

Listed below you will find the titles of 100 books most cited during the twelve-year period 1961-72.¹ As with all previous studies I've reported, the data is based on the *Science Citation Index*®. Thus, it carries whatever bias may be implied by its source journal coverage.

The present list updates a previously published list of frequently cited 'non-journal items.'² From the present list, however, we have excluded 'books' that are in fact collections of articles or chapters by members of an invisible college. Thus, the new list consists of monographs, in the real sense of that word. A few authors are listed as 'editors' only because their work compiles data, such as tables of formulas, etc.

In the lists, the books are 'ranked' by citation frequency. Not too much weight should be given the individual ranking. It is merely a convenience in listing. It is as a group that the books are important, a group that would have to be part of a 'core' collection for any developing graduate-school library.

To obviate, as far as possible, the unfairness of cross-field comparison, I have divided the 100 books into three groups: Physics and Chemistry (42 items); Biochemistry and Bio-Medicine (29 items); and Mathematics and Statistics (29 items).

It is interesting to speculate on the significance of the size of each group in this collection of 100 books. Lists of highly cited articles are usually heavily

oriented toward the biochemical and biomedical sciences. Here, physics and physical chemistry predominate.

In reviewing the lists, I succumbed to some number games, and the results of them agree with some intuitions that I think most research workers would share. Total citations to these 100 books came to 45,509 for the twelve-year period. The 29 "bio" books accounted for 25%, the 29 math-stat books for 35%, and the 42 phys-chem books for 40% of the citations. However, the 'average' math-stat book was cited more frequently than others (550 times; the 'average' phys-chem book was cited 431 times; the 'average' bio book 395 times.)

Some facts about a few titles are in order. Bellamy's *Infra-red Spectra of Complex Molecules* was cited more frequently in the Russian translation than in the original. (This observation is particularly interesting in view of the international copyright situation.)³ So if you would have more Russians read your work, publish in Russian.

When we compile these lists we must try to be cognizant of changes in titles of revised editions. In 1951, Homer W. Smith published *The Kidney, Structure and Function in Health and Disease*.⁴ In 1956, he published *Principles of Renal Physiology*.⁵ While the two books are 'different', the latter updates the former. However, the retitling 'separates' the listing in the *SCI*® citation tables. *Kidney* was cited 186 times during the 1961-1972 period. *Principles*

was cited 211 times, which just falls short of the count required to be included in the "top 100." A combined count of 397 would rank Smith's later book 22nd and even higher in the 'bio' group. Undoubtedly there are similar cases. When we have identified them, we'll be glad to supplement this initial list.

Every good library should prune its

duplicate collection. If you would like to donate a really useful collection to a new graduate library in a developing country or a growing U.S. college, this list is a good place to start. In the months to come we hope to provide additional lists that will more adequately represent some of the smaller specialties.

1. Recently we listed the *math* books and articles most cited during the period 1961-1972: Garfield, E. Highly cited works in mathematics. 1. "Pure" mathematics. CC[®] No. 47, 21 November 1973, p. 5-9; 2. "Applied" mathematics. CC No. 48, 28 November 1973, p. 5-9.

2. ----- Play the new game of 20 citations! Wherein ISI[®] reveals the 50 most frequently cited "non-journal items." CC No. 32, 11 August 1971, p. 5-9.

3. ----- Does the quality of Soviet science justify double coverage in *Current Contents*[®]. Copyright controversy calls for reappraisal. CC No. 52, 26 December 1973, p. 5-9.

