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PSSC's science study series

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PSSC's Science Study Series

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Early in 1957, a report was published describing the formation of the "Physical Science Study Committee" (PSSC) the previous December and its proposed new physics program for secondary schools.¹ Three years later the course textbook, laboratory, and various ancillary materials had reached a point where they were being trialed with teachers and students.² The textbook, *Physics*, was published in 1960.³ It is currently in its seventh edition.⁴

Among the supplementary materials that were considered very early in the program's planning was "...a series of paperback books intended to increase the physical science literature available to students and adults with special interests in science."⁵ This series began in 1959 with its first volume in the "Science Study Series" published by Doubleday Anchor Books. During its 15-year history, 72 books were published, with the last in 1974.⁶ A complete list of these is given in Table I. Number 6 was never published, although it apparently had been planned for early in the series. The initial price for most volumes was \$0.95; longer books were \$1.45.

The selection of topics of the books was highly varied. They included biography, history of science, weather, electronics, cosmology, nuclear physics, physics and life science, etc. Indeed, it is hard to find an area of science upon which this series did not touch. Most of the books were written specifically for this series,

although some (such as C. V. Boys' classic, *Soap Bubbles*) were reprints. Around 1966 the American Meteorological Society began to develop "...a series of monographs for secondary school students and laymen, and since the intended audiences were similar, arrangements were made to include their volumes on meteorology in the Science Study Series."⁷ The entire collection made available to students (as well as their teachers and the general public) a series of well-written books on various topics in science—most of which had some connection to physics. When one examines the titles, it becomes apparent that the original intention of the developers was well met.

To what extent high-school students made use of these books is difficult to say. Selected volumes, however, were found useful by college instructors for "mini" courses a few years ago.⁸

While the series, as such, is no longer being published, a little less than one-third of it has been reprinted by different publishers. Several of the titles have been revised or published as a second edition. A list of these (by original series number) is provided in Table II. The current (1998) publisher and price are also included. Teachers who remember the series and who had favorite titles will hopefully find some of them here. The publishers are to be commended on keeping such materials available for today's readers.

The series, as much as its individ-

ual titles, offered suggestions regarding the connectedness of physics with the other sciences. The usefulness of physics in helping to understand or explain apparently diverse phenomena can also be seen in the variety of the titles. As teachers search for ways of finding common themes among the sciences, they may find some useful ideas in this old, but not forgotten, series.

References

1. *Phys. Today* **10**, 28 (March, 1957).
2. Gilbert C. Finlay, *Am. J. Phys.* **28**, 286 (1960).
3. Physical Science Study Committee, *Physics* (D. C. Heath, Boston, 1960). This was reviewed by Thomas D. Miner, *Am. J. Phys.* **29**, 338 (1961). His review may still be read with profit by anyone examining any introductory physics textbook.
4. Uri Haber-Schaim et al., *PSSC Physics* (Kendall-Hunt, Dubuque, IA, 1991).
5. Ref. 2, p. 287.
6. *Books in Series*, 3rd ed. (R. R. Bowker, New York, 1980), p. 1636.
7. See, for example, George Ohring, *Weather on the Planets: What We Know about Their Atmospheres* (Doubleday Science Study Series, New York, 1966), p. viii.
8. Kenneth A. Soxman, *Phys. Teach.* **10**, 339 (Sept. 1972); Robert J. Whitaker, *J. of Coll. Sci. Teach.* **11**, 168 (January 1982).

