Essays of an Information Scientist, Vol:2, p.577-583, 1974-76 Current Contents, #37, p.5-11, September 13, 1976

"Current Comments"

Journal Citation Studies. 26. Latin-American Journals

Number 37 September 13, 1976

This is the fifth in a series of citation studies that considers journals by geographical origin. The four earlier studies covered Russian, French, Japanese, and German journals. To save space and repetition, citations of the earlier studies will be found in the references of the last.[1]

The 18 Latin-American (LA) journals studied are listed in Figure 1. The 18 titles, published in 9 countries, constitute only 0.7% of the 2443 journals covered by the *Science Citation Index®* (*SCI®*) in 1974. They produced 530 articles, about 0.1% of the 400,971 articles indexed by the *SCI* that year. These papers contributed about 0.1% of the references, 5772 of 5.245 million. Each article averaged about 11 references. The international average was 13.

As a report on LA science and scientific literature, this analysis has serious shortcomings. That's not meant as an apology. Indeed, those shortcomings may be the central point of this discussion.

We know from the address listings published weekly in *Current Contents®* and cumulated annually in *ISI's Who is Publishing in Science®* that the 9 countries involved produced at least 3643 articles in 1974. Only 15% of those 3643 articles published by these LA countries in 1974 found their way into the LA journals indexed by the *SCI*.[2]

Acta Cient. Venezolana
Acta Physiol. Latino-Americana (Argentina)
Anais Acad. Brasileira Ciencias
Anales Asoc. Quim. Argentina
Archivos Biol. Med. Exp. (Chile)
Archivos Inst. Biol. Andina (Peru)
Archivos Inst. Cardiol. Mexico
Archivos Invest. Med. (Mexico)
Archivos Soc. Amer. Oftalmol. Optometria (Colombia)
Internat. J. Neurology (Uruguay)
Medicina (Argentina)
Mem. Inst. Oswaldo Cruz (Brazil)
Patologia (Mexico)
Phyton, Internat. J. Exp. Botany (Argentina)
Revista Invest. Clin. (Mexico)
Revista Med. Chile
Revista Microsc. Electron. (Venezuela)
Turrialba (Costa Rica)

Figure 1. Latin-American Journals Considered in This Study

Figure 2 shows the 25 journals that the LA journals listed in Figure 1 cited most frequently. Figure 3 shows the 25 journals that most frequently cited the LA journals. Each of the figures shows the total number of citations made or

Figure 2. Journals that were Cited by Latin-American (LA) Journals.
Journals are listed in order of their citation *by* the LA group. **A** = total citations by all journals. **B** = total citations by LA journals. **C** = self-citations. **D** = **B/A** (LA citations in terms of total citations). **E** = **C/A** (self-citations in terms of total citations, the self-cited rate). **F** = **C/B** (self-citations in terms of LA citations). **G** = impact factor.

	Journal	A	B	C	D	E	F	G
1.	Rev. Med. Chile	181	159	137	87.9	76.0	86.2	0.148
2.	J. Clin. Endocr. Metab.	11645	132	—	0.1	—	—	5.170
3.	Circulation	14461	130	—	0.9	—	—	6.834
4.	Lancet	37047	128	—	0.3	—	—	6.677
5.	New Engl. J. Med.	26726	120	—	0.4	—	—	8.364
6.	Amer. J. Physiol.	21519	117	—	0.5	—	—	2.414
7.	Nature	59206	107	—	0.2	—	—	3.636
8.	J. Clin. Invest.	24768	105	—	0.3	—	—	6.992
9.	Science	47505	98	—	0.2	—	—	5.412
10.	Amer. J. Med.	9779	97	—	1.0	—	—	4.411
11.	J. Amer. Med. Assoc.	17211	88	—	0.5	—	—	3.068
12.	J. Biol. Chem.	81354	85	—	0.1	—	—	5.843
13.	J. Appl. Physiol.	8619	79	—	0.9	—	—	1.780
14.	Endocrinology	15948	74	—	0.5	—	—	4.337
15.	Medicina	194	72	67	37.1	34.5	93.1	0.460
16.	Brit. Med. J.	20748	67	—	0.3	—	—	3.556
17.	Turrialba	96	65	60	67.7	62.5	92.3	0.188
18.	Ann. Internal Med.	10231	64	—	0.6	—	—	4.828
19.	Circulation Res.	9082	63	—	0.7	—	—	4.922
20.	J. Amer. Chem. Soc.	98995	63	—	0.1	—	—	4.383
21.	J. Nat. Cancer Inst.	9678	54	—	0.6	—	—	3.289
22.	P. Soc. Exp. Bio. Med.	18171	50	—	0.3	—	—	1.471
23.	Gastroenterology	8693	49	—	0.6	—	—	5.394
24.	Biochim. Biophys. Acta	51491	44	—	0.1	—	—	3.120
25.	Internat. J. Cancer	3624	37	—	1.0	—	—	4.928

