

FINANCIAL DISCRIMINATION BY JOURNALS--AND WHAT TO DO ABOUT IT

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ABSTRACT: Among the criteria for publication that partly substitute for quality of the work is the ability of the author to pay. I document various aspects of this and related kinds of discrimination, by individual journals and classes of journals. I then propose a means of joint action by authors against such socially irresponsible journals.

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My basic thesis is that the only criterion for publication of any piece of scientific work should be its quality. (I don't propose to discuss how quality can be evaluated, but note that Evolutionary Theory has procedures that always give conceptual originality a positive weight rather than its usual, de facto, negative weight.) Various other criteria also exist, however. Perhaps the most common is the degree of concordance between author and referees in how they perceive their science (cf. Van Valen and Pitelka, 1974). Another, especially for long papers, is where the author happens to work (cf. Van Valen, 1975).

A third extraneous criterion is how much money the author has. Various categories of scientists are mostly less well off financially than what is taken to be the standard: students, the retired, those without academic positions or just beginning them, the grantless proletariat, and almost everyone in most countries of the world. These categories themselves differ. However, in many cases all authors are equally subjected to the same financial requirements for publication. As a result some good work is never published and other papers are published less advantageously than would have been the case with more money.

Journals also have financial problems, and a few have become extinct rather than explore inexpensive alternatives to their traditions. When journals impose mandatory charges they still get enough papers, so by considering their own self-interest as paramount they are able to discriminate against the poor without fear of retaliation.

As with other socially irresponsible powers, a remedy requires joint action. After documenting the nature of the problem I will suggest appropriate action, some of which has already started on a small scale. I thank Walter Necker for comments and help in gathering data.

Scope of the survey

I made a survey of the policies of journals in the University of Chicago library, and of a few other journals I subscribe to. The survey was incomplete, being related to the physical location of the journals, but it covered a large majority of the journals in the library that fit my guidelines.

The guidelines are meant to fit the situation of a poor American looking for a place to publish, as I believe his problem is the most common and among the most severe. Therefore I considered only journals that publish at least some papers in English and whose instructions to contributors are in English, German, or a Romance language. I also included only those journals published in the United States, Canada, western Europe, Israel, and Japan. Our library has few journals from Australia and New Zealand, and the policies of most of those we do have are unclear. The availability of publication for long papers is a

separate if related question (which Evolutionary Theory also alleviates), so I excluded the many monograph series subsidized by institutions for their staff. I also excluded those review series that seem to solicit their papers. I tried to include all kinds of journals that publish papers in the evolutionary half of biology.

I also looked at subscription prices, because these too are often socially irresponsible. For uniformity I again chose the situation of an individual American scientist, who would join the appropriate society if one was relevant. Prices are for 1975 wherever possible; the number of pages is from the last complete volume available or estimated from the current one. Any threshold of calling a price excessive has its limitations, as several factors are involved, but I chose 8 cents a page as being an excessive amount under any circumstances. This value indeed proved to separate out certain irresponsible publishers rather well.

Results

The Appendix contains most of the data from the survey, by individual journals. I request modifications and additions to the table, for possible future publication.

In many cases I had to assume that financial discrimination was absent because it was not mentioned in the instructions for contributors. This is sometimes false. Such cases of hidden discrimination deserve attention. In 1973, at least, the *Journal of Theoretical Biology* gave faster publication to those papers (above some unknown but short length) for which payment was made. This discrimination has never been mentioned in the 2-page instructions and was unknown to at least two members of the editorial board. *Lethaia* mentioned a similar policy on p. 2 of its 1974 volume, but this hasn't appeared in its instructions either, a year and a half later. The *American Journal of Botany* no longer even publishes its instructions, which can be obtained only by writing the editor. In January 1974, the instructions said that only members of the associated society could publish. *Oecologia* fails to state that members of the International Ecological Association receive a 45% discount (but even so the journal is considerably overpriced). *Bibliotheca Primatologica*, the predecessor of *Contributions to Primatology*, let its contributors know only after submission or specific enquiry (and at least once only at the time of page proof) that a charge on the order of \$1000 must be paid or the publication would not appear. Perhaps its successor still does. *Bulletins of American Paleontology* and *Palaeontographica Americana* fail to state that they require full payment for the cost of illustrations.