4. Smith, H.W. *The Kidney, Structure and Function in Health and Disease*. Oxford University Press, 1951.

5. Smith, H.W. *Principles of Renal Physiology*. Oxford University Press, 1956.

Most Cited Books 1961-1972

PHYSICS AND CHEMISTRY

Rank	Citations	Bibliographical Data
1.	1514	Pauling, L. <i>The nature of the chemical bond and the structure of molecules and crystals; an introduction to modern structural chemistry</i> . 3rd ed. Cornell Univ. Press, 1960.
2.	1063	Herzberg, G. <i>Molecular spectra and molecular structure</i> . 3 vols. VanNostrand, 1966.
3.	946	Lederer, C.M. et al. <i>Table of isotopes</i> . 6th ed. Wiley, 1967.
4.	894	Hirschfelder, J.O. et al. <i>Molecular theory of gases and liquids</i> . Wiley, 1964.
5.	799	Bellamy, L. <i>Infra-red spectra of complex molecules</i> . 2nd ed. Methuen, 1958.
6.	746	Hansen, M. <i>Constitution of binary alloys</i> . 2nd ed. McGraw-Hill, 1958.
7.	572	Abragam, A. <i>Principles of nuclear magnetism</i> . Oxford Univ. Press, 1961.
8.	506	Wilson, E.B. et al. <i>Molecular vibrations: theory of infrared and Raman vibrational spectra</i> . McGraw-Hill, 1955.
9.	488	Robinson, R.A. & Stokes, R.H. <i>Electrolyte solutions</i> , Plenum, 1959.
10.	486	Flory, P.J. <i>Principles of polymer chemistry</i> . Cornell Univ. Press, 1953.
11.	464	Carslaw, H.S. & Jaeger, J.C. <i>Conduction of heat in solids</i> . 2nd ed. Oxford Univ. Press, 1959.
12.	451	Allen, C. <i>Astrophysical quantities</i> . 2nd ed., Oxford Univ. Press, 1963.
13.	426	Born, M. & Huang, K. <i>Dynamical theory of crystal lattices</i> . Oxford Univ Press, 1954.
14.	418	Born, M. & Wolf, E. <i>Principles of optics</i> . 4th ed. Pergamon, 1970.
15.	378	Nakamoto, K. <i>Infra-red spectra of inorganic and coordination compounds</i> . 2nd ed. Wiley, 1970.
16.	378	Pimentel, G.C. & McClellan, A.L. <i>The hydrogen bond</i> . Freeman, 1960.

Rank	Citations	Bibliographical Data
17.	377	Landau, L.D. & Lifshitz, E. <i>Electrodynamics of continuous media</i> . Addison-Wesley, 1960.
18.	376	Edmonds, A.R. <i>Angular momentum in quantum mechanics</i> . Princeton Univ. Press, 1968.
19.	366	Pople, J.A. <i>et al. High resolution nuclear magnetic resonance</i> . McGraw-Hill, 1959.
20.	361	Landau, L.D. & Lifshitz, E. <i>Statistical physics</i> . 2nd ed. Addison-Wesley, 1969.
21.	361	Herzberg, G. <i>Infra-red and Raman spectra of polyatomic molecules</i> . VanNostrand, 1945.
22.	345	Glasstone, S. <i>et al. Theory of rate processes</i> . McGraw-Hill, 1941.
23.	325	Harrison, W.A. <i>Pseudopotentials in the theory of metals</i> . W.A. Benjamin, 1966.
24.	314	Schlichting, H. & K. <i>Boundary layer theory</i> . 6th ed. McGraw-Hill, 1968.
25.	308	Abriksov, A.A. <i>et al. Quantum field theoretical methods in statistical physics</i> . Pergamon, 1965.
26.	299	Streitwieser, A. <i>Molecular orbital theory for organic chemists</i> . Wiley, 1961.
27.	298	Landau, L.D. & Lifshitz, E. <i>Quantum mechanics: non-relative theory</i> . Addison-Wesley, 1958.
28.	293	Spitzer, L. Jr., <i>Physics of fully ionized gases</i> . 2nd ed. Wiley, 1962.
29.	292	Hultgren, R. <i>et al. Selected values of thermodynamic properties of metals and alloys</i> . Wiley, 1963.
30.	291	Courant, R. & Hilbert, D. <i>Methods of mathematical physics</i> . Wiley, 1962.
31.	284	Griem, H. <i>Plasma spectroscopy</i> . McGraw-Hill, 1964.
32.	280	Rose, M.E. <i>Elementary theory of angular momentum</i> , Wiley, 1957.
33.	278	Morse, P.M. & Feshbach, H. <i>Methods of theoretical physics</i> . 2 pts. McGraw-Hill, 1953.
34.	264	Timmermans, J. <i>Physico-chemical constants of pure organic compounds</i> . 2nd ed. American Elsevier, 1965.
35.	258	Lamb, H. <i>Hydrodynamics</i> . Dover, 1932.
36.	248	Harned, H.S. & Owen, B.B. <i>Physical chemistry of electrolytic solutions</i> . 3rd ed. VanNostrand, 1958.
37.	241	Townes, C.H. & Schawlow, A.L. <i>Microwave spectroscopy</i> . McGraw-Hill, 1955.
38.	235	Chandrasekhar, S. <i>Hydrodynamic and hydromagnetic stability</i> . Oxford Univ. Press, 1961.
39.	230	Latimer, W.M. <i>Oxidation potentials</i> . 2nd ed. Prentice-Hall, 1952.
40.	229	Jackman, L.M. & Sternhell, S. <i>Applications of nuclear magnetic resonance spectroscopy in organic chemistry</i> . Pergamon, 1960.
41.	224	Bethe, H.A. & Salpeter, E.E. <i>Quantum mechanics of one and two electron atoms</i> . Springer, 1957.
42.	220	McClellan, A.L. <i>Tables of experimental dipole moments</i> . Freeman, 1963.