Table I: PSSC Science Study Series

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| <p>S1 Hughes, Donald J. <i>The Neutron Story: Exploring the Nature of Matter</i>. 1959.</p> <p>S2 Bitter, Francis. <i>Magnets: The Education of a Physicist</i>. 1959.</p> <p>S3 Boys, Sir Charles Vernon. <i>Soap Bubbles and the Forces Which Mould Them</i>. 1959.</p> <p>S4 Griffin, Donald R. <i>Echoes of Bats and Men: Seeing with Sound Waves</i>. 1959.</p> <p>S5 Hurley, Patrick M. <i>How Old Is the Earth?</i> 1959.</p> <p>S6 Not Published</p> <p>S7 Holden, Alan and Singer, Phylis. <i>Crystals and Crystal Growing</i>. 1960.</p> <p>S8 Fink, Donald G. and Lutyens, David M. <i>The Physics of Television</i>. 1960.</p> <p>S9 Van Bergeijk, Willem A.; Pierce, John R.; and David, Edward E., Jr. <i>Waves and the Ear</i>. 1960.</p> <p>S10 Cohen, I. Bernard. <i>The Birth of a New Physics</i>. 1960.</p> <p>S11 Benade, Arthur H. <i>Horns, Strings, and Harmony</i>. 1960.</p> <p>S12 Romer, Alfred. <i>The Restless Atom</i>. 1960.</p> <p>S13 Jaffe, Bernard. <i>Michelson and the Speed of Light</i>. 1960.</p> <p>S14 Bondi, Hermann. <i>The Universe at Large</i>. 1960.</p> <p>S15 Dubos, René. <i>Pasteur and Modern Science</i>. 1960.</p> <p>S16 Koestler, Arthur. <i>The Watershed: A Biography of Johannes Kepler</i>. 1960.</p> <p>S17 Wilson, Robert R. and Littauer, Raphael. <i>Accelerators: Machines of Nuclear Physics</i>. 1960.</p> <p>S18 Davis, Kenneth S. and Day, John Arthur. <i>Water: The Mirror of Science</i>. 1961.</p> <p>S19 Battan, Louis J. <i>The Nature of Violent Storms</i>. 1961.</p> <p>S20 MacDonald, D. K. C. <i>Near Zero: The Physics of Low Temperature</i>. 1961.</p> <p>S21 Shapiro, Ascher H. <i>Shape and Flow: The Fluid Dynamics of Drag</i>. 1961.</p> <p>S22 Gamow, George. <i>Gravity</i>. 1962.</p> | <p>S23 Ovenden, Michael W. <i>Life in the Universe: A Scientific Discussion</i>. 1962.</p> <p>S24 Battan, Louis J. <i>Radar Observes the Weather</i>. 1962.</p> <p>S25 Galambos, Robert. <i>Nerves and Muscles</i>. 1962.</p> <p>S26 Page, Robert Morris. <i>The Origin of Radar</i>. 1962.</p> <p>S27 Sandfort, John F. <i>Heat Engines</i>. 1962.</p> <p>S28 Brown, Sanford C. <i>Count Rumford: Physicist Extraordinary</i>. 1962.</p> <p>S29 Battan, Louis J. <i>Cloud Physics and Cloud Seeding</i>. 1962.</p> <p>S30 Weaver, Warren. <i>Lady Luck: The Theory of Probability</i>. 1963.</p> <p>S31 Weisskopf, Victor F. <i>Knowledge and Wonder: The Natural World as Man Knows It</i>. 1963.</p> <p>S32 Bitter, Francis. <i>Mathematical Aspects of Physics</i>. 1963.</p> <p>S33 MacDonald, D. K. C. <i>Faraday, Maxwell, and Kelvin</i>. 1964.</p> <p>S34 Bascom, Willard. <i>Waves and Beaches: The Dynamics of the Ocean Surface</i>. 1964.</p> <p>S35 Andrade, E. N. da C. <i>Rutherford and the Nature of the Atom</i>. 1964.</p> <p>S36 Bondi, Hermann. <i>Relativity and Common Sense</i>. 1964.</p> <p>S37 Griffin, Donald R. <i>Bird Migration</i>. 1964.</p> <p>S38 Pierce, John R. <i>Electrons and Waves</i>. 1964.</p> <p>S39 Stewart, Alec T. <i>Perpetual Motion</i>. 1964.</p> <p>S40 Kock, Winston E. <i>Sound Waves and Light Waves</i>. 1965.</p> <p>S41 Asimov, Isaac. <i>A Short History of Chemistry</i>. 1965.</p> <p>S42 Andrade, E. N. da C. <i>Sir Isaac Newton: His Life and Work</i>. 1965.</p> <p>S43 Fink, Donald G. <i>Computers and the Human Mind: An Introduction to Artificial Intelligence</i>. 1965.</p> <p>S44 Pierce, John R. <i>Quantum Electronics</i>. 1966.</p> <p>S45 Gamow, George. <i>Thirty Years That Shook Physics</i>. 1966.</p> <p>S46 Battan, Louis J. <i>The Unclean Sky</i>. 1966.</p> |
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Table I: PSSC Science Study Series (cont.)

