Man. '46 30:303-04
Huxley, Julian S. and Wells, G. F. Evolution, Fact and Theory. '32 17:163
Jacques, H. E. Living Things How to Know Them. '39 23:395
Johnson, Gaylord How Father Time Changes the Animals' Shapes. '39 27:4a
Koebner, H. E. Through the Magnifying Glass. '54 40:243
Lamarck, Kirtley F. Sons of the Earth. '30 16:84; 17:77
Morgan, Thomas Hunt The Scientific Basis of Evolution. '32 17:77
Newman, The Gist of Evolution. 11:61
Newmyer, Horatio Hackett Evolution Yesterday and Today. '32 16:521-22
Raymond, Percy A. Prehistoric Life. '39 24:297
Romer, Alfred Sherwood Man and the Vertebrates. '55 41:251
Romer, Alfred S. The Procession of Life. '46 37:243-44
Ross, Herbert H. A Synthesis of Evolutionary Theory. 52:516
Seers, A. Waddingham The Earth and Its Life. 5:569
Shimer, Harvey Woodburn An Introduction to the Study of Fossils. '33 19:86
Stewart, George R. Man: An Autobiography. '46 31:35
Wells, G. F. Evolution, Fact and Theory. '32 17:163
I. General Biology (Books for Adults)

Allee, Warder Clyde. Animal Life and Social Growth. '32 16:522
Ball, Eric G. Biochemical Preparations Volume 2. 39:315
Bairstow, Margaret. Courtship: An Ethological Study. '67 53:175
Bonner, John T. Cells and Society. '55 41:245
Bradley, John Hodgdon. Patterns of Survival. '38 22:377
Clement, A. G. Living Things. 11:216
Croll, N. A. Ecology of Parasites. '66 52:511
East, Edward M. Biology in Human Affairs. '31 16:82-83
Gerard, R. W. Unresting Cells. '40 25:236
Gerard, Ralph W. Unresting Cells. '49 34:335
Gray, Peter (Editor). Encyclopedia of the Biological Sciences. '70 55:102
Harvey, E. Newton. Living Light. '40 25:410
Hill, A. V. Adventures in Biophysics. '31 15:274
Holmes, S. J. Organic Form and Related Biological Problems. '48 32:224
Huxley, Julian S. Problems of Relative Growth. '32 17:249
Jennings, H. S. The Biological Basis of Human Nature. '30 17:347
Kellogg, W. N. and Kellogg, L. A. The Ape and the Child. '33 19:88
Knablench, Irving William. Readings in Biological Science. '48 32:376
Kappel, Theodore. The Conquest of Limp. '30 15:74
Mabx, Felix. Foundations of Biology. '55 40:163
Maitz, William M. Dictionary of Biochemistry and Related Subjects. '43 28:296
Needham, Joseph. Order and Life. '68 53:179
Pearl, Raymond. The Natural History of Population. '39 23:223-30
Putnam, H. D. Eutrophication in North Central Florida Lakes. '69 55:100
Sheard, Charles. Life-Giving Light. '33 17:344
Steen, Edwin R. Dictionary of Biology. '71 57:106-07
Thomson, J. A. Everyday Biology. 9:67
Tolansky, S. Optical Illusions. '67 53:181

m. Conservation (Books for Children)

Blough, Glenn O. Lookout for the Forest. '55 40:242-43
Blough, Glenn O. The Tree on the Road to Turntown. '53 37:268
Bruere, Martha. Bensley. Your Forests. '45 30:108
Caldwell, Lynton Keith. Environment, A Challenge to Modern Society. '70 56:569
Evers, Alf. The Treasure of Watchdog Mountain. '55 43:377
Hazen, Barbara. Please Protect the Porcupine. '67 52:84
Johnson, James Ralph. The Last Passenger. '56 49:377-78
Lathrop, Dorothy P. Let Them Live. '51 37:292
Pack, Charles. Lathrop and Gill. Tom Forest Facts for School. '31 17:350
Shuttleworth, Dorothy E. The Wildlife of South America. '66 52:99
Tchaika, Florence. Trouble at Beaver Dam. 54 39:76
Webber, Irma E. Thanks to Trees. '52 37:277
Trees for Tomorrow. '47 32:47
The Wonder of Water. '57 44:155

m. Conservation (Books for Adults)

Adelstein, Michael E. and Pival, Joan G. Ecocide and Population. '72 57:246
Baer, Marian E. Pandora's Box. The Story of Conservation. '39 24:180
Beard, Daniel. Fading Trails. '42 27:50
Caldwell, Lynton Keith. Environment, A Challenge to Modern Society. '70 56:569
Book Reviews

Callison, Charles H. (Editor) America's Natural Resources. '67 52:517
Cartsadon, Thomas R. and Modley, Rudolf U.S.A.: Measure of a Nation. '49 33:314
Chase, Stuart Rich Land, Poor Land. '36 21:167
Cocanouer, Joseph A. Tramping Out the Vintage. '45 30:162
Dewhurst, J. Frederick and Associates America's Needs and Resources. '47 53:72-76
Fanning, Leonard M. Our Oil Resources. '45 30:312
Faulkner, Edward H. A Second Look. '47 33:166
Fitzpatrick, Frederick L. The Control of Organisms. '40 25:175
Flawn, Peter T. Environmental Geology: Conservation, Land-Use Planning, and Resource Management. '70 56:567-68
Frasier, Dean The People Problem. '71 57:104
Fuchs, Walter M. When the Oil Wells Run Dry. '46 32:52
Gabrielson, Ira N. Wildlife Conservation. 52:514
Gabrielson, Ira N. Wildlife Refuges. '43 28:183
Gaer, Joseph Men and Trees. '39 25:173
Gifford, John C. Living by the Land. '45 30:305-06
Glover, Katherine America Begins Again. '39 23:293-94
Hazard, Joseph T. Our Living Forests. '48 33:79
Martin, Alexander C. Botany and Our Social Economy. '48 32:293
Mather, Kirtley F. Enough and to Spare. '44 29:219
McCluney, William Ross (Editor) What You Can Do to Stop the Environmental Destruction of South Florida. '71 56:576-78
Mitchell, Luch Sprague, Bowman, Eleanor Phelps, Mary My Country 'Tis of Thee. '40 25:354
National Wildlife Federation A Desert in Your Own Backyard. 38:249
Osborn, F. This Plundered Planet. '48 33:166
Parkins, A. E. and Whitaker, J. R. (Editors) Our Natural Resources and Their Conservation. '35 21:54
Pearson, Frank A. and Harper, Floyd A. The World's Hunger. '45 33:166
Perry, John Our Polluted World: Can Man Survive? '67 55:259
Pfeiffer, Ehrenfried The Earth's Face and Human Destiny. '47 33:166
Popkin, Roy The Environmental Science Services Administration. '67 53:179
Pryor, William Clayton and Pryor, Helen S. Water--Wealth or Waste. '39 24:413
Reed, W. Maxwell America's Treasure. '39 24:413
Rolin, Jacob and Eastman, Max The Road to Abundance. '53 38:247
Russell, Sir E. J. Lessons on Soil. '50 34:329
Sears, Paul B. Deserts on the March. '35 22:209
Sears, Paul B. Deserts on the March. '47 33:77; 35:274
Sears, Paul B. Life and Environment. '39 24:55
Smith, Guy Harold (Editor) Conservation of the Natural Resources. '50 34: 340-41
Strode, Maurice A. Understanding Environmental Pollution. '71 56:578
Sutman, Francis X. (Editor) What Kind of Environment Will Our Children Have? '71 56:574-75
Troost, Cornelius J. and Altman, Harold Environmental Education: A Sourcebook. '72 57:108
United Nations Soil Conservation, An International Study. '48 33:166
Vogt, W. Road to Survival. '48 33:166
Whitaker, Joe Russell The Life and Death of the Land. '46 33:76-77
Wilson, Leonard W. Practice of Wildlife Conservation. '65 51:417
Wilson, Ira J. Basic Issues in Environment. '72 57:107
Zimmerman, O. T. and Lavine, Irwin DDT, Killer of Killers. '46 31:41
The Explorer Naturalist (Journal of the Amateur Naturalists Association) 34: 270

n. Nature Study and Natural History (Books for Children)