Most Cited Books 1961-1972
BIOCHEMISTRY AND BIOMEDICINE

Rank	Citations	Bibliographical Data
1.	1531	Pearse, A.G. <i>Histochemistry: theoretical and applied</i> . 2 vols. 3rd ed., Williams & Wilkins, 1969.
2.	891	Umbreit, W.W., Burris, R.H. & Stauffer, J.F. <i>Manometric and biochemical techniques</i> . 5th ed. Burgess, 1971.
3.	723	Kabat, E.A. <i>Experimental immunochemistry</i> . 2nd ed. C.C. Thomas, 1971.
4.	501	Lillie, R.W. <i>Histopathologic technic and practical histochemistry</i> . 3rd ed. McGraw-Hill, 1965.
5.	501	Adams, M.H. <i>Bacteriophages</i> . Wiley, 1959.
6.	471	Gomori, G. <i>Microscopic histochemistry</i> . Univ. of Chicago Press, 1952.
7.	458	Breed, R.S. et al. eds. <i>Bergey's Manual of determinative bacteriology</i> . 7th ed. Williams & Wilkins, 1957.
8.	443	Goodman, L.S. & Gilman, A. <i>Pharmacological basis of therapeutics</i> . 4th ed. Macmillan, 1970.
9.	395	Bergmeyer, H.U. ed. <i>Methods of enzymatic analysis</i> . Academic, 1965
10.	374	Osgood, C.E. et al. <i>Measurement of meaning</i> . Univ. of Illinois Press, 1967.
11.	365	Stahl, E. ed. <i>Thin-layer chromatography; a laboratory handbook</i> . 2nd. ed. Springer, 1965.
12.	327	Wintrobe, M.M. <i>Clinical hematology</i> . 6th ed. Lea & Febiger, 1967.
13.	320	Dixon, M. & Webb, E. <i>Enzymes</i> . 2nd ed. Academic, 1964.
14.	306	Hollingshead, A.B. & Redlich, F.C. <i>Social class and mental illness</i> . Wiley, 1958.
15.	303	Ferster, C.B. & Skinner, B.F. <i>Schedules of reinforcement</i> . Appleton, 1957.
16.	296	Conway, E.J. <i>Microdiffusion analysis and volumetric error</i> . Chemical Publishing Co., 1963.
17.	294	Barka, T. & Anderson, P.J. <i>Histochemistry</i> . Hoeber, 1963.
18.	286	Brody, S. <i>Bioenergetics and growth, with special reference to the efficiency complex in domestic animals</i> . Hafner, 1964.
19.	286	Thorndike, E.L. <i>Teachers' word book of thirty thousand words</i> . Teachers College Press, Columbia Univ., 1944.
20.	282	Johansen, D.A. <i>Plant microtechnique</i> . McGraw-Hill, 1940.
21.	263	Neisser, U. <i>Cognitive psychology</i> . Appleton, 1967.
22.	239	Eccles, J.C. <i>Physiology of synapses</i> . Springer, 1964.
23.	235	Edwards, P.R. <i>Identification of Enterobacteriaceae</i> . 3rd ed. Burgess, 1971.
24.	232	Svedberg, T. & Pedersen, K.O. <i>Ultracentrifuge</i> . Johnson Rep., 1940.
25.	231	Wolpe, J. <i>Psychotherapy for reciprocal inhibition</i> . Stanford Univ. Press, 1958.
26.	226	Mann, T. <i>Biochemistry of semen and of the male reproductive tract</i> . Barnes & Noble, 1964.
27.	225	Hoffman, B. & Cranefield, P.F. <i>Electrophysiology of the heart</i> . McGraw Hill, 1960.
28.	220	Festinger, L. <i>Theory of cognitive dissonance</i> . Stanford Univ. Press, 1957.
29.	219	Jensen, W.A. <i>Botanical histochemistry, principles and practice</i> . Freeman, 1962.