Presumptively equitable journals are not detectably more frequent in one subject than another except for geology, a traditionally low-budget area. (But of course many individuals in all areas are financially pressed; discrimination is just harder to get away with when few workers can pay the going rate.) The same is true by geographic distribution. Except for a few commercial firms, western Europe has a much higher proportion of equitable journals than does the United States. This is especially true for Great Britain, perhaps because of its tradition of fairness. For journals apparently controlled academically, Table 1 shows the geographic distribution of discriminatory journals in my sample.

Most commercial publishers based in Germany have a higher subscription price per page than almost any publisher elsewhere. The means per 100 pages are as follows, with sample size in parentheses:

BLV	\$27.50 (1)	Parey	\$23.40 (5)
Cramer	10.40 (1)	Schweizerbart	24.90 (5)
de Gruyter	36.00 (1)	Springer	18.40 or 19.00(17)

	discriminatory			discriminatory	
	yes	no		yes	no
Belgium	1	1	Japan	6	2
Canada	2	6	Netherlands	4	3
Finland	1	0	Portugal	0	1
France	4	8	Scandinavia	7	3
Germany	1	2	Spain	0	1
Great Britain	5	36	Switzerland	3	3
Israel	1	1	United States	69	43
Italy	2	3			

TABLE 1: the geographic distribution of discriminatory journals in my sample.

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For other countries the mean prices are as follows:

France				
Alsatia	\$44.00 (1)	Masson	\$8.90 (2)	
Great Britain				
Blackwell	\$11.10 (3)	Taylor & Francis	\$8.90 (1)	
Pergamon	5.80 or 11.50 (4)			
Netherlands				
Brill	\$11.30 (3)	Nijhoff	\$6.10 (1)	
Elsevier	6.90 or 12.30 (5)	North Holland	14.10 (2)	
Junk	9.00 (2)	Swets & Zeitlinger	16.20 (2)	
Switzerland				
Birkhäuser	\$5.30 or 10.80 (2)	Karger	\$15.30 (6)	
United States				
Academic	\$5.70 or 7.20 (4)	Plenum	\$5.20 or 7.90 (4)	

The variance within publishers is low relative to that among publishers. Where two means are given, the first refers to the rate for individuals (although it often requires that the individual be at an institution which also subscribes) and the second mean is the institutional rate. I omitted Macmillan, as in the present sample it is represented only by Nature (\$1.50), which is a special case. (However, the almost overpriced Naturwissenschaften lowered Springer's mean by its inclusion.)

Most journals from the United States are academically controlled; perhaps this helps explain why the two commercial publishers there have lower prices than any elsewhere. In Germany almost no journals are academically controlled. The British firm Blackwell has a mean price of \$11.10 (and a low variance) for its 3 commercial journals; for the 3 journals it publishes for the British Ecological Society the mean price for nonmembers is \$3.70 (and the maximum mean for members is \$1.30). I have probably misclassified a few journals.

Kinds of financial discrimination

The policy of the American Anthropologist is extraordinary, especially in a subject that professes interest in people everywhere. For any nonmember of the sponsoring society, it now charges \$25 for the privilege of having a paper processed, whether or not the paper is accepted.

The frequencies of the several kinds of discrimination recorded can be seen from the table in the Appendix. But these kinds are not exhaustive. Journals discriminate financially in other ways. An author must often pay to get even one published copy of his paper. Changes in substance at the proof stage, which are sometimes necessary, are usually allowed only if the author pays for

them. The same is almost universally true for colored and folded illustrations, the only exception I know being the Geological Society of America. The availability of money from the author ordinarily substitutes for whatever need there may be to use such special features in the paper. Photographs of figures are often required, and these can be expensive. The same is true for professional-grade preparation of figures, particularly when suitable equipment is unavailable. Some journals, such as *Ecology*, inquire about the availability of money for page charges before a paper is processed. This creates the possibly unfounded impression that payment is relevant to acceptance. The availability of money to do the research in the first place is a different (if related) matter, discussion of which I leave for another time.

