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Chemical Engineering Journal 69 (1998) 151–156

Chemical Engineering Journal

The profile of the Chemical Engineering Journal and Biochemical Engineering Journal as reflected in its publications, references and citations, 1983–1996

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Abstract

Scientometric techniques have been used to help outline the profile of the Chemical Engineering Journal and Biochemical Engineering Journal during the 1983–1996 period.

Keywords: Chemical Engineering Journal; Biochemical Engineering Journal; Scientometric techniques

1. Introduction

Journals behave very much like living, or even human, beings. They are born (launched), may marry (merge), divorce (split) and, finally, die (cease), just to mention a few of the most important events of their life cycle. It is even claimed that the demography of journals 'reveals a more complicated and colourful picture than that of humans' [1].

The biography of a journal can be given in various ways. On one end, one finds personal and descriptive editorial memoirs; on the other, professional analyses from scientific, economic, sociological or other points of view.

Statistics on publications, references, citations and other bibliographical items—whether called scientometrics, bibliometrics or by any other name—has lately become a standard basis of classifying, mapping, assessing journals. A milestone paper on these topics has been published almost 25 years ago [2]; skepticism regarding the reliability of such kind of a mirror is almost of the same age [3]. When compared with conclusions drawn from other, more 'conservative' methods, results of scientometric analyses usually fall into one of two categories. Either they coincide—in this case scientometrics is generally considered superfluous and, therefore, discarded—or they contradict—in this case scientometrics is generally considered irrelevant and, therefore, discarded. Nevertheless, there is still a devoted group (including the author) who believe that some non-trivial and yet relevant conclusions might sometimes be drawn from such statistical reasoning, and that the mirror of scientometrics is worth a glance even if not for a privileged but just for a different view.

In the present study, scientometric techniques have been used to help outline a profile of the journal Chemical Engineering Journal and Biochemical Engineering Journal (hencetoforth abbreviated as CEJ) during the 1983–1996 period. The main data source of the analysis was the Scientometric Indicators Datafiles of the ISSRU (Budapest, Hungary) [4] derived from the Science Citation Index (SCI) database of the Institute for Scientific Information (ISI, Philadelphia, PA, USA).

2. Analysis of publications

A total number of 1005 papers published in Volumes 27 (1983) through 62 (1996) of CEJ and categorized by SCI into the document types of Articles (879 items), Letters (17 items), Notes (102 items) and Reviews (7 items) were taken into account. These types are usually regarded in our Datafiles as relevant (citable) items, while all others (such as biographical items, editorials, corrections) are discarded.

2.1. *Where do the publications come from?*

Countries of origin can be assigned to papers according to the corporate addresses indicated in the by-line of the papers

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1385-8947/98/$19.00
PII S1385-8947(98)00074-6

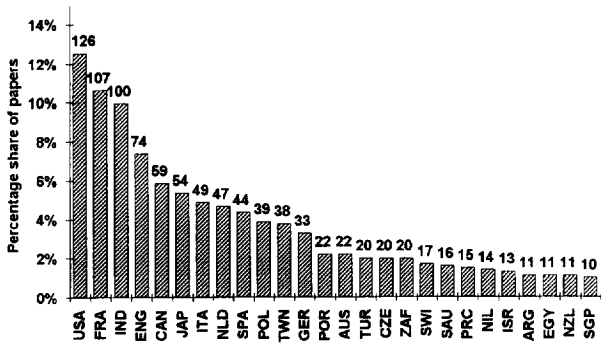

Fig. 1. Percentage share (vertical scale) and absolute number (on the top of the bars) of papers in CEJ by countries (for an explanation of the country codes see Appendix A).

or given as a footnote. It must be noted that the SCI has a policy of omitting certain addresses (e.g., those preceded by the phrase 'on leave from'), but the number of losses from such omissions is statistically negligible. All addresses of all contributing authors are recorded in the database; in our statistics each contributing country is counted exactly once. What counts is, thus, the number of papers to which (any number of) authors from the given country contributed.