received by a journal, the number of citations made or received by the LA group, the number of self-citations, and columns for percentages that relate these figures to each other. The last column in both Figures 2 and 3 shows the journals' impact factors. Impact in this case is the average number of times articles published by a journal in 1972 and 1973 were cited in 1974.

In 1974 the LA group cited 1437 publications 5083 times. The 25 most-cited journals in Figure 2 account for 42% of the citations made by the LA journals. Again we find here evidence of the seemingly universal applicability of the law of concentration.[3] In other studies of this type, the top 50 most-cited journals accounted for 28 to 43% of citations. Here, half the number of journals has produced just as great a percentage of the total.

The list of journals in Figure 2 is heavily biomedical, and reflects the *SCI*'s journal selection perhaps as much as the research interests of LA

Figure 3. Journals that Cited Latin-American (LA) Journals.
Journals are listed in order of their citation *of* the LA group. **A** = total citations of other journals. **B** = total citations from journals in the LA group. **C** = self-citations. **D** = **B/A** (LA citations in terms of total citations). **E** = **C/A** (self-citations in terms of total citations, the self-cit*ing* rate). **F** = **C/B** (self-citations in terms of LA citations). **G** = impact factor.

	Journal	A	B	C	D	E	F	G
1.	Rev. Med. Chile	181	149	137	82.3	75.7	91.9	0.148
2.	Medicina	1654	73	67	4.4	4.1	91.8	0.460
3.	Turrialba	739	60	60	8.1	8.1	100.0	0.188
4.	Prog. Med. Virol.	2583	34	—	1.3	—	—	3.750
5.	Acta Physiol. Lat.-Amer.	517	26	23	5.0	4.5	88.5	0.292
6.	An. Asoc. Quim. Argent.	571	25	24	4.4	4.2	96.0	0.242
7.	Brain Res.	19626	20	—	0.1	—	—	3.104
8.	Rev. Invest. Clin.	635	19	16	3.0	2.5	84.2	0.197
9.	Contraception	4027	12	—	0.3	—	—	2.056
10.	Phytochemistry	8374	11	—	0.1	—	—	1.103
11.	J. Pharm. Exp. Ther.	7277	9	—	0.1	—	—	3.576
12.	Ann. New York Acad. Sci.	16190	7	—	0.0	—	—	1.181
13.	Annu. Rev. Entomol.	2490	7	—	0.3	—	—	2.079
14.	Arch. Oral Biol.	3394	7	—	0.2	—	—	1.058
15.	Endocrinology	10736	7	—	0.1	—	—	4.337
16.	Pharmacology	1379	7	—	0.5	—	—	1.367
17.	Arch. Invest. Med.	683	6	4	0.1	0.1	86.7	0.042
18.	Biochim. Biophys. Acta	45366	6	—	0.0	—	—	3.120
19.	Brit. J. Ophthalmol.	2365	6	—	0.0	—	—	1.160
20.	Exp. Neurol.	4431	6	—	0.3	—	—	1.827
21.	EEG Clin. Neurophys.	2334	6	—	0.3	—	—	1.498
22.	Experientia	9248	6	—	0.1	—	—	0.883
23.	Hormones Metab. Res.	2228	6	—	0.3	—	—	1.401
24.	J. Comp. Neurol.	4551	6	—	0.1	—	—	3.725
25.	J. Neurophysiol.	2959	6	—	0.2	—	—	4.537

scientists. Of the 25 journals, 19 are biomedical. Only 3 of the 25 are journals from the LA group studied: *Revista Medica de Chile, Medicina,* and *Turrialba.* Heavy citation of the first two can, I think, be credited to a tendency we have seen before in these studies of geographic literatures: one or two 'local' medical journals are apt to be on any such list. Usually high self-citation plays a role. *Turrialba,* also has a high self-citation rate as is the case with many specialized agricultural journals.