Alexander, William P. and Cormack, Maribelle Bruce and Marcia, Woodsmen. '39 23:293
Andrews, Roy Chapman This Amazing Planet. '40 25:235
Athey, Lillian Cox. *Along Nature's Trails.* '36 21:115
Bell, Thelma Harrington and Bell, Corydon. *Nature Paint Book.* '33 21:115
Blough, Glenn O. *Soon After September.* '59 49:96
Buck, Margaret Waring. *Nature Paint Book.* '33 21:115
Blough, Glenn O. *Soon After September.* '59 49:96
Buck, Margaret Waring. *In Woods and Fields.* '50 34:268; 38:110
Carr, William H. *The Stir of Nature.* '30 17:166
Doane, Pelagie. *A Book of Nature.* '52 38:107-08
Epple, Anne Orth. *Nature Quiz Book.* '54 41:352
Fenton, Carroll Lane. *Wild Folk at the Pond.* '48 32:378-79
Fox, Charles Philip. *When Spring Comes.* '64 49:BC
Fox, Charles Philip. *When Summer Comes.* '66 52:80
Fuller, Raymond T. *Along the Brook.* '31 18:125
Hylander, Clarence J. *The Year Round.* '32 24:180
Kane, Henry B. *The Tale of the Wild Goose; The Tale of the Bullfrog.* '46 31:108
Kety, Julie Closson. *Children of a Star.* '32 17:259
Cosens, A. M. *Tick-Tock, a Journey into the Wonderland of Science.* '45 30:245
Lubell, Winifred and Cecil. *In a Running Brook.* '68 52:507
Mann, Paul B. and Hastings, George T. *Out of Doors.* '32 17:247

Mitchell, Lucy Sprague. *Guess What's in the Grass.* '45 30:180
Parker, Bertha Morris. *Spring Is Here; Summer Is Here; Fall Is Here; Winter Is Here.* '48 33:303
Patch, Edith M. *Holiday Hill.* '31 16:433-34
Patch, Edith Marion. *Holiday Meadow.* '35 20:114
Patch, Edith M. and Fenton, Carroll L. *Forest Neighbors.* '38 23:57
Porter, Walter P. and Hansen, Einar A. *Fields and Fenecorws.* '37 22:275
Selsam, Millicent. *See Through the Forest.* '56 43:376
Selsam, Millicent. *See Through the Jungle.* '57 43:376
Shuttlesworth, Dorothy E. *The Wild Life of Australia and New Zealand.* '67 52:100
Sterling, Dorothy. *Fall Is Here.* '66 52:101
Von Hagen, Victor. *South American Zoo.* '46 31:112
Werner, Jane and Staff of the Walt Disney Studio. *Walt Disney's Living Desert.* '54 41:357
Werner, Jane and Staff of the Walt Disney Studio. *Walt Disney's Vanishing Prairie.* '55 41:357
True Nature Series. *Animals of the Woods; Gray Squirrel; Snapping Turtle; Water Birds; Black Bear Twins; Three Little Kittens; Pride, the Sadie Hourse; Shop, the Farm Dog; Goats and Kids; Bumpy Rabbit; Animals on the Farm; and Elephants.* '46 31:106

Clark, Austin H. *Nature Narratives.* '31 16:333
Devoe, Alan. *Down to Earth.* '40 25:176
Fisher, G. Clyde (Editor). *Nature's Secrets.* '21 211
Fuller, Raymond T. *The Doorway to Nature.* '31 18:188
Hawkes, Clarence. *Notes of a Naturalist.* '38 23:57

McCreery, James L. *Exploring the Earth and Its Life in a Natural History Museum.* '33 18:258
Medgser, Oliver P. *Nature Rambles: Summer; Nature Rambles: Autumn.* '32 17:166
Medgser, Oliver P. *Nature Rambles.* '32 21:115

n. Nature Study and Natural History (Books for Adults)
Palmer, E. Laurence Fieldbook of Natural History. '49 33:309
Peterson, Roger Tory Wildlife in Color. '51 38:107
Pimental, Richard A. Natural History. '63 52:518
Royston, H. R. The Unity of Life. 12: 354

Thomson, Sir J. Arthur The Outline of Natural History. '31 16:431
Watson, E. L. Grant Mysteries of Natural History. '36 23:355
Woods, Robert S. The Naturalist’s Lexicon. '44 50:101

o. Agriculture, Domestic Science, and Forestry (Books for Children)

Buehr, Walter The Magic of Paper. '66 52:96
Chamberlain, James F. How We Are Clothed. 8:375
Darling, Louis Chickens and How to Raise Them. '55 41:363
Duncan, Marion On the Farm. '40 25:171
Gringhuis, Dirk Of Cabbages and Cattle. '62 51:415
Hollos, Clara The Story of Your Bread. '49 33:305
Perry, Josephine Fish Production. '40 25:175
Perry, Josephine The Paper Industry. '46 30:254

Perry, Josephine and Slauson, Cleste Forestry and Lumbering. '39 24:413
Petersham, Maud and Miska The Story Book of Clothes. '33 21:117
Petersham, Maud and Miska The Story Book of Things We Wear. '39 24:178
Rogers, Matilla The First Book of Cotton. '54 39:74
Schloot, G. Warren, Jr. The Wonderful Egg. '52 37:272
Wall, Gertrude Wallace Gifts from the Forest. '52 39:176
Winchell, Florence Food Facts for Every Day. 9:280
Zim, Herbert S. Your Food and You. '57 41:381

o. Agriculture, Domestic Science, and Forestry (Books for Adults)

Bendure, Zelma and Pfeiffer, Gladys America’s Fabrics. '46 30:319
Blumenthal, Saul Food Products. '47 32:52
Clark, William H. Farms and Farmers. '45 30:109-10
Ellis, Rhoda Dictionary of Dietetics. '56 42:96
Furnas, C. C. and Furnas, S. M. Man, Bread and Destiny. '37 22:375
Fraser, Samuel American Fruits. '27 12:567
Harlow, Benjamin Vitamins. 6:344
Hinman, Robert B. and Harris, Robert B. The Story of Meat. '39 25:355
Johnson, Sherman E. and Associates Managing a Farm. '46 30:306
Kellogg, Charles E. The Soils that Support Us. '41 26:56
Lamert, L. M. Milk and Dairy Products. '47 32:225

Leggett, Wm. F. The Story of Linen. '45 30:54
Leggett, William F. The Story of Wool. '47 32:57
Phillips, A. J. Gardening Without Soil. '40 25:57
Rosewarne, D. D. The Science of Nutrition Simplified. '29 14:470
Russell, James E. Heredity in Dairy Cattle. '44 29:217
Sherman, Henry C. Chemistry of Food and Nutrition. '32 16:523-24
Sherman, Henry C. Food and Health. '34 21:55
Sherman, Henry C. Food Products. '35 21:55
Shinkle, John H. Textile Testing. '40 25:294
Strong, John H. Fabric Structure. '47 32:52
Tressler, Donald K. Marine Products of Commerce. 8:533
Worthen, Edmund L. Farm Soils: Their Management and Fertilization. '48 33:80
Zon, Raphael Forests and Water in the Light of Scientific Investigation. 12:558
Proceedings of the Auburn Conference on the Use of Radioactive Isotopes in Agricultural Research. '48 34:206

2. Physical Sciences and Applications
Note: Listings in each of the following categories are divided into:
(1) Books for Children
(2) Books for Adults

a. General Physical Science (Books for Children)

Bendick, Jeanne How Much and How Many. '47 37:145
Bragdon, Lillian J. Tell Me the Time, Please. '36 21:51
David, Eugene Crystal Magic. '65 49:498
Lord, Eugene Hodgdon Experimenting at Home with the Wonders of Science. '40 25:170-71
Schlein, Miriam It's About Time. '55 43:281
Watson, Jane Werner How to Tell Time. '57 41:354
Ziner, Feenie and Thompson, Elizabeth The True Book of Time. '56 41:368

b. General Physical Science (Books for Adults)

Adler, Irving The Secret of Light. '52 39:176
Bennett, H. Standard Chemical and Technical Dictionary. '39 24:298
Childs, W. H. J. Physical Constants. '34 18:188
Collins, A. Frederick Science for Young Men. '46 30:245
DeMent, Jack and Dake, H. C. Uranium and Atomic Power. '45 32:45-46
Frank, J. O. and White, H. K. High School Science Terminology; Chemistry and Physics. '30 14:576
Freeman, Ira M. Invitation to Experiment. '40 6-171
Graydon, Thomas New Laws for Natural Phenomena. 22:377
Hodgman and Lange Handbook of Physics and Chemistry. 10:432
Hodgman and Lange Handbook of Chemistry and Physics. 12:494
Hodgman, Charles D. Handbook of Chemistry and Physics. '32 17:162
Hodgman, Charles D. Handbook of Chemistry and Physics. '44 39:249
Kahn, Fritz Design of the Universe: The Heavens and the Earth. '54 41:172

b. Physical Science — Atomics and Structure of Matter (Books for Children)