Authors from a total of 61 countries contributed to CEJ in the period under study. Eight countries appeared only once; the most productive one, the USA, was present with 126 publications. The percentage share and the absolute number of publications written by authors of the 26 most productive countries is given in Fig. 1. It is not the leading position of the USA that is surprising, but the relatively small margin between the USA and the runner-up France and the even smaller difference between France and India.

2.2. *International coauthorship patterns*

International cooperation has an ever growing role in contemporary scientific research. It usually manifests itself in internationally coauthored papers, which can easily be tracked by bibliometric tools [5]. The percentage share of internationally coauthored papers in the total publication output strongly depends on the subject field. In some areas of physics, e.g., in particle physics, publications are almost exclusively international, while in mathematics and, in the other end of the scale, in technological fields, international cooperation is less dominant. In the 1990s, the world average share of internationally coauthored papers is about 20–25%.

Among the 1005 papers published in CEJ (volumes 27–62), 105 had authors from more than one country. This fairly low proportion can be considered a characteristic of the subject field, as can be seen from the fact that the papers citing CEJ and published in a variety of other journals (see Table 5

Table 1
Journal papers and non-journal items most cited in CEJ (volumes 27–62)

Item	Times cited
Reid, R.C., Sherwood, T.K.: The Properties of Gases and Liquids, Their estimations and Correlation. Mc Graw-Hill. New York. 1958	70
Bird, R.B., Stewart, W.E., Lightfoot, E.N.: Notes on Transport Phenomena. Wiley. New York. 1958	42
Levenspiel, O.: Chemical Reaction Engineering. Wiley. New York. 1972	37
Danckwerts, P.V.: Gas–Liquid Reactions. Mc Graw-Hill, New York. 1970	23
Villadsen, J., Michelson, M.: Solution of Differential Equation Models for Polynomial Approximation. Prentice-Hall. Englewood Cliffs, 1977	22
Shah, Y.T., Kelkar, B.G., Godbole, S.P., Deckwer, W.D.: Design parameter estimations for bubble column reactors. AICHE Journal 28(3) 353–379 (1982)	18
Bailey, J., Ollis, D.F.: Biochemical Engineering Fundamentals. Mc Graw-Hill. New York. 1986	15
Calderbank, P.H., Mooyoung, M.B.: The continuous phase heat and mass transfer properties of dispersions. Chemical Engineering Science 16(1–2) 39–54 (1961)	15
Froment, G.F., Bischoff, K.B.: Chemical Reactor Analysis and Design. Wiley, New York. 1979	15
Kunii, D., Levenspiel, O.: Fluidization Engineering. Krieger. New York. 1969	14
Levich, V.: Physicochemical Hydrodynamics. Prentice-Hall, Englewood Cliffs. 1962	14
Ruthven, D.M.: Principles of Adsorption and Adsorption Processes. Wiley. New York. 1984	13
Wallis, G.B.: One-Dimensional Two-Phase Flow. Mc Graw-Hill. New York. 1969	13
Danckwerts, P.V.: Continuous flow systems: Distribution of residence times. Chemical Engineering Science. 2(1) 1–13 (1953)	12
Geldart, D.: Types of gas fluidization, Powder Technology 7(5) 285–292 (1973)	12
Helfferich, F.: Ion Exchange. Mc Graw-Hill, Charlotte. 1962	12
Marquardt, D.W.: An algorithm for least squares estimation of nonlinear parameters. J. Soc. Ind. Appl. Math. 11(2) 431–444 (1963)	12
Akita, K., Yoshida, F.: Gas hold-up and volumetric mass-transfer coefficient in bubble columns: Effect of liquid properties. Ind. and Eng. Chem. Process, 12(1) 76–80 (1973)	11
Finlayson, B.A.: Nonlinear Analysis in Chemical Engineering. Mc Graw-Hill, New York. 1980	11
Joshi, J.B.: Axial mixing in multiphase contactors: A unified correlation. T. Ind. Chem. Eng., 58(3) 155–165 (1980)	11
Wilke, C.R.: Correlation of diffusion coefficients in dilute solutions, AICHE Journal, 1(2) 264–270 (1955)	11
Deckwer, W.D.: On the mechanism of heat transfer in bubble column reactors. Chemical Engineering Science. 35(6) 1341–1346 (1980)	10
Richardson, J.F.: T. Ind. Chem. Eng., 32:35 (1954)	10
Rodrigues, A.E.: Intraparticle forced convection effect in catalyst diffusivity measurements and reactor design, AICHE Journal, 28(4) 541–546 (1982)	10
Van Triet, K.: Review of measuring methods and results in nonviscous gas–liquid mass transfer in stirred vessels. Ind. and Eng. Chem. Process, 18(3) 357–364 (1979)	10