One might be tempted, on the basis of the list of cited journals in Figure 2, to assume that our LA colleagues are the least chauvinistic of the geographic groups we have so far studied. In view, however, of the fact that they mostly publish elsewhere, one can conclude little of nationalistic import from the fact that they cite their own literatures rarely.

Figure 3 shows the journals that cited the LA group most. The 18 journals were cited by some 375 journals

1008 times. The 25 journals in Figure 3 accounted for about 52% of the citations. Of these 25 journals, 7 are Latin-American. Note, however, that the prominence of the LA journals is due to their relatively heavy citation by the LA group itself, and in each case there is a high self-citing rate. As a matter of interest, we have reproduced in Figures 4 and 5 the citing and cited detail lists for these seven journals from *Journal Citation Reports®* .[4] The detail lists show exactly what journals these five have cited, and what journals have cited them.

To complete this study of LA journals covered by the *SCI*, we searched our highly-cited-article listings for items from these journals. We found only two articles that have been cited 10 times or more in any year during the period 1961-1975. The first was Chagas' paper on trypanosomiasis cruzi.[5] The second was a paper by Maggiolo and Huidobro on experimental production of the morphine abstinence syndrome in mice.[6]

Obviously LA scientists have published many other and more highly cited papers. Where, one wonders, did the LA Nobel Prize winners publish their work? A spot check of the *Five Year SCI 1965-1969 Cumulation* has shown what one should expect. Bernardo Houssay (1947 prize winner in medicine) and Luis Leloir (1970 prize winner in chemistry) are indeed very highly cited authors. But Leloir has been cited for work published in *Journal of the American Chemical Society, Journal of Biological Chemistry, Methods in Enzymology, Archives of Biochemistry and Biophysics.* Houssay published in the *Comptes Rendus de la Societe Biologique, Endocrinology, Diabetes, Annals of Internal Medicine,* among others.

I believe this study leads to some obvious conclusions. I'm happy to say those conclusions have already been stated in the LA literature itself by my friend and colleague Tulio Arends, of the Instituto Venezolano de Investigaciones Cientificas. To quote him in part: ". . . a coordinated action is needed to avoid the proliferation of low quality scientific journals in Latin America, and to sponsor those which are high in quality, endurance, and are potentially useful for publishing scientific contributions."[7]

We are well aware that there are many additional journals published in Latin America that the *SCI* does not cover. Arends mentions several of them, but few are cited frequently enough to appear in Figures 2 and 3. Extending the list in Figure 1 to the 100 most cited journals would add only 5 LA journals; extending it to 200 would add eight more. Extending the list in Figure 3 to 100 journals would add only one other LA journal.

As Arends points out,[7] the Latin American journal problem is one of poor quality and unnecessary proliferation and fragmentation--there are simply too many poor journals. The problem is made worse by inflationary costs and frequently inadequate printing facilities. As Arends says elsewhere, ". . . authors have called attention to the waste of brains and manpower by the proliferation of journals which are doomed from the start from their lack of periodicity and quality. No feasible propositions have been made to face this problem."[8]

In view of such statements from a distinguished Latin-American medical investigator, I can hope that I will not offend the pride and sensibility of our Spanish- and Portuguese-speaking col-