Beeler, Nelson F. and Branley, Franklyn M. Experiments with Atomics. '54 39:80
Gamow, George Mr. Tompkins Explores the Atom. '44 28:296
Leeds, Roslyn D. Introducing the Atom. '67 52:508-09
Leuwellen, John You and Atomic Energy and Its Wonderful Uses. '49 33:304
b. Physical Science — Atomics and Structure of Matter (Books for Adults)

Anderson, William R. The Useful Atom. '66 52:512
Bohr, Niels Atomic Theory and the Description of Nature. '34 19:80
Boya, Ben The Fourth State of Matter: Plasma Dynamics and Tomorrow's Technology. '71 56:582-83
Buckingham, John Matter and Radiation. '30
Crehore, Albert Cushing Electrons, Atoms, Molecules. '46 31:40
Darrow, Karl K. Atomic Energy. '48 34:332
Davis, Helen Miles (Editor) Atomic Facts. '50 37:350
Eidinoff, Maxwell Leigh and Ruchlis, Hyman Atomics for the Millions. '47 31:331
Frisch, O. R. Meet the Atoms. '47 31:333
Glasstone, Samuel Sourcebook on Atomic Energy. '67 52:(1)BC
Haas, Arthur The World of Atoms. '37 22:217
Heisenberg, W. Nuclear Physics. '53 38:323
Hochstrasser, Robin M. Behavior of Electrons in Atoms. '64 52:515
Langdon-Davies, John Inside the Atom. '33 18:256
Mandelker, Jacob Matter, Energy and Mechanics. '54 39:247
Millikan, Robert A. Electrons (+ and -): Protons, Photons, Neutrons, Mesotrons, and Cosmic Rays. '47 31:332
Parker, Bertha Morris Matter and Molecules. '47 32:288
Potter, Robert D. Young People's Book of Atomic Energy. '46 31:112
Soddy, Frederick The Interpretation of the Atom. '32 17:249
Shannon, James I. The Amazing Electron. '46 33:80
Stout, Wesley W. Secret. '47 34:332
United States Atomic Energy Commission Major Activities in the Atomic Energy Programs. '56 41:440
Wilson, H. A. The Mysteries of the Atom. '34 18:190
Wilson, William The Microphysical World. '54 40:163
Nuclear Terms: A Brief Glossary. '67 52:519

c. Physical Science — Water (Books for Children)

Baer, Marian E. The Wonders of Water. '39 23:398
Clymer, Eleanor Make Way for Water. '53 33:77
Edelstadt, Vera Oceans in the Sky. '46 31:119
Norling, Jo and Ernest The First Book of Water. '52 38:114
Pigman, Augustus A Story of Water. '38 23:113
Riedman, Sarah R. Water for People. '52 37:72
Walsh, Mary Water, Water Everywhere. '53 38:110


c. Physical Science — Water (Books for Adults)

Briggs, Peter Water: The Vital Essence. '67 53:176
Davis, Kenneth S. and Dag, John Arthur Water: The Mirror of Science. 52:101
Draffin, Jasper Owen The Story of Man's Quest for Water. '39 23:352
Garnett, William A Little Book on Water Supply. 7:71
King, Thomson Water. '53 37:274
Woodbury, David O. Fresh Water from Salty Seas. '67 52:508

Baker, R. Ray So That's Chemistry. '40 25:172
Beeler, Nelson and Branley, Franklyn Experiments in Chemistry. '52 37:281
Buehr, Walter Plastics: The Man-Made Miracle. '67 52:96
Freeman, Mae and Ira Fun with Chemistry. '44 30:172
Morgan, Alfred First Chemical Book for Boys and Girls. '50 35:58

Bennett, H. (Editor) The Chemical Formulary. '33 21:54
Bennett, H. The Chemical Formulary. '41 26:111
Bennett, H. The Chemical Formulary. '45 30:105-06
Bennett, H. The Chemical Formulary. '48 32:377
Bennett, H. Chemical Specialties. '46 32:92
Bennett, H. Concise Chemical and Technical Dictionary. '47 32:52
Bennett, H. Practical Everyday Chemistry. '34 20:184

Bunzel, H. H. and Nisenson, Samuel Everyday Chemistry. '37 22:327
Chen, Philip S. A New Handbook of Chemistry. '75 60:426
Chilton, Thomas H. Strong Water. '66 53:176
Clarke, Beverley L. Marvels of Modern Chemistry. '32 17:349
Collins, A. Frederick How to Understand Chemistry. '32 18:55
Collins, A. Frederick The March of Chemistry. '36 22:49
Collins, A. Frederick The Metals. '32 17:349
Davis, Helen Miles The Chemical Elements. '52 38:329
Duck, Edward W. Plastics and Rubbers. '71 56:436
Ehrenfeld, Louis The Story of Common Things. '32 17:249
Epstein, Sam and Beryl The First Book of Glass. '55 43:280
Findlay, Alexander Chemistry in the Service of Man. '39 25:116
Fisher, Harry L. Rubber and Its Use. '41 26:57
Freeman, Ira M. All About the Wonders of Chemistry. '54 41:360
Glasstone, Samuel Chemistry in Daily Life. '28 14:386
Glasstone, Samuel Recent Advances in General Chemistry. '36 21:221
Glasstone, Samuel Recent Discoveries in Physical Chemistry. '31 17:80
Hackh, Ingo D. W. A Chemical Dictionary. '31 14:468
Harry, Ralph G. Modern Cosmetology. '40 24:414
Hausner, Henry H. Powder Metallurgy. '67 32:52
Haynes, William Cellulose: The Chemical That Grows. 38:318
Haynes, William The Stone That Burns. '42 27:50
Hershey, J. Willard The Book of Diamonds. '40 24:414
Hessel, F. A., Martin, W. J. and Hassel, M. S. Chemistry in Warfare. '40 25:116
Hill, Terrell L. Lectures on Matter and Equilibrium. '67 52:515
Hodgman, Charles D. Chemical Tables from the Handbook of Chemistry and Physics. '38 23:298
Holmes, Harry N. Out of the Test Tube. '41 26:55
Holmes, Harry N. Out of the Test Tube. '34 19:139
Hyman, Herbert H. Noble-Gas Compounds. '63 52:17-18
Jacobs, Morris J. The Chemical Analysis of Foods and Food Products. '38 22: 37
John, W. D. Modern Polishes and Specialties. '47 32:45
Jowalemon, Ira B. Romantic Copper, Its Lure and Lore. '34 19:198-99
Karsch, M. S. and Reinmuth, Otto Grignard Reactions of Non-Metallic Substances. '54 39:249
Kolthoff, I. M. Acid Base Indicators. '37 22:102
Latimer, Wendell M. and Hildebrand, Joel H. Reference Book of Inorganic Chemistry. '51 36:511
Long, Herta R. Alpha ray-Beta ray Emission Chart. '50 35:58
Ludger, W. F. and Zuffanti, Saverio The Electronic Theory of Acids and Bases. '46 31:39
Mantell, C. L. Sparks from the Electrode. '33 17:344
Mayer, A. W. Chemical Technical Dictionary. '43 28:183
McMillen, Wheeler New Riches from the Soil. '46 32:59
Meade, Richard K. Portland Cement. '39 25:293
The Merck Index of Chemicals and Drugs. '52 36:311
Mersereau, Samuel Foster Materials of Industry. '41 27:43
Metcalfe, June Aluminum from Mine to Sky. '47 36:62
Metcalfe, June M. Copper, the Red Metal. '44 30:55
Noyes, William Albert and Noyes, W. Albert Modern Alchemy. '32 21:51
Pearl, Richard M. The Wonder World of Metals. '66 52:50R
Perry, Josephine The Light Metals Industry. '47 32:49
Perry, Josephine The Petroleum Industry. '46 30:253
Perry, Josephine The Plastics Industry. '46 32:49
Porter, Harold M. Chemistry of Foods and Household Materials. '37 22: 334
Read, William Thornton Industrial Chemistry. '33 20:117
Rivett, A. C. D. The Phase Rule. 8: 531
Rogers, Frances and Beard, Alice 5000 Years of Glass. '37 22:279
Sabel, William Basic Techniques of Preparative Organic Chemistry. '67 53:180
Sand, Henry S. Electrochemical Theory. '39 25:59
Slack, A. V. Defense Against Famine: The Role of Fertilizer Industry. '70 55:586
Slosson, Edwin E. Creative Chemistry. 5:185
Snell, Foster Dee and Snell, Cornelia T. Chemicals of Commerce. '39 24:298
Swesty, Kenneth M. Chemistry Magic. '56 41:239
Sykes, Peter A Guidebook to Mechanism in Organic Chemistry. '70 57:100
Symposium: The Chemical Industry Facts Book. '55 41:250
Symposium: The Home Chemist. '34 21: 54
Wachtel, Curt Chemical Warfare. '41 27:43
Wahl, Arthur C. and Bonner, Norman A. Radioactivity Applied to Chemistry. '51 35:61
Weinart, George W. Pyrotechny. '39 25:294
Williams, Trevor Illyd The Elements of Chromatography. 40:163
Wolfe, Bernard Plastics. '45 30:106
e. General Physics (includes mechanics, energy and heat, light, sound and applications) (Books for Children)