later in this paper) have a very similar ratio of internationally coauthored papers.

Not only the extent but also the structure of international cooperations differs from that in other fields of research. While typically cooperation between the scientific superpowers and between smaller countries and the superpowers dominate, in CEJ coauthorship links are scattered almost uniformly among countries. The strongest coauthorship link (seven coauthored papers) is quite surprisingly between Northern Ireland and New Zealand but this is actually the result of the cooperative activity of a single author.

3. Analysis of references

A typical CEJ paper had about 20 items in its list of references. In the period under study, about 20 000 references were made to about 16 000 items. About 75% of the referenced items were journal articles, but a few non-journal items attracted significantly higher number of references than any journal article. The list of items most cited in CEJ during the period under study is given in Table 1. In case of non-journals items, references to different editions of the same work were totalled.

The approximately 15 000 journal references were scattered among closely 1500 journal titles (it is impossible to tell the exact number because of the significant number of defective, misspelled or otherwise ambiguous references), half of them occurring only once. More than half of the references cited, however, not more than 17 journals, each occurring at least 100 times. These most frequently cited journals are listed in Table 2.

The age distribution of the references is shown in Fig. 2. The maximum (modus) of the distribution is at 4 years, the median ('reference half-life') at 10 years. This latter value indicates that CEJ papers largely rely upon more 'mature' literature, but the value is not unusual in this field. It might be also connected with the fact that the 'golden age' of chemical engineering research was in the 60's and 70's, and some fundamental literature published in this period is permanently cited from that time on. Another indicator characteristic to the age of the references is the Price-index: the percentage share of references not older than 5 years. The Price-index of CEJ is 27%—again, far from the 80% of the hottest particle physics or molecular biology journals, but fits to its own subject field.

Some of the references found in the CEJ volumes 27 through 62 are worth mentioning just because of their extreme age. References to works from the 19th century or earlier are collected in Table 3 in the order of their age.

Table 2
Journals most cited in CEJ (volumes 27–62)

Journal title	Times cited
Chemical Engineering Science	1586
AICHE Journal	1216
Industrial and Engineering Chemistry[a]	1152
Biotechnology and Bioengineering	812
Chemical Engineering Journal and Biochemical Engineering Journal[b]	556
Canadian Journal of Chemical Engineering	372
Transactions of the Industrial Chemical Engineers	281
Journal of Chemical Engineering of Japan	235
Chemical Engineering Communications	206
Journal of Chemical Engineering Data	198
Chemical Engineering Progress	187
Chemische Ingeneurstechnik	150
Journal of Catalysis	136
Journal of the American Chemical Society	122
Journal of Physical Chemistry (US)	115
Powder Technology	110
International Chemical Engineering	108

[a]All series together.
[b]Before 1983: Chemical Engineering Journal.

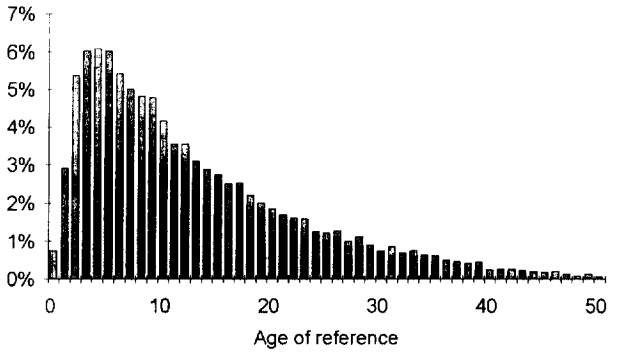

Fig. 2. Distribution of references by age.