Journals can legitimately restrict their subjects in any way, as long as they continue to be read and to receive papers, and the imposition of a maximum length for papers is a policy that is ordinarily good for any single journal even if strongly deleterious to science when every journal does it (a tragedy of the commons). The expansion of old journals and the creation of new ones both have their costs and benefits. But a restriction on the author of a paper is something quite different. Honorary societies such as the National Academy of Sciences have at least an excuse, although anyone can write trash and the publications of the Royal Society of London are open to all comers. (In the latter case, however, some comers start more equal than others.) Financial criteria for publication are unrelated to the merit of the work. That there may well be a positive association between merit and financial status gives no stronger grounds for discrimination on the basis of a correlate than does the (probably stronger) association between measured IQ and skin color in the United States.

One kind of financial discrimination is sometimes thought innocuous. This is the publication of a subsidized paper rapidly by the addition of extra pages, so no other paper is delayed. However, I don't think it is necessary to spell out the diverse ways in which early publication can bring an advantage, even relative to papers that aren't delayed because of it. The American Psychological Association formerly had such a policy for its journals but abandoned it in 1974 for this reason.

A remedy

Journals need papers, and good papers, to survive. Authors do not need to send their papers to journals that behave irresponsibly.

I therefore will pursue the following actions, and call on others to do likewise:

- (1) To submit no paper to an irresponsible journal except when there is no reasonable alternative.
- (2) To avoid citing papers published after the end of 1976 in irresponsible journals, when alternative citations are available.
- (3) To refrain from refereeing papers for irresponsible journals.

Some journals are more irresponsible than others, and one can be more stringent with the worse ones. *Special Papers in Palaeontology* is an exceptionally mild case. Its discrimination, although real, is not of its making and is an undesired necessity if the journal is to exist at all to serve its unique function.

These journals that fill a useful niche, but that nevertheless discriminate, can be replaced if they neither change nor survive. With enough goodwill, which a perceived niche tends to generate, the founding of a new journal becomes possible.

Literature cited

- Van Valen, L. 1975. Monograph publication. Syst. Zool. 24:222.
 _____ and F.A. Pitelka. 1974. Intellectual censorship in ecology. Ecology
 55:925-926.

APPENDIX: The survey

For brevity I give numbers to the observed classes of discrimination. A prime over any number indicates that occasional exceptions may be made to the policy under unstated conditions.

1. The discrimination is not mentioned in the instructions for contributors.
2. Restricted to members (of a relevant society) of more than a year's standing.
3. Restricted to members, or in one case to subscribers.
4. Restricted to members unless from a different discipline.
5. Members receive preference.
6. Papers must be communicated by a member and the journal publishes no list of members.
7. Papers must be communicated by a member and the journal does publish a list of members.
8. Authors must be from a specified geographic region.
9. Authors from a given geographic region receive preference.
10. There is a large and nonrefundable processing fee for submission of papers by nonmembers.
11. Mandatory charge for more than (\underline{x}) pages, and such an excess sometimes occurs.
12. Mandatory charge for more than an unstated number of pages.
13. Mandatory charge for more than (\underline{x}) pages by members.
14. Mandatory charge for more than (\underline{x}) pages by nonmembers.
15. Lower but mandatory charge for members.
16. Mandatory charge for tables or figures of more than (\underline{x}) pages.
17. Mandatory charge for tables or figures more than ($\underline{x}\%$) of the paper.
18. Mandatory charge for more than an unstated number of tables or figures.
19. Mandatory charge for more than \underline{x} plates (half-tone).
20. Mandatory charge for better than usual processing of figures.
21. Payment of charges is relevant to acceptance and scheduling if there are more than 4 plates.
22. Mandatory charge for putting data into depository.
23. Charges reduced but not eliminated for the poor.
24. Charges mandatory except for two restricted classes of individuals.
25. Charges mandatory except for two restricted classes of members.
26. Payment ensures more rapid publication.
30. Subscription price not stated in journal.
31. Price excessive ($\$ \underline{x}/\underline{y}$ pp.). Unpaged plates count as 2 pages each. The lowest price for individuals is given.