Baer, Marian E. Sound. '52 37:276
Branley, Franklyn M. and Vaughn, Eleanor K. Mickey's Magnets. '56 43:83
Feravolo, Rocco V. Light. '61 51:414
Fischer, Vera Kistiakowsky The Magic of Sound. '56 41:365
Feravolo, Rocco V. Light. '61 51:414
Hawks, Ellison The Romance of the Merchant Ship. '31 17:259
Ilin, M. How the Automobile Learned to Run. '45 30:179
Kettelkamp, Larry The Magic of Sound. '56 41:365
Kettellkamp, Larry Shadows. '57 39:74
Lewellen, John The True Book of Toys at Work. '53 39:76
Lineaweaver, Marion The First Book of Sailing. '53 39:74
McCullough, John G. and Yessler, Leonard Farther and Faster. '54 39:80
Nelson, Lee All the Sounds We Hear. '60 50:192
Peeters, Maud and Miska The Story Book of Wheels. '35 21:117
Pine, Tillie S. and Levine, Joseph Friction all Around. '60 49:6C
Schneider, Herman and Nina Let's Look Inside Your House. '48 32:378
Schneider, Herman and Nina Now Try This. '47 32:290
Stone, A. Harris and Siegel, Bertram M. Take a Balloon. '67 52:99
Tresselt, Alvin How Far Is Far? '64 52:306
Van Metre, T. W. Trains, Tracks, and Travel. '46 30:321
Zim, Herbert S. What's Inside of Engines? '53 37:291

f. General Physics (includes mechanics, energy and heat, light, sound and applications) (Books for Adults)

Anderson, Rudolph E. The Story of the American Automobile. '50 34:340
Beck, George E. What Makes the Wheels Go Around. '31 17:258
Bragg, Sir William The Universe of Light. '33 17:346
Clark, W. W. Manual of Mechanical Movements. '33 17:343
Collins, A. Frederick Experimental Optics. '33 18:255
Collins, A. Frederick Simplified Household Mechanics. '39 26:117
Committee on Colorimetry of the Optical Society of America The Science of Color. '53 38:248
Crouse, William H. Understanding Science. '48 32:375
Culver, Charles A. Musical Acoustics. '56 42:184
Darrow, Floyd L. The New World of Physical Discovery. '30 6:86
Darrow, Karl K. The Renaissance of Physics. '56 21:219
Davis, William S. Practical Amateur Photography. '27 12:567
Donworth, Albert B. Gravitation and the Atomic Bomb. '48 34:206
Dunn, Carleton E. Natural Color Processes. '40 25:238
Evans, Ralph M. An Introduction to Color. '48 32:376
Fleming, J. A. Waves and Ripples. B: 531
Gabor, Don. The Electron Microscope. '49 32:378
Gamow, G. Mr. Tompkins in Wonder Land or Stories of c, s, and h. '40 25: 50
Gamow, George Gravity. 52:101
Halacy, D. S., Jr. Fuel Cells: Power for Tomorrow. '65 52:512
Henney, Keith and Dudley, Beverly Handbook of Photography. '39 25:353
Heyl, Paul R. New Frontiers of Physics. '30 16:85
Hillson, Peter J. Photography: A Study in Versatility. '69 54:391
Hirschfeld, E. Fluorescence and Phosphorescence. '38 23:178
Huey, Edward G. What Makes the Wheels Go Round. '40 24:353
Karlsen, Paul The World Around Us. '36 21:124
Kettering, Charles F. and Orth, Allen The New Necessity. '32 16:522
Lewellen, John The Boy Scientist. '55 41:353-54
Loewy, Raymond Locomotive. '37 21:217
Low, A. M. Science for the Home. '38 23:296-97
Luhr, Overton Physics Tells Why. '40 31:332
Luckiesh, Mathew Color and Colors. '38 23:172
Luhr, Overton Physics Tells Why. '43 30:109
Mees, C. E. Kenneth Photography. '37 21:121
Menzel, Donald H. (Editor) Fundamental Formulas of Physics. '56 41:255
Morris, Percy A. Nature Photography Around the Year. '38 23:356
Morwood, John Sailing Acrodynamics. '55 39:183
Nott-Smith, Morton Heat and Its Workings. '33 18:27
Mott-Smith, Morton The Story of Energy. '34 19:38
Mott-Smith, Morton This Mechanical World. '31 16:168
Pye, D. R. Heat and Energy. 8:374
Radley, J. A. and Grant, Julius Fluorescence Analysis in Ultra-Violet Light. '35 20:119
Reck, Franklin M. and Claire Power from Start to Finish. '41 26:112
Richardson, K. I. T. The Gyroscope Applied. '54 40:163
Rothman, Milton A. The Laws of Physics. 52:516-17
Schroedinger, Erwin Space-Time Structure. '50 35:56
Siegbahn, Manne The Spectroscopy of X-Rays. 10:356
Stroddard, Edward The Story of Power. '57 43:283
Symposium: Precision Electrical Measurements. '56 42:94
Wall, E. J. Photographic Emulsions. '29 14:570
Wall, E. J. and Jordan, Franklin I. Photographic Facts and Formulas. '40 25:293
Weiss, Harvey Sailing Small Boats. '67 52:(1)IBC
Young, C. B. F. and Coons, K. W. Surface Active Agents. '45 30:172

f. Physics — Electricity and Applications (Books for Children)

Bendick, Jeanne Electronics for Young People. '47 36:62
Bendick, Jeanne and Robert Television Works Like This. '54 39:72
Bragg, W. L. Electricity. '36 22:163
Buehr, Walter Wonder Worker: The Story of Electricity. '61 52:96
Epstein, Sam and Beryl The First Book of Electricity. 52:(1)IBC
Epstein, Sam and Beryl The First Book of Electricity. '53 39:73
Gould, Jack All About Radio and Television. 41:359
Meyer, Jerome S. Picture Book of Radio and Television and How They Work. '51 38:115

f. Physics — Electricity and Applications (Books for Adults)

Brown, George H., Hoyler, Cyril N. and Bierwirth, Rudolph A. Theory and Application of Radio-Frequency Heating. '47 32:53
Brown, O. F. The Elements of Radio-Communication. 12:356
Caverly, Don Primer of Electronics and Radiant Energy. '52 38:323
Collins, A. Frederick Fun with Electricity. '36 21:166
Collins, A. Frederick How to Understand Electricity. '35 21:166
Cowan, Lester (Editor) Recording Sound for Motion Pictures. '31 16:341
Crow, Leonard R. Synchros, Self-Synchronous Devices and Electrical Servo-Mechanisms. '53 38:324
Denman, Frank Television, the Magic Window. '52 38:255
Eddy, Capt. Wm. C. Television. '45 30:172
Felix, Edgar H. Television. '31 16:340-41
Freeman, Samuel Two-Way Radio. '46 30:171