Table 3
The oldest references found in CEJ (volumes 27–62)

Author	Bibliographic data	Year
Franklin B.	Phil. T. Roy. Soc. London 64:445	1774
Dalton J.	Mem. P. Manchester Lit. 5:535	1802
Cabral J.M.S.	US Patent 000034657	1836
Wan J.K.S.	US Patent 000474038	1836
Grove W.R.	Phil. Mag. 14:127	1839
Beer A.	Ann. Phys. Chem. 96:1	1855
Beer A.	Ann. Phys. Chem. 96:210	1855
Houzeau A.	C.R. Hebd. Acad. Sci. 76:572	1873
Plateau J.	Statique Experiment and Theorie	1873
Van der Waals J.D.	Thesis, Univ. Leiden	1873
Weber H.F.	Wildemanns Ann. Phys. 10:103	1880
Clausius R.	Ann. Phys. Chem. 9:337	1880
Graetz L.	Ann. Phys. Chem. 25:337	1885
Hormann G.	Thesis, Univ. Göttingen	1887
Howe W.	Thesis, Univ. Berlin	1887
Herschel C.M.	ASCE 17:228	1887
Thomson W.	Phil. Mag. 24:503	1887
Hariot M.	B. Soc. Chim. Fr. 170	1889
Setschenow J.	Z. Phys. Chem. 4:117	1889
Maxwell J.C.	Treatise of Electricity	1892
Rayleigh J.W.	Phil. Mag. 34:481	1892
Hurter F.	J. Soc. Chem. Ind. London 12:277	1893
Van der Waals J.D.	Z. Phys. Chem. 13:657	1894
Bancroft W.D.	Phys. Rev. 3:120	1895
Ostwald W.	Z. Phys. Chem. 22:289	1897

It is worth noting that these 'citation Methuselahs' were mentioned not in some particular historical studies but in 18 research papers.

4. Analysis of citations

In the present study, citations in the period 1983–1996 to all previous years are taken into consideration; special attention is paid to citations to CEJ papers published during the period 1983–1996 (volumes 27 through 62).

First, some summary statistics. During the years 1983–1996, about 1300 CEJ papers received a total of 6450 citations from 4860 citing papers (including 562 citations from 387 CEJ papers: a journal self-citation rate of 8.7%).

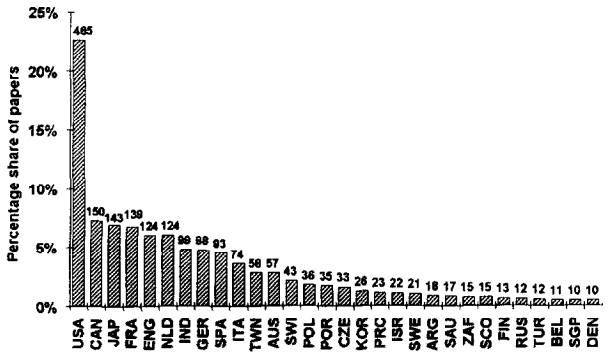

Fig. 3. Percentage share (vertical scale) and absolute number (on the top of the bars) of papers citing CEJ by countries (for an explanation of the country codes see Appendix A).

Table 4
Countries ranked by Citation/Publication Preference Index

Rank	Country	Citation/Publication Preference Index
1	USA	1.81
2	Germany	1.45
3	Japan	1.30
4	Netherlands	1.29
5	Australia	1.27
6	Canada	1.24
7	Switzerland	1.24
8	Spain	1.03
9	Israel	0.83
10	England	0.82
11	Czech Republic	0.81
12	Argentina	0.80
13	Portugal	0.78
14	P.R. China	0.75
15	Taiwan	0.75
16	Italy	0.74
17	France	0.64
18	Saudi Arabia	0.52
19	Singapore	0.49
20	India	0.48
21	Poland	0.45
22	South Africa	0.37
23	Turkey	0.29

A detailed analysis of the citations received in 1983–1996 by the CEJ papers published in 1983–1996 showed that from the 1005 papers published, 620 (62%—a fairly high percentage) were cited and received a total of 2722 citations (2.71 per paper) from 2216 citing items (including 258 CEJ papers).

