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CURRENT COMMENTS

So Who's Perfect? Corrections and Additions to the 250 Most-Cited Authors List

Number 21, May 22, 1978

Last December we published three essays in *Current Contents®* on the 250 most-cited primary authors, 1961-1975.[1-3] Based on data from the *Science Citation Index®* for 1961-1975, the studies gave the number of citations each author received during that time period, and correlated high citation frequency with authors' ages, memberships in national academies, and Nobel prizes. A list of the authors' most-cited publications was also supplied.

As a number of readers have noted, several errors were made in the lists. After more than a little additional effort, we are now able to supply the corrections which appear in Figure 1.

Since there was no "logical" reason to cut off the original lists at 249 or 250 names, we have taken this opportunity to list (in Figure 2) those authors who were cited 4,000 or more times, but did not make the top 249. Were space unlimited, I would be pleased to go much further, since we know that most authors who have been highly cited have distinguished themselves in one way or another. I hope we can expand these lists in the future.

The preparation of the original 250 most-cited authors list last year was in some ways a unique experience for us. Although we had done many citation studies before, most dealt with *journals* or *articles*. While these studies are not simple, they are easier to complete than ones that deal with *authors* and give as much information as we did. The reason for this is that much of the bibliographic information we need to deal with journals and articles is contained in our own files. Personal information on authors, such as birthdates and academy memberships, has to be obtained from other sources. This is one reason that even the few studies on authors we did in the past were limited. For the most part, we simply listed their names and their citation counts.

To obtain biographical information on our 250 authors, we checked two biographical dictionaries: *World Who's Who in Science* and *American Men and Women in Science (AMWS)*. All but about 40 of the original 250 authors were

Figure 1: Corrections to the lists of the 250 most-cited authors, 1961-1975, which appeared in *Current Contents* Nos. 49, 50, and 51 in 1977.

1. ***Birth and Death Dates***

Allison A C:
born in 1925, not 1928

Born M:
1882-1970 (death date omitted)

Cuatrecasas P:
born in 1936, not 1903

Hansen M:
born in 1901, not 1921

King R B: born in 1938, not 1903, making him the youngest author on the list

Reed L J:
1886-1956, not born in 1926

Seeger A:
born in 1927, not 1914

Slater J C:
born in 1900, not 1926

Weber K:
born in 1936, not 1916

2. ***Academy Memberships***

Many memberships in national science academies were originally omitted because the information was not available. However, many individuals and some academies have since alerted us to memberships that were missing. The following is not necessarily complete, but it does indicate the additional information we have received. Academy memberships which were not on the original list are in boldface type.

Name	*National Academy*	*Name*	*National Academy*
Arnon D I	**Sweden**, U.S.	Fisher R A	U.K., **U.S.***
Berson S A	**U.S.***	Friedel J	France, **Sweden**
Burnet F M	**Australia, Sweden,** U.K., U.S.	Hodgkin A L	**Sweden,** U.K., U.S.
Carlsson A	**Sweden**	Ouchterlony O	**Sweden**
Chance B	**Sweden,** U.S.	Smith H W	**U.S.***
Chandrasekhar S	**Sweden,** U.K., U.S.	Sutherland E W	**U.S.***
		Van Slyke D D	**U.S.***
Cope A C	**U.S.***	Van Vleck J H	France, **Sweden,** U.K., U.S.
Courant R	**U.S.***		
DeRobertis E	**Argentina**	von Euler U S	**Sweden,** U.K., U.S.
Djerassi C	**Sweden,** U.S.		
Eccles J C	**Australia,** U.K., U.S.	Winstein S	**U.S.***

***Former (deceased) members.**

3. ***Corrections to the list of most-cited research publications by the 250 authors***

The publications given on the original list for L.S. Goodman and M. Hansen were, respectively, a textbook and a reference book, rather than reports of original research. The publication attributed to A.N. Nesmeyanov was a work by his brother. The most-cited research publications by these authors are:

Goodman L S, Grewal M S, Brown W C & Swinyard E A. Comparison of maximal seizures evoked by pentylenetetrazol (metrazol) and electroshock in mice, and their modification by anticonvulsants.
J. Pharmacol. Exp. Ther. **108**:168-97, 1953.
[This article was cited 62 times from 1961 to 1975.]