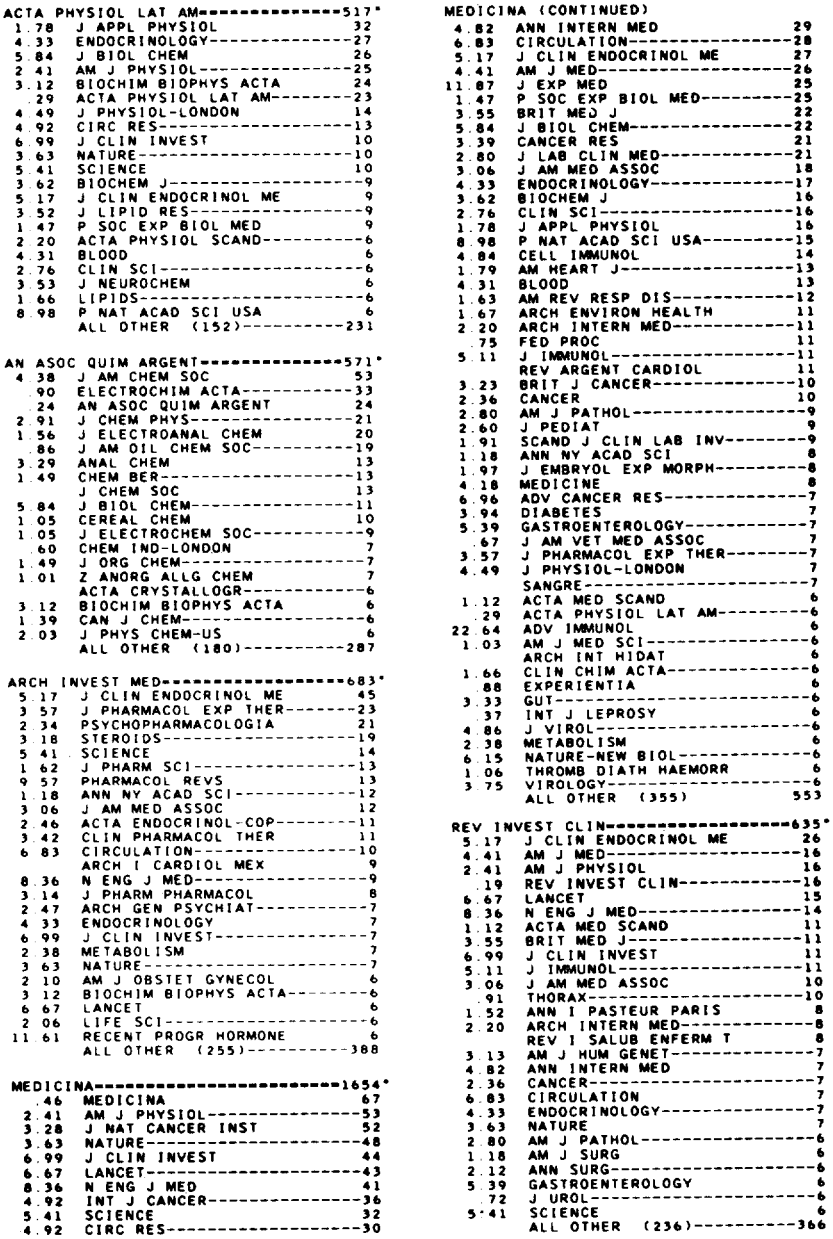
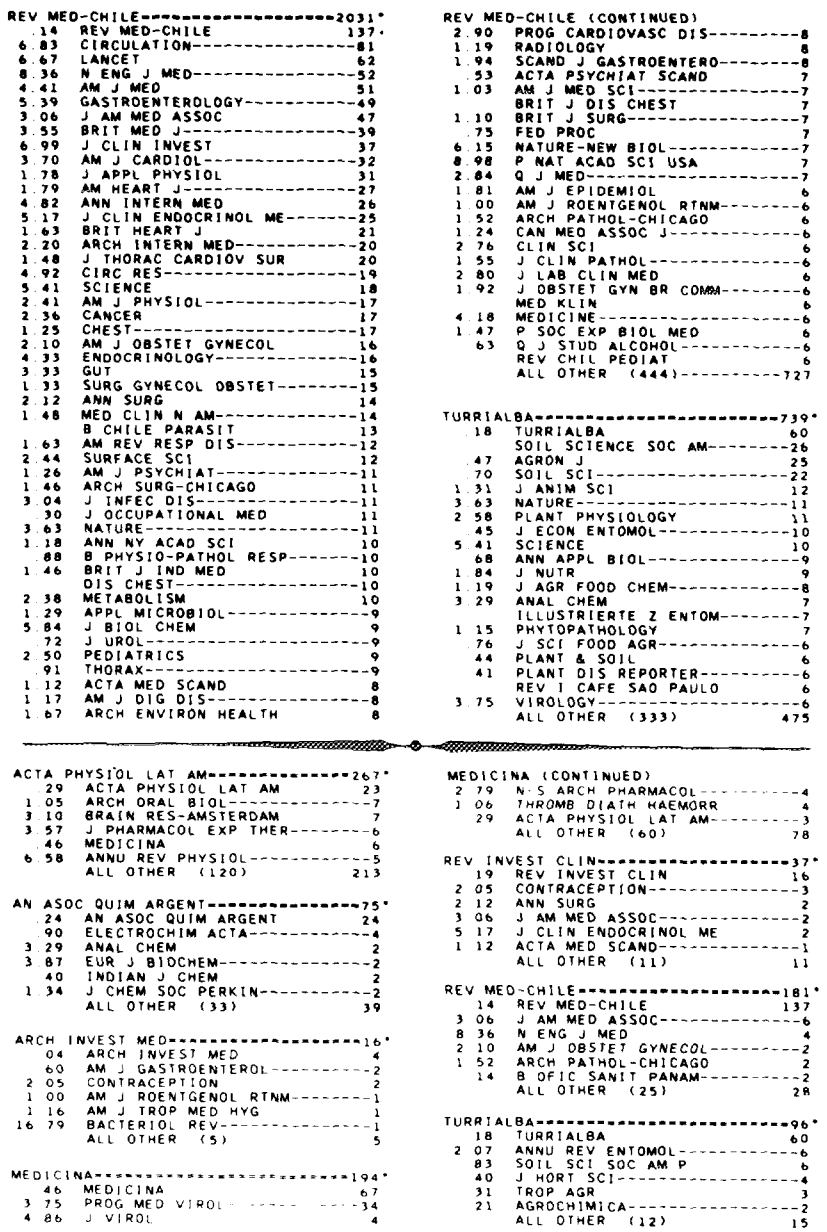