4.1. The sources of the citations

The statistics of this section are based on the 1958 (=2216–258) papers citing CEJ and published in other journals. The country distribution of the authors (Fig. 3) superficially resembles to the distribution of the authors of CEJ papers (cf. Fig. 1). A closer look, however, reveals interesting differences.

Table 4 lists the countries in the decreasing order of an indicator we called the Citation/Publication Preference Index. This indicator is the ratio of the country's percentage share in papers citing CEJ to its percentage share in papers published in the journal. The value of this indicator can be interpreted in two ways: from the side of the numerator or of the denominator. Thus, a high value may either mean that authors from the country have a special preference for citing CEJ or that it is negatively biassed as publishing in the journal is concerned; similarly, a low value may equally be interpreted as a negative bias in citation or as a positive bias in publication behavior. To put it a bit aphoristically: those at the top of the list are readers rather than writers, those at the bottom, writers rather than readers.

The papers citing CEJ came from about 300 different journals. The top 20 citing journals (see Table 5) are responsible

Table 5
Journals most frequently citing CEJ in the 1983–1996 period

Journal	No. of papers citing CEJ
Chemical Engineering Science	280
Chemical Engineering Journal and Biochemical Engineering Journal	258
Industrial and Engineering Chemistry Research	133
Biotechnology and Bioengineering	131
Canadian Journal of Chemical Engineering	80
AICHE Journal	77
Chemical Engineering Communications	70
Chemical Engineering Research and Design	48
Journal of Chemical Technology and Biotechnology	47
Journal of Chemical Engineering of Japan	45
Computers and Chemical Engineering	29
Enzyme and Microbial Technology	28
Journal of Chromatography	28
Chemical Engineering and Processing	26
Journal of Biotechnology	25
Separation Science and Technology	25
Journal of Membrane Science	23
Applied Biochemistry and Biotechnology	22
Applied Microbiology and Biotechnology	22
Fluid Phase Equilibria	22
International Journal of Heat and Mass Transfer	22

for 60% of the citing items. The first six titles in Table 5 are identical with the top six entries of six most cited journals (cf. Table 1).

4.2. The targets of citations

The most cited papers published in CEJ are collected in Table 6. (The detailed bibliographic data of papers published before 1980 were not available.)

About 90% of the citations were received by papers with at least one author from the 20 most productive countries (cf. Fig. 1). The relative contributions of these countries to the citedness of the journal can be assessed by the relative citation rate (RCR). This indicator gauges the actual number of citations received by each paper to the expected number of citations, i.e., to the average citation rate of the journal. To put it very simply, countries with RCR values higher than 1 contribute to the citedness above par, while those with RCR < 1 contribute under par. The 20 most productive countries are ranked by their relative citation rate in Table 7.

Less than half of the countries listed performed above the average (RCR > 1), the rest of them below (RCR < 1). As

Table 6
CEJ papers receiving the highest number of citations in the 1983–1996 period