I group the journals roughly into 14 classes by subject. The country or region of publication has a standard abbreviation; Aus is Austria. The kind of publisher is based on the known or inferred determiner of prices: A, academic; C, commercial; U, university press.

	Publisher		Categories of discrimination
	Place	Kind	
General science			
American Philosophical Society. Proceedings.	USA	A	none
American Philosophical Society. Transactions.	USA	A	none
American Scientist.	USA	A	none
Archives des Sciences.	Switz	A	none
Arizona Academy of Science. Journal.	USA	A	13(8), 14(0), 18
Chesapeake Science.	USA	A	11(24), 17(20%)
Elisha Mitchell Scientific Society. Journal.	USA	A	11(0)
Experientia.	Switz	C	31(\$120/1500 pp.)
Florida Scientist.	USA	A	5, 16(0)
Illinois State Academy of Science. Transactions.	USA	A	6, ?11
Indiana Academy of Science. Proceedings.	USA	A	3
Iowa Academy of Science. Proceedings.	USA	A	5, 13(30), 14(0), 18
Iowa State Journal of Research.	USA	A	none
Kansas Academy of Science. Transactions.	USA	A	3
Michigan Academician.	USA	A	3
Minnesota Academy of Science. Journal.	USA	A	8
Montana Academy of Sciences. Proceedings.	USA	A	3, 31(\$10/90 pp.)
National Academy of Science. Proceedings. Nature.	USA	A	7, 14(0)
Naturwissenschaften.	Brit	C	none
New York Academy of Sciences. Transactions.	Ger	C	none
North Dakota Academy of Science. Proceedings.	USA	A	none
Ohio Journal of Science.	USA	A	3, 11(5)
Oklahoma Academy of Science. Proceedings.	USA	A	11(4)
Royal Society of London. Philosophical Transactions.	USA	A	none
Royal Society of London. Proceedings. Science.	Brit	A	none
Southern California Academy of Sciences. Bulletin.	Brit	A	none
Tennessee Academy of Science. Journal.	USA	A	14(0)
Texas Journal of Science.	USA	A	none
Utah Academy of Sciences, Arts, and Letters. Proceedings.	USA	A	13(1), 14(0)
Virginia Journal of Science.	USA	A	none
Washington Academy of Science. Journal.	USA	A	none
Wisconsin Academy of Sciences, Arts, and Letters. Transactions.	USA	A	5, 12
General biology			
Acta Tropica.	Switz	A	31(\$33/380 pp.)
American Microscopical Society. Transactions.	USA	A	none
American Midland Naturalist.	USA	A	18
Biochemical Systematics and Evolution.	Brit	C	31(\$25/220 pp.)