- S47 Ohring, George. *Weather and the Planets*. 1966.
- S48 Thomson, George. *J. J. Thomson: Discoverer of the Electron*. 1966.
- S49 Edinger, James G. *Watching for the Wind: The Seen and Unseen Influences on Local Weather*. 1966.
- S50 Blanchard, Duncan C. *From Raindrops to Volcanoes: Adventures with Sea Surface Meteorology*. 1966.
- S51 Pierce, John R. *Waves and Messages*. 1966.
- S52 Cohen, Bernard L. *The Heart of the Atom: The Structure of the Atomic Nucleus*. 1967.
- S53 Reiter, Elmar R. *Jet Streams: How Do They Affect Our Weather?* 1967.
- S54 Newhall, Beaumont. *Latent Image: The Discovery of Photography*. 1967.
- S55 Craig, Richard A. *The Upper Atmosphere*. 1968.
- S56 Clancy, Edward P. *The Tides*. 1968.
- S57 Moore, A. D. *Electrostatics*. 1968.
- S58 Sciamia, D. W. *The Physical Foundations of General Relativity*. 1969.
- S59 Landsberg, H. W. *Weather and Health: An Introduction to Biometeorology*. 1969.
- S60 Moore, A. D. *Invention, Discovery & Creativity*. 1969.
- S61 Battan, Louis J. *Harvesting the Clouds: Advances in Weather Modification*. 1969.
- S62 Kock, Winston E. *Lasers and Holography: An Introduction to Coherent Optics*. 1969.
- S63 Patterson, Elizabeth C. *John Dalton and the Atomic Theory: The Biography of a Natural Philosopher*. 1970.
- S64 Jaffe, Bernard. *Moseley and the Numbering of the Elements*. 1971.
- S65 Tarling, Don and Tarling, Maureen. *Continental Drift: A Study of the Earth's Moving Surface*. 1971.
- S66 Billmeyer, Fred. W., Jr. *Synthetic Polymers: Building the Giant Molecule*. 1971.
- S67 Rothman, Milton A. *Discovering the Natural Laws: The Experimental Basis of Physics*. 1971.
- S68 Foreman, Harry, M.D., ed. *Nuclear Power & the Public*. 1972.
- S69 Schlegel, Richard. *Inquiry into Science: Its Domains & Limits*. 1972.
- S70 Parsegian, V. L. *This Cybernetic World of Men, Machines & Earth Systems*. 1972.
- S71 Bowden, F. P. and Tabor, David. *Friction: An Introduction to Tribology*. 1973.
- S72 Denes, Peter B. and Pinson, Elliot N. *Speech Chain: The Physics & Biology of Spoken Language*. 1973.
- S73 Cohen, Bernard L. *Nuclear Science and Society*. 1974.

(Each of these books was published by Doubleday & Company, New York)

et cetera...