Paper	Times cited
Hikita H., Asai S., Kitao M., Segawa K., Tanigawa K.: Gas Hold-Up in Bubble-Columns, Chem. Eng. J., 1980, Vol. 20, Iss. 1, pp. 59–67 [Univ. Osaka Prefecture, Dept. Chem. Engn., Sakai, Osaka 591, Japan]	86
Dekker M., Baltussen J.W.A., Bijsterbosch B.H., Laane C., Vantriet K., Weijers S.R.: Enzyme Recovery by Liquid–Liquid Extraction Using Reversed Micelles, Chem. Eng. J. and Biochem. Eng. J., 1986, Vol. 33, Iss. 2, pp. B27–B33 [Agr. Univ. Wageningen, Dept. Food Sci., 6703 Wageningen, Netherlands; Agr. Univ. Wageningen, Food and Bioengn. Grp., 6703 Wageningen, Netherlands; Agr. Univ. Wageningen, Dept. Biochem., 6703 Wageningen, Netherlands; Agr. Univ. Wageningen, Dept. Phys. and Colloid Chem., 6703 Wageningen, Netherlands]	78
Arnold F.H., Blanch H.W., Wilke C.R.: Analysis of Affinity Separations. 1. Predicting the Performance of Affinity Adsorbers, Chem. Eng. J. and Biochem. Eng. J., 1985, Vol. 30, Iss. 2, pp. B9–B23 [Univ. Calif. Berkeley, Dept. Chem. Engn., Berkeley, CA 94720, USA]	70
Hills J.H.: Chem. Eng. J., 1976, Vol. 89, p. 89	66
Baird M.H.I.: Chem. Eng. J., 1975, Vol. 9, p. 171	58
Vera J.H.: Chem. Eng. J., 1972, Vol. 3, pp. 1	53
Heijnen J.J., Vantriet K.: Mass-Transfer, Mixing and Heat-Transfer Phenomena in Low Viscosity Bubble Column Reactors, Chem. Eng. J. and Biochem. Eng. J., 1984, Vol. 28, Iss. 2, pp. B21–B42 [Gist Brocades NV Res. and Dev., Res. and Dev., POB 1, 2600 Delft, Netherlands]	48
Hikita H.: Chem. Eng. J., 1977, Vol. 13, p. 7	48
McCarthy M.J.: Chem. Eng. J., 1974, Vol. 7, p. 1	47
Albal R.S., Carr N.L., Schumpe A., Shah Y.T.: Mass-Transfer in Multiphase Agitated Contactors, Chem. Eng. J. and Biochem. Eng. J., 1983, Vol. 27, Iss. 2, pp. 61–80 [Univ. Pittsburgh, Dept. Chem. and Petr. Engn., Pittsburgh, PA 15261, USA; Gulf Res. and Dev. Co., Pittsburgh, PA 15230, USA]	43
Arnold F.H., Blanch H.W., Wilke C.R.: Analysis of Affinity Separations. 2. The Characterization of Affinity Columns by Pulse Techniques, Chem. Eng. J. and Biochem. Eng. J., 1985, Vol. 30, Iss. 2, pp. B25–B36 [Univ. Calif. Berkeley, Dept. Chem. Engn., Berkeley, CA 94720, USA]	43
Kawase Y., Mooyoung M.: Mathematical Models for Design of Bioreactors—Applications of Kolmogorov Theory of Isotropic Turbulence, Chem. Eng. J. and Biochem. Eng. J., 1990, Vol. 43, Iss. 1, pp. B19–B41 [Univ. Waterloo, Dept. Chem. Engn., Biochem. Engn. Grp., Waterloo N2L 3G1, Ontario, Canada]	41
Linek V., Benes P., Vacek V.: A Critical Review and Experimental Verification of the Correct Use of the Dynamic Method for the Determination of Oxygen Transfer in Aerated Agitated Vessels to Water, Electrolyte Solutions and Viscous Liquids, Chem. Eng. J. and Biochem. Eng. J., 1987, Vol. 34, Iss. 1, pp. 11–34 [Prague Inst Chem. Technol, Dept. Chem. Engn., CS-16628 Prague 6, Czechoslovakia]	40
Sanger P., Deckwer W.D.: Liquid–Solid Mass-Transfer in Aerated Suspensions, Chem. Eng. J. and Biochem. Eng. J., 1981, Vol. 22, Iss. 3, pp. 179–186 [Univ. Hannover, Inst. Tech. Chem., D-3000 Hanover 1, Germany]	40
Baldyga J., Bourne J.R.: Simplification of Micromixing Calculations. 1. Derivation and Application of New Model, Chem. Eng. J. and Biochem. Eng. J., 1989, Vol. 42, Iss. 2, pp. 83–92 [Swiss Fed. Inst. Technol., Tech. Chem. Lab., CH-8092 Zürich, Switzerland]	39
Verlaan P., Luyben K.C.A.M., Tramper J., Van Triet K.: A Hydrodynamic Model for an Airlift-Loop Bioreactor with External Loop, Chem. Eng. J. and Biochem. Eng. J., 1986, Vol. 33, Iss. 2, pp. B43–B53 [Agr. Univ. Wageningen, Dept. Food Sci., 6703 Wageningen, Netherlands; Agr. Univ. Wageningen, Food and Bioengn. Grp., 6703 Wageningen, Netherlands; Delft Univ. Technol., Dept. Biochem. Engn., 2628 Delft, Netherlands]	38
Charpentier J.C.: Chem. Eng. J., 1976, Vol. 11, p. 161	35
Dogu T.: The Importance of Pore Structure and Diffusion in the Kinetics of Gas–Solid Non-Catalytic Reactions—Reaction of Calcined Limestone with SO_2, Chem. Eng. J. and Biochem. Eng. J., 1981, Vol. 21, Iss. 3, pp. 213–222 [Middle-East Tech. Univ., Dept. Chem. Engn., Ankara, Turkey]	35
Lee K.J., Rogers P.L.: The Fermentation Kinetics of Ethanol Production by Zymomonas-Mobilis, Chem. Eng. J. and Biochem. Eng. J., 1983, Vol. 27, Iss. 2, pp. B31-B38 [Univ. New South Wales, Sch. Biotechnol., Kensington, NSW 2033, Australia]	34
Reschke M., Schugerl K.: Reactive Extraction of Penicillin. 1. Stability of Penicillin-G in the Presence of Carriers and Relationships for Distribution Coefficients and Degrees of Extraction, Chem. Eng. J. and Biochem. Eng. J., 1984, Vol. 28, Iss. 1, pp. B1–B9 [Univ. Hanover, Inst. Tech. Chem., D-3000 Hanover 1, Germany]	34