	Publisher Place	Kind	Categories of discrimination
General biology, continued			
Biological Bulletin.	USA	A	none
Biological Cybernetics.	Ger	C	31(\$ <u>55</u> / <u>240</u> pp.)
Biological Reviews.	Brit	A	none
Biological Society of Washington. Proceedings.	USA	A	3
BioSystems.	Neth	C	31(\$ <u>35</u> / <u>250</u> pp.)
Biotropica.	USA	A	5
Canadian Field-Naturalist.	Can	A	11'(<u>6</u>), 16'(<u>0</u>)
Caryologia.	Ital	A	none
Chromosoma.	Ger	C	31(\$ <u>60</u> / <u>450</u> pp.)
Commentationes Biologicae.	Fin	A	6
Cytologia.	Jap	A	11(<u>16</u>)
Embryologia.	Jap	A	11(<u>16</u>), 17(<u>29</u> %)
Evolution.	USA	A	11(<u>15</u>)
Evolutionary Biology.	USA	C	none
Evolutionary Theory.	USA	A	none
Garcia de Orta.	Port	A	none
Growth.	USA	A	11(<u>0</u>)
Journal of Experimental Biology.	Brit	A	none
Journal of Molecular Evolution.	Ger	C	31(\$ <u>55</u> / <u>380</u> pp.)
Journal of Natural History.	Brit	C	31(\$ <u>64</u> / <u>720</u> pp.)
Linnean Society of London. Biological Journal.	Brit	A	none
Perspectives in Biology and Medicine.	USA	U	none
Quarterly Review of Biology.	USA	A	11(<u>20</u>)
Revue Canadienne de Biologie.	Can	U	none
Zoology			
Acta Zoologica.	Scand	A	none
American Entomological Society. Transactions.	USA	A	5
Annotationes Zoologicae Japonenses.	Jap	A	13(<u>6</u>), 14(<u>0</u>)
Auk.	USA	A	11(<u>16</u>)
Bird-Banding.	USA	A	none
Bird Study.	Brit	A	none
Bollettino di Zoologia.	Ital	A	none
British Birds.	Brit	A	none
Bulletin of Entomological Research.	Brit	A	none
Canadian Entomologist.	Can	A	24
Canadian Journal of Zoology.	Can	A	none
Condor.	USA	A	11(<u>16</u>)
Contributions to Primatology.	Switz	C	?1, ?11(see text), 30, 31(\$ <u>112</u> / <u>614</u> pp.)
Copeia.	USA	A	none
Entomologia Experimentalis et Applicata.	Neth	C	11(<u>16</u>), 31(\$ <u>68</u> / <u>480</u> pp.)
Entomologica Americana.	USA	A	11(<u>0</u>), 15, 23
Entomological News.	USA	A	16(<u>0</u>), 26
Entomological Society of America. Annals.	USA	A	4, 13(<u>5</u>), 14(<u>0</u>), 18, 20
Entomological Society of Washington. Proceedings.	USA	A	13(<u>0</u>), 14(<u>0</u>), 15, 25, 26
Entomologists' Record.	Brit	A	16(<u>0</u>)

	Publisher Place	Kind	Categories of discrimination
Zoology, continued			
Fishery Bulletin.	USA	A	none
Folia Primatologica.	Switz	C	31(\$ <u>80</u> / <u>640</u> pp.)
Helminthological Society of Washington. Proceedings.	USA	A	11(<u>0</u>), 15
Herpetologica.	USA	A	11(<u>15</u>), 26
Ibis.	Brit	A	none
Insectes Sociaux.	Fr	C	31(\$ <u>35</u> / <u>420</u> pp.)
International Journal of Insect Morphology and Embryology.	Brit	C	none
Israel Journal of Zoology.	Isr	A	none
Journal of Comparative Physiology.	Ger	C	31(\$ <u>70</u> / <u>400</u> pp.)
Journal of Entomology.	Brit	A	none
Journal of Experimental Zoology.	USA	A	17(<u>50</u> %)
Journal of Fish Biology.	Brit	A	none
Journal of Helminthology.	Brit	A	none
Journal of Herpetology.	USA	A	none
Journal of Mammalogy.	USA	A	none
Journal of Nematology.	USA	A	3
Journal of Wildlife Management.	USA	A	11(<u>10</u>), 18
Journal of Zoology.	Brit	A	none
Lepidopterists' Society. Journal.	USA	A	11(<u>20</u>)
Linnean Society of London. Zoological Journal.	Brit	A	none
Mammalia.	Fr	A	none
Monitore Zoologico Italiano.	Ital	A	11'(<u>15</u>)
Nautilus.	USA	A	16(<u>0</u>)
Nematologica.	Neth	C	31(\$ <u>76</u> / <u>470</u> pp.)
Netherlands Journal of Zoology.	Neth	A	9, 31(\$ <u>45</u> / <u>500</u> pp.)
New York Entomological Society. Journal.	USA	A	14(<u>0</u>), 15
Parasitology.	Brit	U	31(\$ <u>75</u> / <u>820</u> pp.)
Physiological Zoology.	USA	U	none
Primates.	Jap	A	none
Psyche.	USA	A	11(<u>0</u>), 16 (<u>0</u>)
Revue de Zoologie Africaine.	Belg	A	none
Royal Entomological Society. Transactions.	Brit	A	none
Säugetierkundliche Mitteilungen.	Ger	C	31(\$ <u>110</u> / <u>400</u> pp.)
Société Entomologique de France. Annales.	Fr	A	31(\$ <u>95</u> / <u>1000</u> pp.)
Studies on the Neotropical Fauna.	Neth	C	18, 30, 31(\$ <u>44</u> / <u>210</u> pp.)
Systematic Zoology.	USA	A	14(<u>0</u>), 26
Zeitschrift für Morphologie der Tiere.	Ger	C	31(\$ <u>80</u> / <u>320</u> pp.)
Zeitschrift für Parasitenkunde.	Ger	C	31(\$ <u>70</u> / <u>360</u> pp.)
Zeitschrift für Säugetierkunde.	Ger	C	31(\$ <u>60</u> / <u>380</u> pp.)
Zeitschrift für Zoologische Systematik und Evolutionsforschung.	Ger	C	31(\$ <u>74</u> / <u>400</u> pp.)
Zoologica Scripta.	Scand	A	31(\$ <u>52</u> / <u>280</u> pp.)
Botany			
American Journal of Botany.	USA	A	1, 3
Annals of Botany.	Brit	A	19(<u>2</u>)
Arnold Arboretum. Journal.	USA	A	none