Figure 1. Corrections to the 250 most-cited authors list (continued).

Hansen M & Smith A L. Studies on the mechanism of oxidative phosphorylation. 7. Preparation of submitochondrial particle (ETP_H), which is capable of fully coupled oxidative phosphorylation.
Biochim. Biophys. Acta **81**:214-22, 1964.
[This article was cited 162 times from 1964 to 1975.]

Nesmeyanov A N & Sokolik R A. *Metody elemento-organicheskoi khimii. Bor, aliuminii, gallii, indii, talii. (Methods of elemento-organic chemistry. Boron, aluminum, gallium, indium and thallium.)* Moscow: Nauka, 1964.
[This publication was cited 101 times from 1964 to 1975.]

4. ***Replacements on the list***

The names "E. Muller" and "S. Levine," which were each treated as one person on the original lists, proved to be homographs representing several persons, none of whom had received enough citations to make the list. M. Abramowitz was on the list because of a handbook, rather than reports of original research.

These three names have therefore been deleted from the list and replaced with the following authors:

Hill AV (1886-1977)
Total times cited 1961-1975: **4,032**
Yearly average: **269**
Times cited in 1974: **250**
Times cited in 1975: **255**
Prizes: **Nobel Prize in Physiology or Medicine, 1922**
Membership in national academies: **U.S., U.K.**
Most-cited publication:
Hill AV. The heat of shortening and the dynamic constants of muscle.
Proc. Roy. Soc. London Ser. B. **126**:138-95, 1938.
[This article was cited 517 times from 1961 to 1975.]

Rouser G (1923)
Total times cited 1961-1975: **4,032**
Yearly average: **269**
Times cited in 1974: **341**
Times cited in 1975: **243**
Most-cited publication:
Rouser G, Kritchevsky G, Heller D & Lieber E. Lipid composition of beef brain, beef liver & sea anemone. 2. Approaches to quantitative fractionation of complex lipid mixtures.
J. Amer. Oil Chem. Soc. **40**:425-54, 1963.
[This article was cited 749 times from 1963 to 1975.]

Wurtman R J (1936)
Total times cited 1961-1975: **4,030**
Yearly average: **269**
Times cited in 1974: **443**
Times cited in 1975: **385**
Most-cited publication:
Wurtman R J & Axelrod J. A sensitive and specific assay for the estimation of monoamine oxidase.
Biochem. Pharmacol. **12**:1439-41, 1963.
[This article was cited 283 times from 1963 to 1975.]

[redacted]

Membership in national academies:
U.S., Poland

was cited 125 times from 1962 to 1975.]

Nelson N (1910)
Total times cited 1961-1975: **4,016**
Yearly average: **267**
Times cited in 1974: **270**
Times cited in 1975: **307**

Most-cited publication:
Nelson N. Photometric adaptation of the Somogyi method for the determination of glucose.
J. Biol. Chem. **153**:375-80, 1944.
[This article was cited 3,265 times from 1961 to 1975.]

Porter K R (1912)
Total times cited 1961-1975: **4,003**
Yearly average: **266**
Times cited in 1974: **197**
Times cited in 1975: **288**
Membership in national academies: **U.S.**

Most-cited publication:
Porter K R & Palade G E. Studies in the endoplasmic reticulum. 3. Its form and distribution in striated muscle cells.
J. Biophys. Biochem. Cytol. **3**:269, 1957.
[This article was cited 313 times from 1961 to 1975.]