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Grimes, David Meet the Electron. '44 29:108
Hale, A. P. Electrical Interference. '56 42:95
Harlow, Alvin F. Old Wires and New Waves. '36 21:221
Hawks, Ellison The Book of Electrical Wonders. '31 16:434
Hylander, C. J. and Harding, R., Jr. An Introduction to Television. '46 30:250
Johnson, J. Richard Television: How It Works. '56 41:443
Krugman, Leonard Fundamentals of Transistors. '54 41:258
Langdon-Davies, John Radio. '35 21:166
Low, A. M. Electronics Everywhere. '52 39:174
Lunt, Joseph R. Everyday Electricity. '27 12:570
MacLaurin, W. Rupert Invention and Invention in the Radio Industry. '49 34:208
Mark, David Basics of Phototubes and Photocells. '42 41:443
Morgan, Alfred Getting Acquainted with Electricity. '42 25:70
Morgan, Alfred Getting Acquainted with Radio. '40 25:237
Moseley, Sydney A. and McKay, Herbert Television. '38 21:221
Poole, Lynn and Gray Electronics in Medicine. '64 48:434
Rider, John F. Basic Vacuum Tubes and Their Uses. '55 41:256
Samuels, M. M. Power Unleashed. '46 31:37
Sommer, A. Photoelectric Cells. '47 32:52
Squier, George O. Telling the World. '33 17:346
Stokley, James Electrons in Action. '46 30:313
Taylor, Denis Introduction to Radar and Radar Techniques. '67 53:180
Tyler, Kindon S. Telecasting in Color. '46 32:56-57
Wade, Herbert T. Everyday Electricity. '24 12:568
Woodbury, David O. Communication. '31 16:340
Yates, Raymond F. Fun with Electronics. '45 30:107
Yates, Raymond F. The Amazing Electrons. '37 23:232
Yates, Raymond F. The Working Electron. '46 30:304
Young, Victor J. Understanding Microwaves. 41:257

Earth Science — Geology, Physical Geography, Mineralogy (Books for Children)

Branley, Franklyn M. North, South, East, and West. '66 52:102
Clark, Mary Lou You and How the World Began. '57 41:368
Cormack, M. B. The First Book of Stones. '50 38:113
Goetz, Della Deserts. '56 41:362
Goetz, Della Mountains. '62 52:95
Huntington, Harriet E. Let's Go to the Desert. '49 33:379
Keene, Melvin The Beginner's Story of Rocks and Minerals. '66 52:86
Kennamer, Lorrin and Wishart, A. Paul Geography. '62 49:498
McDonald, Lucille Saunders Jewels and Gems. '40 25:238
Pease, Josephine van Dolzen This Is the World. '46 31:108
Pine, Tillie S. and Levine, Joseph Air All Around. 52:80
Podendorf, Iila The True Book of Seasons. '55 41:350
Pough, Frederick H. All About Volcanoes and Earthquakes. 41:360
Russell, Solvieg Paulson From Rocks to Rockets. '60 52:92
Schneider, Herman and Nina Follow the Sunset. '52 37:269
Schneider, Herman and Nina Rocks, Rivers, and the Changing Earth. '52 37:269
Shannon, Terry Among the Rocks. 41:347
Shuttlesworth, Dorthy The Story of Rocks. '56 41:347
Stone, A. Harris and Ingmanson, Dale Rocks and Rills: A Look at Geology. '67 52:98
Townsend, Herbert Our Wonderful Earth. '50 35:57
Washburne, Carleton and Washburne, Hellen The Story of Earth and Sky. '33 19:66
Zim, Herbert S. Waves. '67 52:93
Zim, Herbert S. What's Inside the Earth? '53 39:70
Abbot, C. G. The Sun's Short Regular Variation and Its Large Effect on Terrestrial Temperatures. '47 33:79
American Geological Institute Dictionary of Geological Terms. 52:220
Atwood, Wallace W. The Physiographic Provinces of North America. '40 25:104
Atwood, Wallace W. The Rocky Mountains. '45 30:104
Barton, Robert Oceanology Today, Man Explores the Sea. '71 56:276-77
Bascom, Willard Waves and Beaches: The Dynamics of the Ocean Surface. '64 52:220
Beebe, William Exploring with Beebe. '32 19:43
Beebe, William Nonsuch: Land of Water. '32 17:160
Behrman, Daniel Exploring the Ocean. '70 30:104
Bell, H. S. Oil Shales and Shale Oils. '48 33:82
Brindze, Ruth The Gulf Stream. '45 30:103
Burhnr, Walter Volcano. 50:28C
Carlisle, Norman Riches of the Sea. '68 52:510
Cartner, William C. How We Know What on Earth Happened Before Man Arrived. '72 57:242
Casteret, Norbert Ten Years Under the Earth. '38 23:356
Colby, C. B. America's Natural Wonders. '56 44:6
Coleman, Satis N. Volcanoes, New and Old. '46 30:314
Coleman Ice Ages, Recent and Ancient. 11:60
Daly, Reginald Aldworth The Changing World of the Ice Age. '35 22:273
Dobson, C. H. B. The Upper Regions of the Earth's Atmosphere. 12:492
Dodge, Nat N. and Zim, Herbert S. The American Southwest. '55 40:244
Eakle, Arthur S. Mineral Tables. '38 23:356
Ellsworth, Lincoln Exploring Today. '35 20:230
Evans, Eva Knox Why We Live Where We Live. '53 39:180
English, George Letchworth Getting Acquainted with Minerals. '35 20:112
Fenton, Carroll Lane Along the Hill. '35 20:231
Fenton, Carroll Lane and Fenton, Mildred Adams Riches From the Earth. '53 39:180
Fenton, Carroll Lane and Fenton, Mildred Adams The Rock Book. '40 25:236-37
Fisher, James The Wonderful World of the Sea. '57 41:347-48
Fitzhugh, Edward F. Treasures in the Earth. '36 22:325
Flint, Richard Foster Glacial Geology and the Pleistocene Epoch. '47 32:54
Fryxell, Fritiof The Tetons: Interpretations of a Mountain Landscape. '46 30:309
Gait, Robert I. Exploring Minerals and Crystals. '72 58:138
Galt, Tom Volcano. '46 30:313-14
Gamow, George Biography of the Earth. '48 32:376
Gautier, E. F. Sahara, the Great Desert. '35 20:185
Gluck, Nelson The River Jordan. '46 30:308-09
Hamilton, Elizabeth The First Book of Caves. '56 43:282
Hawkins, Alfred C. The Book of Minerals. '35 20:184
Hawks, Ellison The Book of Natural Wonders. '35 20:184
Hood, Peter How the Earth Is Made. '54 39:81
Hotchkiss, William O. The Story of a Billion Years. '33 17:344
Huntington, Harriet E. The Yosemite Story. '66 52:78
Icenhower, J. B. The First Book of the Antarctic. '57 43:280
Jagger, T. A. Volcanoes Declare War. '45 30:163
Johnson, Gaylord The Story of Earthquakes and Volcanoes. '38 22:331
Joly, The Surface History of the Earth. 10:508
Koeppel, Clarence E. Earth and Sun Relations. '34 20:115
Leveson, David A Sense of the Earth. '72 57:245
Linklater, Eric The Voyage of the Challenger. '72 57:241
Lynch, Joseph Dur Trembling Earth. '40 25:235
Marmer, H. A. The Sea. '30 16:170-71
Morris, Frederick K. The Making of the Valley. '36 21:53
National Research Council Bulletins Physics of the Earth. '31-'32 17:254
Sec. XVI

Mininger, H. H. A Comet Strikes the Earth. '46 34:332
Paul, J. Harland The Last Cruise of the Carnegie. '32 16:518
Pearl, Richard M. How to Know the Rocks and Minerals. '55 41:342
Pearl, Richard M. Popular Gemology. '65 51:417
Pearl, Richard M. Rocks and Minerals. '56 41:344
Peattie, Roderick (Editor) The Pacific Coast Ranges. '46 30:310
Price, George McReady Common Sense Geology. '46 33:82
Read, Thomas T. Our Mineral Civilization. '32 17:162
Reinfeld, Fred Picture Book of Rocks and Minerals. '63 40:400
Robinson, Arthur H. Elements of Cartography. '53 38:317
Rosevear, Francis Burr Science Craft Mineralogy Manual. '36 22:334
Schwartz, George M. and Thiel, George A. Minnesota's Rocks and Waters. '54 39:169
Scott, J. M. The Polar Regions. 21:116
Shand, S. J. Earth Lore. '38 23:172
Sherman, Robert C. Life and Death of the Soil. '55 41:239
Shuler, Ellis W. Rocks and Rivers of America. '45 30:55
Simpson, Scott's Polar Journey and the Weather. 11:64
Smart, W. M. The Origin of the Earth. '51 35:301
Smith, Chard Powers The Housatonic. '46 30:309-10
Stetson, Harlan True Earth, Radio and the Stars. '34 20:50
Stewart-Remington, John and Francis, Wilfrid The Composition and Assaying of Minerals. '53 38:318
Stommel, Henry Science of the Seven Seas. '45 30:54
Taylor, Griffith Antarctic Adventure and Research. '30 16:170
Vaeth, J. Gordon 200 Miles Up. '55 41:245
Verrill, A Hyatt Minerals, Metals and Gems. '54 39:118
Wahlstrom, Ernest E. Petrographic Mineralogy. '55 41:254
Waters, Frank The Colorado. '46 31:342
Williams, Henry Smith The Biography of Mother Earth. '31 16:521
Zodac, Peter How to Collect Minerals. '34 20:113

h. Earth Science – Meteorology (Books for Children)