"Naked to the Bone"

The author of a book on the history of x-rays,¹ "documents the gradual realization [in the early days] that this useful diagnostic tool could itself turn deadly, as radiologists and patients developed burns, lesions, and (ultimately) cancers. Banquets at radiological conventions became problematic because so many diners lacked fingers or hands to manipulate the tableware."²

1. B. Holtzmann, *Naked to the Bone* (Rutgers University Press, New Brunswick, NJ, 1997).

2. Quoted in the review by P. Boyer, *Science*, **276**, 1996 (June 27, 1997).

A²B

Table II: PSSC Science Study Series Reprints

- S3** Boys, Sir Charles Vernon. *Soap Bubbles and the Forces Which Mould Them*. 3rd ed. New York: Dover Publications, Inc., 1959. (\$3.95)
- S7** Holden, Alan and Morrison, Phylis S[inger]. *Crystals and Crystal Growing*. Cambridge: MIT Press, 1982. (\$13.95)
- S10** Cohen, I. Bernard. *The Birth of a New Physics*. Revised and expanded ed. New York: Norton, 1985. (\$10.95)
- S11** Benade, Arthur H. *Horns, Strings, and Harmony*. New York: Dover Publications, Inc., 1992. (\$7.95)
- S13** Jaffe, Bernard. *Michelson and the Speed of Light*. Westport, CT: Greenwood Press, 1979. (\$35)
- S19** Battan, Louis J. *The Nature of Violent Storms*. Westport, CT: Greenwood Press, 1981. (\$35)
- S26** Page, Robert Morris. *The Origin of Radar*. Westport, CT: Greenwood Press, 1979. (\$38.50)
- S27** Sandfort, John F. *Heat Engines*. Westport, CT: Greenwood Press, 1979. (\$59.75)
- S29** Battan, Louis J. *Cloud Physics and Cloud Seeding*. Westport, CT: Greenwood Press, 1979. (\$49.75)
- S30** Weaver, Warren. *Lady Luck: The Theory of Probability*. New York: Dover Publications, Inc., 1982. (\$6.95)
- S31** Weisskopf, Victor F. *Knowledge and Wonder: The Natural World as Man Knows It*. 2nd ed. Cambridge: MIT Press, 1979. (\$13.50)
- S35** Andrade, E. N. da C. *Rutherford and the Nature of the Atom*. Magnolia, MA: Peter Smith, 1990. (\$14.50)
- S36** Bondi, Hermann. *Relativity, and Common Sense*. New York: Dover Publications, Inc., 1980. (\$4.95)
- S41** Asimov, Isaac. *A Short History of Chemistry*. Westport, CT: Greenwood Press, 1979. (\$55)
- S42** Andrade, E. N. da C. *Sir Isaac Newton: His Life and Work*. Westport, CT: Greenwood Press, 1979. (\$59.75)
- S45** Gamow, George. *Thirty Years That Shook Physics*. New York: Dover Publications, Inc., 1985. (\$5.95)
- S50** Blanchard, Duncan C. *From Raindrops to Volcanoes: Adventures with Sea Surface Meteorology*. Westport, CT: Greenwood Press, 1980. (\$49.75)
- S53** Reiter, Elmar R. *Jet Streams: How Do They Affect Our Weather?* Westport, CT: Greenwood Press, 1979. (\$35)
- S62** Kock, Winston E. *Lasers and Holography: An Introduction to Coherent Optics*. Rev. ed. New York: Dover Publications, Inc., 1981. (\$4.95)
- S66** Billmeyer, Fred. W., Jr. *Synthetic Polymers: Building the Giant Molecule*. Ann Arbor: Books on Demand (University Microfilms International). (\$58.20)
- S67** Rothman, Milton A. *Discovering the Natural Laws: The Experimental Basis of Physics*. Enlarged ed. New York: Dover Publications, Inc., 1989. (\$5.95)
- S72** Denes, Peter B. and Pinson, Elliot N. *Speech Chain: The Physics & Biology of Spoken Language*. 2nd ed. New York: W. H. Freeman & Co., 1995. (\$16.95)