Figure 4. Journals cited in 1974 by the Latin-American journals from the list in Figure 3. The first-line main entry gives the citing Latin-American journal and its total citations of other journals in 1974. The subentries consist of the cited journals and the number of times they were cited in 1974.



REV MED-CHILE----------2031*
.14 REV MED-CHILE 137
6.83 CIRCULATION----------81
6.67 LANCET 62
8.36 N ENG J MED----------52
4.41 AM J MED 51
5.39 GASTROENTEROLOGY----------49
3.06 J AM MED ASSOC 47
3.55 BRIT MED J----------39
6.99 J CLIN INVEST 37
3.70 AM J CARDIOL----------32
1.78 J APPL PHYSIOL 31
1.79 AM HEART J----------27
4.82 ANN INTERN MED 26
5.17 J CLIN ENDOCRINOL ME-------25
1.63 BRIT HEART J 21
2.20 ARCH INTERN MED----------20
1.48 J THORAC CARDIOV SUR 20
4.92 CIRC RES----------19
5.41 SCIENCE 18
2.41 AM J PHYSIOL----------17
2.36 CANCER 17
1.25 CHEST----------17
2.10 AM J OBSTET GYNECOL 16
4.33 ENDOCRINOLOGY----------16
3.33 GUT 15
1.33 SURG GYNECOL OBSTET--------15
2.12 ANN SURG 14
1.48 MED CLIN N AM----------14
B CHILE PARASIT 13
1.63 AM REV RESP DIS----------12
2.44 SURFACE SCI 12
1.26 AM J PSYCHIAT----------11
1.46 ARCH SURG-CHICAGO 11
3.04 J INFEC DIS----------11
.30 J OCCUPATIONAL MED 11
3.63 NATURE----------11
1.18 ANN NY ACAD SCI 10
.88 B PHYSIO-PATHOL RESP-------10
1.46 BRIT J IND MED 10
DIS CHEST----------10
2.38 METABOLISM 10
1.29 APPL MICROBIOL----------9
5.84 J BIOL CHEM 9
.72 J UROL----------9
2.50 PEDIATRICS 9
.91 THORAX----------9
1.12 ACTA MED SCAND 8
1.17 AM J DIG DIS----------8
1.67 ARCH ENVIRON HEALTH 8

REV MED-CHILE (CONTINUED)
2.90 PROG CARDIOVASC DIS---------8
1.19 RADIOLOGY 8
1.94 SCAND J GASTROENTERO--------8
.53 ACTA PSYCHIAT SCAND 7
1.03 AM J MED SCI----------7
BRIT J DIS CHEST 7
1.10 BRIT J SURG----------7
.75 FED PROC 7
6.15 NATURE-NEW BIOL----------7
8.98 P NAT ACAD SCI USA 7
2.84 Q J MED----------7
1.81 AM J EPIDEMIOL 6
1.00 AM J ROENTGENOL RTNM--------6
1.52 ARCH PATHOL-CHICAGO 6
1.24 CAN MED ASSOC J----------6
2.76 CLIN SCI 6
1.55 J CLIN PATHOL----------6
2.80 J LAB CLIN MED 6
1.92 J OBSTET GYN BR COMM--------6
MED KLIN 6
4.18 MEDICINE----------6
1.47 P SOC EXP BIOL MED 6
.63 Q J STUD ALCOHOL----------6
REV CHIL PEDIAT 6
ALL OTHER (444)----------727