Smith I (1926)
Total times cited 1961-1975: **4,025**
Yearly average: **268**
Times cited in 1974: **258**
Times cited in 1975: **208**

Most-cited publication:
Smith I. Colour reactions to paper chromatograms by a dipping technique.
Nature **171**:43-4, 1953. [This article was cited 183 times from 1961 to 1975.]

located in these sources. Getting information about these last 40 was more of a challenge. Since birth dates for authors of books are listed on the index cards in card catalogs, we consulted the National Union Catalog at a local university library and got correct birth dates for many of those who had published books. But we were still left with a number of authors for whom we had no personal data at all—people who were still just names on our printouts.

By consulting *ISI's Who is Publishing in Science*® or by obtaining journal articles by these remaining authors, we were able to find their addresses. The US National Academy of Sciences provided us with birth dates for its members, and we phoned other authors living in the US. Embassies were contacted for information on authors living outside the US.

Determining whether authors were members of national science academies was a difficult process. Although academy memberships were listed for the people we found in *World Who's Who in Science* and *AMWS*, the most recent editions of both these references are several years old. Thus, we had to write to national academies throughout the world for their current membership lists. Some academies responded, but many did not. So we were forced to omit many academy memberships.

After the essays had been published, we also discovered that we should not have limited our request to *current* membership information. For example, the list of members of the US National Academy of Sciences which we requested did not include deceased members. That's why we failed to mention that a few of the deceased authors on our list had been Academy members.

To create the bibliography containing the most-cited publication for each author, we first relied on the *SCI*® *'s Source Index.* However, since so many of the articles were published before 1961, we usually consulted the original journals in local libraries.

While we were gathering these data, we found that some of the most-cited publications were in fact textbooks or handbooks. This suggested, as we had expected from previous studies, that some people on the list had achieved high impact because of their work as editors. When a text or a handbook was the most-cited item, we checked the author's second most-cited publication. If this was a report of original research, it was used. If a person proved not to have written significant research articles, his or her name was deleted from the list.

Among the more difficult jobs in assembling the list of 250 authors was the identification of homographs (names that represent two or more authors). The *SCI* provides initials only, and not first names of cited authors. Works by two or more people with the same surname and initials are of necessity listed under one entry.

Homograph consciousness might best describe the care we gave to this problem. Whenever we con-

a physicist, but the item was a biochemistry paper, we knew we probably had a homograph problem.

We then had to separate the citations—those belonging to physicist J. Doe, those received by biochemist J. Doe, etc. If none of these people had received enough citations to make the list, the name was dropped. We added the next person's name to the list and began to gather personal information about him or her.

When the lists were approaching completion, we sent them to seven eminent scientists for review. They made many helpful comments and alerted us to some errors at that stage of the work.

Despite all our efforts, a few mistakes remained undetected. I apologize for these errors, especially to those who were personally affected by any of them. Nevertheless, I hope it is obvious that the number of errors is relatively small if the full size and scope of the study necessity of contacting authors to verify their own personal data.

In the next few months we will be publishing two very important citation studies. One will deal with frequently cited authors in science. For the first time, however, this study will not be restricted to "first" authors. There will also be a study of frequently cited social scientists.

We will continue to make every reasonable effort to assure accuracy in these studies. The magnitude of the work involved seems to ensure that a few factual errors will occur. But with your help we can keep these to a minimum. If you believe we have committed the most serious error of all—that of omitting a highly cited author—please contact me. We will provide the citation data for any single author. You can, of course, obtain this information yourself by consulting the *Science Citation Index* directly.

REFERENCES

1. **Garfield E.** The 250 most-cited primary authors, 1961-1975. 1. How the names were selected. *Current Contents* (49):5-15, 5 December 1977.
2. ----------. The 250 most-cited primary authors, 1961-1975. 2. The correlation between citedness, Nobel prizes, and academy memberships. *Current Contents* (50):5-15, 12 December 1977.
3. ----------. The 250 most-cited primary authors, 1961-1975. 3. Each author's most-cited publication. *Current Contents* (51):5-20, 19 December 1977.