Bendick, Jeanne Lightning. '61 50:192
Fenton, Carroll Lane and Fenton, Mildred Adams Our Changing Weather. '54 39:91
Friskey, Margaret The True Book of Air Around Us. 38:112
Lehr, Paul E., Burnett, R. Will and Zim, Herbert S. Weather. '57 41:343
Kinney, Jean What Does the Cloud Do? '67 52(1):18C
Larrick, Nancy Rain, Hail, Sleet and Snow. '61 51:414
Meyer, Jerome S. Picture Book of the Weather. '48 33:305
Podendorf, Ila The True Book of Weather Experiments. '61 48:200
Ridgley, Douglas C. Rainfall of the Earth. '33 18:192
Schneider, Herman Everyday Weather and How It Works. '51 36:200
Schneider, Herman and Nina Let's Find Out About the Weather. '56 41:346
Smith, Theresa K. The Fog Is Secret. '66 52:98
Sutton, Felix The How and Why Wonder Book of Our Earth. '60 50:192
Tannehill, Ivan Ray All About the Weather. 41:359
Wyler, Rose The First Book of Weather. 52(1):1BC
Wyler, Rose The First Book of Weather. '56 43:281-82
Washburn, Stanley, Jr. Nimbo, the Little Cloud that Turned Black. '54 43:85
Zim, Herbert S. Lightning and Thunder. '52 37:271

h. Earth Science – Meteorology (Books for Adults)

Baer, Marian E. Rain or Shine. '40 25:175
Battan, Louis J. The Nature of Violent Storms. '52:101
Blair, Thomas A. Weather Elements. '37 22:105
Botley, C. M. The Air and Its Mysteries. '40 25:173
Brooks, Charles Franklin Why the Weather? '35 19:196
Felton, Ernest L. California's Many Climates. '65 51:103
Gaer, Joseph Fair and Warmer. '39 25:173
Hare, F. K. The Restless Atmosphere. '63 52:508
Humphreys, W. J. Ways of the Weather. '43 30:103
Humphreys, W. J. Weather Proverbs and Paradoxes. '34 20:49
Loebback, Theo Our Atmosphere. 52:514
Longstreth, T. Morris Understanding the Weather. '53 38:255
Luckiesh, Mathew The Book of the Sky. '33 18:189
McEachron, K. B. and Patrick, Kenneth G. Playing with Lightning. '40 25:352
Miller, Denning Wind, Storm, and Rain. '52 37:222
Nakaya, Ukichiro Snow Crystals. '54 41:258
Petersen, William Man—Weather and Sun. '47 34:290
Pickwell, Gayle Weather. '37 22:378
Ridgley, Douglas C. General Circulation of the Atmosphere. '33 18:128
Ridgley, Douglas C. and Knope, Clarence E. Fundamentals of Climate. '32 17:344
Scorer, Richard and Wexler, Harry Cloud Studies in Color. '68 53:180

Shaw, Sir Napier The Air and Its Ways. 8:531
Shaw, Sir Napier The Drama of the Weather. '33 18:126
Sloane, Eric Clouds, Air, and Wind. '34:275
Starr, Victor P. Basic Principles of Weather Forecasting. '42 28:55
Tannehill, Ivan Ray Weather Round the World. '43 30:104
Van Straten, Florence W. Weather or Not. '66 53:181
Visher, Stephen Sargent Climate of Indiana. '44 30:103
Visher, S. Climatic Laws. 9:63

Yates, Raymond The Weather for a Hobby. '46 30:314
McGraw-Hill Encyclopedia of Environmental Science. '74 60:129
The Meteorological Glossary. '40 25:59
Physics of the Earth III: Meteorology. '31 17:349

i. Astronomy (Books for Children)

Barton, William H. and Joseph, Joseph Maron Starcraft. '46 32:50
Bernhard, Hubert J., Bennett, Dorothy A. and Rice, Hugh S. Handbook of the Heavens. '35 19:199
Coles, Robert P. and Frost, Frances Star of Wonder. '53 39:72
Cothren, Marion B. This Is the Moon. '46 32:49
Freeman, Mae and Ira Fun with Astronomy. '53 39:86
Joseph, Joseph Maron and Lippincott, Sarah Lee Point to the Stars. '67 51:413
Kinney, Jean What Does the Sun Do? '67 53:178
Lewellen, John Moon, Sun, and Stars. '54 39:76
Meyer, Jerome S. Picture Book of Astronomy. '45 30:179
Neurath, Marie Let's Look at the Sky. '52 38:115
Proctor, Mary Our Stars Month by Month. '37 23:236
Schneider, Herman and Nina You Among the Stars. '51 36:200
Warner, Gertrude Chandler Star Stories. '47 33:303
White, W. B. Seeing Stars. '35 20:233
Williams, Lou A Dipper Full of Stars. '44 29:281
Wyler, Rose About the Sky. '56 41:354
Wyler, Rose Planet Earth. '52 37:72
Wyler, Rose and Ames, Gerald The Golden Book of Astronomy. '55 41:348
Zim, Herbert S. Comets. '56 41:361
Zim, Herbert S. The Sun. '53 37:290
Zim, Herbert S. The Universe. 52:93

i. Astronomy (Books for Adults)