	Publisher		Categories of discrimination
	Place	Kind	
Botany, continued			
Baileya.	USA	A	none
Blumea.	Neth	A	none
Botanical Gazette.	USA	U	none
Botanical Magazine.	Jap	A	13(<u>4</u>), 14(<u>0</u>)
Botanische Jahrbücher.	Ger	C	30, 31(<u>\$155/600</u> pp.)
Botaniska Notiser.	Scand	A	3
British Grassland Society. Journal.	Brit	A	none
British Mycological Society. Transactions.	Brit	A	none
Brittonia.	USA	A	none
Bryologist and Lichenologist.	USA	A	none
Canadian Journal of Botany.	Can	A	none
Castanea.	USA	A	3
Euphytica.	Neth	A	11(<u>8</u>)
Forest Science.	USA	A	11(<u>0</u>)
Forestry.	Brit	A	none
Israel Journal of Botany.	Isr	A	11(<u>15</u>)
Journal of Bryology.	Brit	A	none
Journal of Phycology.	USA	A	11'(<u>0</u>)
Linnean Society of London. Botanical Journal.	Brit	A	none
Madroño.	USA	A	3, 11(<u>10</u>)
Michigan Botanist.	USA	A	11(<u>10</u>), 26
Mycologia.	USA	A	2, 18
New Phytologist.	Brit	C	31(<u>\$105/1010</u> pp.)
Nova Hedwigia.	Ger	C	30, 31(<u>\$85/820</u> pp.)
Opera Botanica.	Scand	A	3
Physiologia Plantarum.	Scand	A	13(<u>6</u>), 14(<u>0</u>)
Plant Physiology.	USA	A	14(<u>0</u>), 19(<u>0</u>)
Plant Systematics and Evolution.	Aus	C	31(<u>\$65/300</u> pp.)
Planta.	Ger	C	31(<u>\$55/330</u> pp.)
Pollen et Spores.	Fr	A	none
Revue Algologique.	Fr	A	none
Revue Bryologique et Lichenologique.	Fr	A	none
Revue de Mycologie.	Fr	A	none
Rhodora.	USA	A	16(<u>0</u>)
Taxon.	Neth	A	none
Torrey Botanical Club. Bulletin.	USA	A	3, 11(<u>6</u>)
Vegetatio.	Neth	A	11(<u>24</u>), 18, 30, 31(<u>\$43/430</u> pp.)
Microbiology			
Antonie van Leeuwenhoek.	Neth	A	none
Archives of Microbiology.	Ger	C	31(<u>\$40/300</u> pp.)
Bacteriological Reviews.	USA	A	none
Canadian Journal of Microbiology.	Can	A	none
International Journal of Systematic Bacteriology.	USA	A	none
Journal of Foraminiferal Research.	USA	A	21
Journal of General Microbiology.	Brit	A	none
Journal of Protozoology.	USA	A	11(<u>0</u>), 15
Protistologica.	Fr	A	31(<u>\$75/600</u> pp.)