Table 7
Countries ranked by Relative Citation Rate

Rank	Country	No. of papers	RCR
1	Netherlands	47	2.38
2	Germany	33	1.99
3	Switzerland	17	1.76
4	Czech Republic	20	1.66
5	USA	126	1.54
6	Canada	59	1.34
7	Australia	22	1.22
8	Saudi Arabia	16	1.11
9	Italy	49	0.86
10	England	74	0.83
11	Spain	44	0.82
12	Japan	54	0.79
13	Portugal	22	0.75
14	France	107	0.70
15	Turkey	20	0.65
16	India	100	0.62
17	Taiwan	38	0.46
18	South Africa	20	0.37
19	P.R. China	15	0.25
20	Poland	39	0.23

can be seen, a few developed European countries and, somewhat more surprisingly, the Czech Republic, outperformed the USA. It is bad news for the journal that some of its major producers (France, India, England, Japan) do not contribute really *positively to the citation rate of the journal.*

5. Conclusions

The bibliometric profile of CEJ (volumes 27–62) shows the typical features of engineering journals: a low degree of international coauthorship, long reference half-life, moderate citation rate. In addition, the journal has its own specific characteristics, particularly as the national distribution of authors (both those publishing in CEJ and those citing it) is concerned. There is a certain overrepresentation of French and Indian authors whose papers do not attract a proportional number of citations to the journal. On the other hand, papers from USA and Germany, some smaller countries (Czech Republic, Netherlands, Switzerland), as well as Australia and Canada attract more citations than expected. In most of these countries, authors show greater preference to cite CEJ papers than to publish in the journal. It would be, therefore, worthwhile to find a way to encourage scientists from these countries to use CEJ more often as their publication channel.

Appendix A. Country codes and full country names (explanation for Figs. 1 and 3)

ARG	Argentina
AUS	Australia
BEL	Belgium
CAN	Canada
CZE	Czech Republic
DEN	Denmark
ENG	England
FIN	Finland
FRA	France
GER	Germany
IND	India
ISR	Israel
ITA	Italy
JAP	Japan
KOR	South Korea
NLD	Netherlands
POL	Poland
POR	Portugal
PRC	P.R. China
RUS	Russia
SAU	Saudi Arabia
SCO	Scotland
SGP	Singapore
SPA	Spain
SWE	Sweden
SWI	Switzerland
TUR	Turkey
TWN	Taiwan
USA	USA
ZAF	South Africa

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