TURRIALBA----------739*
.18 TURRIALBA 60
SOIL SCIENCE SOC AM--------26
.47 AGRON J 25
.70 SOIL SCI----------22
1.31 J ANIM SCI 12
3.63 NATURE----------11
2.58 PLANT PHYSIOLOGY 11
.45 J ECON ENTOMOL----------10
5.41 SCIENCE 10
.68 ANN APPL BIOL----------9
1.84 J NUTR 9
1.19 J AGR FOOD CHEM----------8
3.29 ANAL CHEM 7
ILLUSTRIERTE Z ENTOM--------7
1.15 PHYTOPATHOLOGY 7
.76 J SCI FOOD AGR----------6
.44 PLANT & SOIL 6
.41 PLANT DIS REPORTER---------6
REV I CAFE SAO PAULO 6
3.75 VIROLOGY----------6
ALL OTHER (333) 475

ACTA PHYSIOL LAT AM----------267*
.29 ACTA PHYSIOL LAT AM 23
1.05 ARCH ORAL BIOL----------7
3.10 BRAIN RES-AMSTERDAM 7
3.57 J PHARMACOL EXP THER--------6
.46 MEDICINA 6
6.58 ANNU REV PHYSIOL----------5
ALL OTHER (120) 213

AN ASOC QUIM ARGENT----------75*
.24 AN ASOC QUIM ARGENT 24
.90 ELECTROCHIM ACTA----------4
3.29 ANAL CHEM 2
3.87 EUR J BIOCHEM----------2
.40 INDIAN J CHEM 2
1.34 J CHEM SOC PERKIN----------2
ALL OTHER (33) 39

ARCH INVEST MED----------16*
.04 ARCH INVEST MED 4
.60 AM J GASTROENTEROL---------2
2.05 CONTRACEPTION 2
1.00 AM J ROENTGENOL RTNM--------1
1.16 AM J TROP MED HYG 1
16.79 BACTERIOL REV----------1
ALL OTHER (5) 5

MEDICINA----------194*
.46 MEDICINA 67
3.75 PROG MED VIROL 34
4.86 J VIROL 4

MEDICINA (CONTINUED)
2.79 N S ARCH PHARMACOL---------4
1.06 THROMB DIATH HAEMORR 4
.29 ACTA PHYSIOL LAT AM---------3
ALL OTHER (60) 78

REV INVEST CLIN----------37*
.19 REV INVEST CLIN 16
2.05 CONTRACEPTION----------3
2.12 ANN SURG 2
3.06 J AM MED ASSOC----------2
5.17 J CLIN ENDOCRINOL ME 2
1.12 ACTA MED SCAND----------1
ALL OTHER (11) 11

REV MED-CHILE----------181*
.14 REV MED-CHILE 137
3.06 J AM MED ASSOC----------6
8.36 N ENG J MED 4
2.10 AM J OBSTET GYNECOL---------2
1.52 ARCH PATHOL-CHICAGO 2
.14 B OFIC SANIT PANAM---------2
ALL OTHER (25) 28

TURRIALBA----------96*
.18 TURRIALBA 60
2.07 ANNU REV ENTOMOL----------6
.83 SOIL SCI SOC AM P 6
.40 J HORT SCI----------4
.31 TROP AGR 3
.21 AGROCHIMICA----------2
ALL OTHER (12) 15

Figure 5. Journals that cited 7 Latin-American journals in 1974. The first-line main entry gives the cited Latin-American journal and the total number of times it was cited in 1974. The subentries consist of the citing journals and the number of times they cited the main-entry Latin-American journal in 1974.

leagues south of the border with the suggestion that they emulate the example of the newer 'European' journals. The data quoted from *WIPIS*[2] indicate that most of them publish in English already. Why not publish in a *Latin-American* journal printed in Philadelphia or New York? Such a journal--or several such journals--would certainly appear more promptly and, I have no doubt, would have greater impact than the present products of the fragmented scientific publication apparatus of Latin America. It would certainly improve the utilization of Latin American contributions. It seems absurd that Latin American scientists should be impeded in disseminating their work by archaic publishing and printing facilities and by an unsupportable proliferation of mediocre journals.

If my suggestion of New York- or Philadelphia-based Latin-American journals of science, medicine, biochemistry, etc., seems to some of my Latin American colleagues as a new form of Yankee scientific imperialism, I must point out that it will do less for Yankee imperialism than their toleration of the present situation, in which their scientific work contributes to the impact of American and other journals rather than to such true Latin-American journals as I have suggested.

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