Abbot, C. G. The Earth and the Stars. '46 31:34
Allen, John Stuart Astronomy: What Everyone Should Know. '45 30:106
Atter, Dinsmore and Cleminshaw, Clarence H. Pictorial Astronomy. '52 37:141
Atlas of the Universe. 52:78
Baker, Robert H. Introducing the Constellations. '37 22:229
Baker, Robert H. The Universe Unfolding. '32 16:339
Baker, Robert H. When the Stars Come Out. '34 19:199
Baldwin, Ralph B. The Face of the Moon. '34 34:337-38
Barton, William H. and Joseph, Joseph Maron Starcraft. '38 22:334
Bedell, A. L. An Album of Celestial Photographs. '46 30:314
Bedell, A. L. Astronomy for Busy People. 30:315
Bok, Bart J. and Bok, Priscilla F. The Milky Way. '45 30:110
Bondi, Hermann The Universe at Large. 52:101
Bova, Ben The New Astronomies. '72 57:105-06
Campbell, Leon and Jacchia, Sugii The Story of the Variable Stars. '45 30:316
Couderc, Paul The Expansion of the Universe. '52 38:241
Davidson, Martin (Editor) Astronomy for Everyone. '53 38:240
Davidson, Martin From Atoms to Stars. '49 38:240
De Sitter, W. Kosmos. '32 18:256
Draper, Arthur L. and Lockwood, Marion The Story of Astronomy. '39 23:295
Duncan, John Charles Essentials of Astronomy. '42 28:111
Dyson, Frank and Woolley, R. Eclipses of the Sun and Moon. '37 23:298
Editorial Staff of Popular Science Monthly Astronomy for Amateurs. '32 22:48
Edwards, Lawrence The Spangled Heavens. '33 18:127-28
Fath, Edward Arthur Through the Telescope. '36 21:49
Fisher, Clyde Exploring the Heavens. '37 22:44
Frost, Edwin Brant Let's Look at the Stars. '35 22:50
Frost, George E. Planets, Stars and Atoms. '39 23:356
Gallant, Roy A. Exploring Mars. '56 43:283
Gallant, Roy A. Exploring the Universe. '56 43:283
Gamow, George The Birth and Death of the Sun. '52 38:241
Gamow, George The Birth and Death of the Sun. '40 20:2531
Gamow, George The Moon. '54 39:252
Goldberg, Leo and Aller, Laurence H. Atoms, Stars, and Nebulae. '45 30:315
Grondal The Music of the Spheres. 11:64
Hagner, F. H. What Goes on Around You. '46 31:110
Harding, Arthur M. Astronomy. '35 21:259
Heidi, Fritz Meteorites. '64 48:392
Jeans, Sir James The Mysterious Universe. '30 16:84
Jeans, Sir James The Stars in Their Courses. '21 16:85
Jeans, Sir James The Universe Around Us. '44 28:294
Jennison, R. C. Introduction to Radio Astronomy. '67 53:178
Jones, H. Spencer Life on Other Worlds. '40 25:296
Jones, H. Spencer Worlds Without End. '35 21:56
Key, H. A. The Stars: A New Way to See Them. '52 38:107
Lee, Oliver Justin Beyond Yonder. '39 25:118
Lee, Oliver Justin Measuring Our Universe. '50 34:338-39
Lemon, Harvey Brace Cosmic Rays Thus Far. '36 21:221
Lewellen, John You and Space Neighbors. '53 39:75
Lewis, Isabel Astronomy for Young Folks. '32 18:199
Lum, Peter The Stars in Our Heavens. '48 33:304
MacPherson, Hector Modern Astronomy. 11:289
MacPherson, Hector Modern Cosmologies. '29 14:572
Marschall, Roy K. Sun, Moon, and Planets. '52 38:240
Mayall, R. Newton and Mayall, Margaret L. Skyshooting. '49 34:332
McKee, Kelvin A Beginner's Star Book. '37 22:47
McVittie, G. C. Cosmological Theory. '38 23:177
Messel, H. and Butler, S. T. Space Physics and Radio Astronomy. '64 49:90
Middlehurst, Barbara M. and Aller, Lawrence H. (Editors) Nebulae and Interstellar Matter. '68 53:179
Millikan, Robert A. Cosmic Rays. '39 25:297
Mitchell, S. A. The Stars in Our Heavens. '35 20:116
Moseley, Edwin Lincoln Other Worlds. '33 20:108
Moulton, Forest Ray Astronomy. '31 16:171-72
Moulton, Forest Ray The Universe Around Us. '35 21:260
Neely, Henry M. A Primer for Star-Gazers. '46 31:118
Ohring, George Weather on the Planets. '58 51:397
Orchway, Frederick I., III Life in Other Solar Systems. '65 52:507
Payne-Gaposchkin, Cecelia Stars in the Making. '53 38:242
Pendray, G. Edward Men, Mirrors, and Stars. '35 22:43
Pendray, G. Edward Men, Mirrors, and Stars. '46 30:313
Pickering, James Sayre The Stars Are Yours. '53 37:272
Pickering, James S. 1001 Questions Answered About Astronomy. 52:90
Polgreen, John and Cathleen The Stars Tonight. '67 52:89
Reed, W. Maxwell Patterns in the Sky. '51 37:284
Reh, Frank Astronomy for the Layman. '36 21:118
Robinson, John The Universe We Live In. '52 38:241
Sedgwick, J. B. Amateur Astronomer's Handbook. '55 41:252
Shapley, Harlow Flights from Chaos. '30 15:72
Shapley, Harlow Galaxies. '45 30:316-17
Sidgwick, J. B. Observational Astronomy for Amateurs. '55 41:259
Skilling, W. T. and Richardson, R. S. Sun, Moon and Stars. '36 22:48
Smart, W. M. Astronomy. '37 22:276
Stetson, Harlan True Man and the Stars. '30 16:172
Stetson, Harlan True Sunspots and Their Effects. '37 22:378
Stokley, James Stars and Telescopes. '36 22:48
Thomas, Oswald Heaven and Earth. '30 16:258-59
Woodbury, David O. The Glass Giant of Palomar. '39 24:41
Wylie, C. C. Our Starland. '38 23:114
Williamson, Julia Stars Through Magic Casements. '30 15:72
Wagner, Norton Unveiling the Universe. '36 21:123
Whipple, Fred Earth, Moon and Planets. '46 30:315
Watson, Fletcher G. Between the Planets. '45 30:316
White, Anne Terry All About Stars. '54 41:359
Willis, H. L. The Origin of Our Solar System. '46 31:36
Velikovsky, Immanuel Worlds in Collision. '50 34:341-42
Zim, Herbert S. and Baker, Robert H. Stars. '51 37:270

j. Technology – Aviation, Space Travel (Books for Children)

Bendick, Jeanne The First Book of Space Travel. '53 38:114
Beecher, Nelson and Branley, Franklin Experiments with Airplane Instruments. '53 38:111
Burchard, Peter Balloons from Paper Bags to Skyhooks. '60 50:191
Corbett, Scott What Makes a Plane Fly? '67 52:100
Fraser, Chelsea The Model Aircraft Builder. '31 16:252

j. Technology – Aviation, Space Travel (Books for Adults)

Black, Archibald The Story of Flying. '40 25:117-18
Burnett, R. Will Operation Moon. '55 40:80
Carlisle, Norman, Cleveland, Reginald and Wood, Jonathan The Modern Wonder Book of the Air. '45 30:107
Caidin, Martin Destination Mars. '72 57:97-98
Coombs, Charles Skyrocketing into the Unknown. '54 39:244
Devon, Francis The Story of the Helicopter. '46 30:301-02
Fraser, Devon Aviation. '45 30:173
Fraser, Chelsea The Story of Aircraft. '33 20:187
Gatland, Kenneth W. and Kunesch, Anthony M. Space Travel. '53 39:245
Horsley, Terence Soaring Flight. '46 30:302
Hylland, C. J. Flying Power. '43 30:250
Joseph, Alexander Rockets into Space. '55 43:85
Ley, Willy Missiles, Moonprobes, and Megaparsecs. '64 52:514
Leyson, Captain Burr W. Man, Rockets, and Space. '54 39:244
Menzel, Donald H. Flying Saucers. '53 38:242
Poole, Lynn Your Trip into Space. '53 39:245
Ray, Jim The Story of American Aviation. '46 30:173

Smith, Maurice (Editor) Flight Handbook. '55 40:162
Vallee, Jacques and Janine Challenge to Science: The UFO Enigma. '66 53:181
Williams, Archibald Conquering the Air. 11:212
Zim, Herbert S. Rockets and Jets. '45 29:219

k. General Technology (Books for Children)

Pease, Josephine Van Dolzen It Seems Like Magic. '46 31:108

Reynolds, Rollo G. (Editor) Our Changing World. 21:215

k. General Technology (Books for Adults)

Bonnell, Allen T. and Christman, Ruth C. (Editors) Industrial Science. '52 38:325
Cressy, Edward Discoveries and Inventions. '30 14:592
Hatfield, H. Stafford The Inventor and His World. '33 18:55
Leyson, Captain Burr W. Modern Wonders and How They Work. '49 34:331
Leyson, Captain Burr W. More Modern Wonders and How They Work. '52 38:256

Nida, William L. Man Conquers the World with Science. '34 21:117
Polakov, Walter N. The Power Age. '33 13:85
Weidlein, Edward R. and Hamor, William A. Glances at Industrial Research. '36 21:211
Wheeler, Harold (General Editor) Marvels of the Modern World. '40 25:176
Yates, Raymond F. Machines Over Men. '39 24:407

3. General Science (includes topics common to all sciences, e.g., research, and books about several sciences)
a. Bibliographies and Dictionaries

American Chemical Society Selected Titles in Chemistry--An Annotated Bibliography of Moderately Priced Books for the Student, the Teacher, and the General Reader. '72 56:563-64
Arnett, Ross H., Jr. Books on Zoology. '56 42:96
Blackwood, Paul E. Science Experiment Books for Children; Experiments in Elementary Science. 37:268
Bureau of Curriculum Research A Selected Bibliography in Elementary Science. '55 41:346
Callahan, Ludmilla I. Russian-English Technical and Chemical Dictionary. '47 32:220
Deason, Hilary J. A Guide to Science Reading. '66 53:176
Gordon, Eva L. A Bibliography of Nature Study. '39 24:177

Light, Israel Annotated Bibliography on Atomic Energy. '47 32:219
Mallinson, George Griesen and Mallinson, Jacqueline Buck A Bibliography of Reference Books for Elementary Science. 50:192
National Cancer Institute Reading on Cancer: An Annotated Bibliography. '55 42:183
New Jersey Library Association Meet the Sciences. '51 37:141
Osborne, A. K. An Encyclopedia of the Iron and Steel Industry. '56 42:95
Patterson, Austin M. A German-English Dictionary for Chemists. '50 34:342
Book Reviews