	Publisher Place	Kind	Categories of discrimination
Anthropology			
American Anthropologist.	USA	A	10
American Journal of Physical Anthropology.	USA	A	17(50%)
Annals of Human Biology.	Brit	A	19(0)
Arctic Anthropology.	USA	A	31(\$15/140 pp.)
Current Anthropology.	USA	A	none
Homo.	Ger	A	31(\$40/270 pp.)
Human Biology.	USA	A	12', 18'
Journal of Human Evolution.	Brit	C	31(\$51/550 pp.)
Man.	Brit	A	none
Southwestern Journal of Anthropology.	USA	A	none
Zeitschrift für Morphologie und Anthropologie.	Ger	C	30, 31(\$78/380 pp.)
Anatomy			
Acta Anatomica.	Switz	C	11(12), 31(\$90/640 pp.)
Acta Morphologica Neerlandico-Scandinavica.	Neth	C	30, 31(\$41/350 pp.)
Advances in Anatomy, Embryology, and Cell Biology.	Ger	C	30, 31(\$170/500 pp.)
American Journal of Anatomy.	USA	A	17(50%), 31(\$76/800 pp.)
Anatomical Record.	USA	A	17(50%)
Anatomy and Embryology.	Ger	C	18, 31(\$75/350 pp.)
Archives d'Anatomie, d'Histologie, d'Embryologie.	Fr	C	30, 31(\$106/240 pp.)
Archivio Italiano di Anatomia e di Embriologia.	Ital	A	13(24), 14(0)
Journal of Anatomy.	Brit	A	none
Journal of Biomechanics.	Brit	C	none
Journal of Comparative Neurology.	USA	A	17(50%)
Journal of Embryology and Experimental Morphology.	Brit	U	none
Journal of Morphology.	USA	A	17(50%)
Okajimas Folia Anatomica Japonica.	Jap	A	none
Paleontology			
Bulletins of American Paleontology.	USA	A	1, 16(0)
Fossils and Strata.	Scand	A	8, 11(0)
Geobios.	Fr	A	none
Journal of Paleontology.	USA	A	11(15), 19(4)
Lethaia.	Scand	A	1, 26
Micropaleontology.	USA	A	none
Palaeontographica.	Ger	C	30, 31(\$92/255 pp.)
Palaeontographica Americana.	USA	A	1, 16(0)
Paläontologische Zeitschrift.	Ger	A	none
Palaeontology.	Brit	A	none
Palaeovertebrata.	Fr	A	none
Paleobiology.	USA	A	none
Review of Palaeobotany and Palynology.	Neth	C	31(\$96/700 pp.)
Revista Española de Micropaleontología.	Spain	A	none
Societa Paleontologica Italica. Bollettino.	Ital	A	none
Special Papers in Palaeontology.	Brit	A	26(but see text)

	Publisher Place	Kind	Categories of discrimination
General geology			
American Association of Petroleum Geologists. Bulletin.	USA	A	11(<u>40</u> MS pp.)
American Journal of Science.	USA	A	none
Bulletin of Canadian Petroleum Geology.	Can	A	none
Canadian Journal of Earth Science.	Can	A	none
Contributions to Geology.	USA	A	none
Earth-Science Reviews.	Neth	C	none
Eclogae Geologicae Helvetiae.	Switz	A	none
Geological Journal.	Brit	A	none
Geological Magazine.	Brit	A	none
Geological Society of America. Bulletin.	USA	A	none
Geological Society of London. Journal.	Brit	A	none
Geologists' Association. Proceedings. Geology.	Brit	A	none
Journal of Geology.	USA	A	none
Journal of Geology.	USA	U	none
Neues Jahrbuch für Geologie und Paläontologie.	Ger	C	31(<u>\$76/380</u> pp.)
Norsk Geologisk Tidsskrift.	Scand	A	none
Palaeogeography, Palaeoclimatology, Palaeoecology.	Neth	C	none
Precambrian Research.	Neth	C	none
Quaternary Research.	USA	A	none
Scottish Journal of Geology.	Brit	A	none
Société Géologique de Belgique. Annales.	Belg	A	3
Southeastern Geology.	USA	A	none
Aquatic biology			
Archiv für Hydrobiologie.	Ger	C	30, 31(<u>\$124/560</u> pp.)
Botanica Marina.	Ger	C	31(<u>\$90/250</u> pp.)
Bulletin of Marine Science.	USA	A	none
Cahiers de Biologie Marine.	Fr	A	none
Deep-Sea Research.	Brit	C	none
Freshwater Biology.	Brit	A	31(<u>\$70/600</u> pp.)
Helgoländer Wissenschaftliche Meeresuntersuchungen.	Ger	A	none
Hydrobiologia.	Neth	C	18', 31(<u>\$44/550</u> pp.)
Limnology and Oceanography.	USA	A	none
Marine Biological Association of the United Kingdom. Journal.	Brit	A	none
Marine Biology.	Ger	C	11(<u>12</u>), 31(<u>\$80/360</u> pp.)
Schweizerische Zeitschrift für Hydrologie.	Switz	A	11(<u>32</u>), 18
Ecology			
Biological Conservation.	Brit	A	none
Ecological Monographs.	USA	A	11(0)
Ecology.	USA	A	13(<u>16</u>), 14(0)
Environmental Entomology.	USA	A	4, 13(<u>5</u>), 14(0), 18, 20
Journal of Animal Ecology.	Brit	A	none
Journal of Applied Ecology.	Brit	A	none
Journal of Biogeography.	Brit	C	31(<u>\$34/300</u> pp.)
Journal of Chemical Ecology.	USA	C	none