Most Cited Books 1961-1972
MATHEMATICS AND STATISTICS

Rank	Citations	Bibliographical Data
1.	3254	Snedecor, G.W. & Cochran, W.G. <i>Statistical methods</i> . 6th ed. Iowa, 1967.
2.	1824	Siegel, S. <i>Nonparametric statistics for the behavioral sciences</i> . McGraw-Hill, 1960.
3.	1514	Steel, R.G. & Torrie, J.H. <i>Principles and procedures of statistics</i> . McGraw-Hill, 1962.
4.	1444	Winer, B.J. <i>Statistical principles in experimental design</i> . McGraw-Hill, 1962.
5.	622	Abramowitz, M. & Stegun, I.A. eds. <i>Handbook of mathematical functions with formulas, graphs, and mathematical tables</i> . Dover, 1964.
6.	563	Feller, W. <i>Introduction to probability theory and its applications</i> . 2 vols. 3rd ed. Wiley, 1968.
7.	518	Dunford, N. & Schwartz, J.T. <i>Linear operators</i> . 3pts. Wiley, 1958.
8.	432	Erdelyi, A. ed. <i>Higher transcendental functions</i> . 3 vols. McGraw-Hill, 1953.
9.	365	Gradshteyn, I.S. & Tzyzhik, I.M. <i>Tables of integrals, series, and products</i> . Academic, 1966.
10.	341	Dixon, W.J. & Massey, F.J. Jr. <i>Introduction to statistical analysis</i> . 3rd ed. McGraw-Hill, 1969.
11.	320	Doob, J.L. <i>Stochastic processes</i> . Wiley, 1953.
12.	315	Lindquist, E.F. <i>Design and analysis of experiments in psychology and education</i> . Houghton-Mifflin, 1956.
13.	307	Finney, D.J. <i>Statistical methods in biological assay</i> . Hafner, 1964.
14.	299	Crank, J. <i>Mathematics of diffusion</i> . Oxford Univ. Press, 1956.
15.	294	Zygmund, A. <i>Trigonometric series</i> . Cambridge Univ. Press, 1968.
16.	293	Scheffe, H. <i>Analysis of variance</i> . Wiley, 1959.
17.	279	Cochran, W.G. & Cox, G.M. <i>Experimental designs</i> . Wiley, 1957.
18.	271	Loeve, M. <i>Probability theory</i> . 3rd ed. VanNostrand, 1963.
19.	271	Cramer, H. <i>Mathematical methods of statistics</i> . Princeton Univ. Press, 1946.
20.	265	Erdelyi, A. ed. <i>Tables of integral transforms</i> . 2 vols. McGraw-Hill, 1954.
21.	247	Edwards, A.L. <i>Experimental design in psychological research</i> . Holt Rinehart & Winston, 1968.
22.	246	Finney, D.J. <i>Probit analysis</i> . Cambridge Univ. Press, 1971.
23.	246	Anderson, T.W. <i>Introduction to multivariate statistical analysis</i> . Wiley, 1958.
24.	242	Kelley, J.L. <i>General topology</i> . VanNostrand, 1955.
25.	237	Hays, W.L. <i>Statistics for psychologists</i> . Holt, Rinehart & Winston, 1963.
26.	237	Sokal, R.R. & Sneath, P.H. <i>Principles of numerical taxonomy</i> . Freeman, 1963.
27.	235	Kendall, M.G. & Stuart, A. <i>Advanced theory of statistics</i> . 3 vols. Hafner, 1967-9.
28.	234	Watson, G.N. <i>Theory of Bessel functions</i> . Cambridge Univ. Press, 1944.
29.	225	Fisher, R.A. <i>Statistical methods for research workers</i> . Hafner, 1969.