Rockcastle, Verne N. and Gordon, Eva L. Science Books for Children. '57 44: 162, 54
Schwartz, Julius and Schneider, Herman Growing up with Science Books. '59 44:152
Vinal, William Gould Nature Education: A Selected Bibliography. '34 20:110
Webb, Hanor A. The High-School Science Library for 1939-40. '40 25:196
Williams, Alice Marietta Children's Choices in Science Books. '39 177
Woodring, Oakes and Brown Enriched Teaching of Science in the High School. '28 13:106
Bibliography of Material on Animal Experimentation. '54 39:250
Catalog of Technical Books. 27:165
Encouraging Future Scientists: Materials and Services Available in 56. '55 40:79
Science Booklists for Boys and Girls 23:112

b. Books for Children

Abbott, Charles G. Everyday Mysteries. 8:450
Bendick, Jeanne All Around You. '51 37:145
Brockel, Ray You and the Sciences of Plants, Animals, and the Earth. '56 41:367
Brown, Vinson How to Make a Home Nature Museum. '54 39:88
Coffman, Ramon Peyton The Child's Story of Science. 24:180
Davis, Watson Science Picture Parade. '40 25:178
Harrison, Caroline and Washburn, Bradford Allen and Trisha Visit the Science Park. '53 37:277
Harrison, Lucia Daylight, Twilight, Darkness and Time. '35 19:137
Herbert, Don Mr. Wizard's Science Secrets. '52 37:282
Ilin, M. 100,000 Whys. '33 18:188
Jaeger, Ellsworth Land and Water Trails. '53 39:241
Larrick, Nancy See for Yourself: A First Grade Book of Science Experiments. '52 37:292
Lindberg, G. and M. Our Amazing World. '68 52:510-11
Lynde, Carleton John Science Experiences with Home Equipment. '37 21:258
McCreery, James L. Exploring the Earth and its Life. '40 26:111
Moseley, Edwin Lincoln Trees, Stars, and Birds. '35 21:211
Parker, Bertha Morris The Golden Book of Science. '56 41:343-44
Parker, Bertha Morris The Golden Treasury of Natural History. '53 39:68
Podendorf, Ila The One Hundred and one Science Experiments. '60 49:199
Podendorf, Ila Pebbles and Shells. '39:75
Podendorf, Ila and Nina The True Book of More Science Experiments. '56 41:367
Podendorf, Ila The True Book of More Science Experiments. '54 39:75
Podendorf, Ila The True Book of Sounds. '50 35:135
Saxon, G. R. How Fast? '54 39:80
Schneider, Herman and Nina How Big is Big? '46 31:108
Schneider, Herman and Nina How Big is Big? '50 35:135
Schneider, Herman and Nina Science with Milk Cartons. '53 37:290
Schwartz, Julius It's Fun to Know. '52 37:281
Swezey, Kenneth M. Sciencemagic. 37:282
Udane, Bernard and Gilly, Herman Student's Handbook of Science. 48:37:377
Ware, Kay, Sutherland, Lucile and Others Webster Classroom Science Library. '57-59 44:152
Watson, Jane Werner Wonders of Nature. '57 41:354
Webster, David Brain-Boosters. '66 52:101-02
Wyler, Rose The First Book of Science Experiments. '52 37:291
Wyler, Rose and Baird, Eva-Lee Science Teasers. '66 52:84-85
Yates, Raymond F. Science with Simple Things. '40 20:271
c. Books for Adults and Adults

American Association for the Advancement of Science. Summarized Proceedings, June, 1929-January, 1934 and Directory of Members. '29: 19-89

Asimov, Isaac. The Left Hand of the Electron. '72: 56:583


Baitsell, G. A. Science in Progress. '40: 25:235-36

Bazzoni, Charles B. and Others. The University Series. '31, '33: 25:18:257

Bernhard, Hubert J. Wonders of the World. '56: 41:356

Boyd, T. A. Research, the Pathfinder of Science and Industry. '35: 20:51-52

Bush, George P. and Hattery, Lowell H. Scientific Research: Its Administration and Organization. '50: 34:342


Davis, Watson Science Today. '31: 16: 525

Davis, Watson (Editor). The Advance of Science. '35: 22:160


Dietz, David. The Story of Science. '32: 19:42

Freeman, Paul. The Principles of Scientific Research. '50: 34:342

Frewin, J. G. A New Experimental Science, Part II. 12:356

Furnas, C. C. The Next Hundred Years. '36: 22:218

Garbedian, H. Gordon. Major Mysteries of Science. '33: 20:231

Gray, George W. The Advancing Front of Science. '37: 21:259

Haslett, A. W. Unsolved Problems of Science. '36: 22:218

Hunter, George W. and Whitforo, Robert Calvin Readings in Science. '31: 16:170

Huxley, Julian and Andrade, E. N. daC. More Simple Science. '36: 21:211

Huxley, Julian and Andrade, E. N. daC. Simple Science. '35: 20:187

Jaffe, Bernard. Outposts of Science. '35: 21:166

Low, Prof. A. M. Science in Industry. '40: 25:115

Marshall, Roy K. The Nature of Things. '51: 37:142

National Science Teachers Association. Experimentation and Measurement; Frontiers of Dental Science; Microbes and Man; Ceramics: Stone Age to Space Age; Chemistry of Life; The Lore of Living Plants; Nutrition Science and You. '62-'64: 53:182


Olcott, Frances Jenkins. Our Wonderful World. '35: 21:213

O'Neill, John J. You and the Universe. '46: 30:248-49

Parratt, Lyman G. Probability and Experimental Errors in Science. '66: 51:417

Poole, Lynn. Today's Science and You. '52: 37:282


Redman, L. V. and Morv, A. V. The Romance of Research. '34: 19:42


Science Digest. The Science Digest Reader. '48: 34:331

Shapley, Harlow, Rapport, Samuel and Wright, Helen (Editors). A Treasury of Science. '46: 30:318

Shecroft, W. F. Matter, Man, and Ming. 10:588


Thompson, J. Arthur. Riddles of Science, '32: 17:79

Tower, Samuel F. and Lunt, Joseph R. The Science of Common Things. 7:139


University of California Science in the University. '44: 22:107


Zirkle, Conway, Myerhoff, Howard A. and Christman, Ruth E. Soviet Science. '52 38:325

M. History of Science

1. Biographies of Scientists

Burt, Olive W. Luther Burbank. 37:274
Brown, Rose Bicycle in the Sky. '53 38:116
Fairchild, David Exploring for Plants. '31 16:333
Guthridge, Sue Tom Edison. 37:273
Haldane, J. B. S. Adventures of a Biologist. '40 25:236
Harvey-Gibson, R. J. The Master Thinkers. '28 16:332-33
Irving, Lester and Winship, A. E. Fifty Famous Farmers. 9:138
Latham, Jean Lee The Story of Eli Whitney. '53 39:241
Mason, Miriam E. Young Audubon. 37:274
Selsam, Millicent E. Around the World with Darwin. '61 52:85
Shippen, Katherine B. Mr. Bell Invents the Telephone. '52 39:86
Stevenson, Augusta George Carver. 37:273
Weir, Ruth Cromer Thomas Alva Edison. '53 38:119
Wise, W. E. Thomas Alva Edison: The Youth and His Times. '33 18:127

2. Biographies of Scientists (Books for Adults)

Alexander, H. G. The Leibniz-Clarke Correspondence. '56 42:94
Andrade, E. N. daC. Isaac Newton. '50 35:385
Baker, Rachel Dr. Morton: Pioneer in the Use of Ether. '46 30:248
Baker, Rachel The First Woman Doctor. '44 30:164
Barbour, Thomas A Naturalist's Scrapbook. '46 31:337
Beebe, William The Book of Naturalists. '44 22:106
Benison, Saul Tom Rivers. '67 53:175
Bolton, Sarah K. Famous Men of Science. '46 32:80
Burbank, Luther Partner of Nature. '40 25:58
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*Served as Chairman of the Editorial Board beginning with Vol. 13, no. 4, May 1929. The journal’s name was changed from General Science Quarterly to Science Education with the May 1929 issue.

**Served as Editor through Vol. 27, no. 2, September-October 1943. Beginning with the November 1943 issue, the journal was published under the direction of the Committee of Publication (W. G. Whitman, Chairman) through Vol. 28, no. 4, October 1944, when S. R. Powers became Editor.

#Appointed as editor beginning with Vol. 52, no. 5, December 1968.

##Includes four regular issues plus "A Summary of Research in Science Education," containing 85 pages in volume 59 and 99 pages in Volume 60.