	Publisher		Categories
	Place	Kind	of discrimination
Ecology, continued			
Journal of Ecology.	Brit	A	none
Journal of Range Management.	USA	A	11(4)
Oecologia.	Ger	C	31(\$40/370 pp.)
Oecologia Plantarum.	Fr	A	31(\$45/400 pp.)
Oikos.	Scand	A	11(10)
Researches on Population Ecology.	Jap	A	3', 11(20), 19(0)
Behavioral biology			
Animal Behaviour.	Brit	A	none
Animal Learning and Behavior.	USA	A	none
Behavioral Biology.	USA	C	none
Behaviour.	Neth	C	31(\$28/320 pp.)
Brain, Behavior and Evolution.	Switz	C	31(\$98/480 pp.)
Journal of Biological Psychology.	USA	A	none
Journal of Comparative and Physiological Psychology.	USA	A	none
Zeitschrift für Tierpsychologie.	Ger	C	31(\$110/550 pp.)
Genetics			
American Journal of Human Genetics.	USA	U	16(1.5)
Annales de Génétique et de Sélection Animale.	Fr	A	31(\$55/520 pp.)
Annals of Human Genetics.	Brit	A	18, 19(0), 22
Archiv für Genetik.	Switz	A	none
Behavior Genetics.	Brit	C	none
Biochemical Genetics.	USA	C	none
Canadian Journal of Genetics and Cytology.	Can	A	none
Cytogenetics and Cell Genetics.	Switz	C	11'(10), 31(\$70/480 pp.)
Genetica.	Neth	C	30(but price is only \$34/550 pp.)
Genetical Research.	Brit	U	31(\$60/700 pp.)
Genetics.	USA	A	none
Hereditas.	Scand	A	8, 11(32)
Heredity.	Brit	A	none
Human Heredity.	Switz	C	11(8), 31(\$70/580 pp.)
Humangenetik.	Ger	C	31(\$70/350 pp.)
Japanese Journal of Genetics.	Jap	A	11(12)
Journal de Génétique Humaine.	Switz	A	none
Journal of Heredity.	USA	A	16(1)
Theoretical and Applied Genetics.	Ger	C	31(\$65/380 pp.)
Zeitschrift für Pflanzenzüchtung.	Ger	C	31(\$100/350 pp.)
Zeitschrift für Tierzüchtung und Züchtungsbiologie.	Ger	C	31(\$55/160 pp.)
Theoretical biology			
Acta Biotheoretica.	Neth	A	31(\$24/200 pp.)
American Naturalist.	USA	U	12
Biometrics.	USA	A	none
Bulletin of Mathematical Biology.	USA	A	none
Journal of Mathematical Biology.	Aus	C	31(\$55/350 pp.)
Journal of Theoretical Biology.	Brit	C	1, 26
Mathematical Biosciences.	USA	C	none
Theoretical Population Biology.	USA	C	11(8)