Economics of Publishing Divisional Preprints*

By JOSEPH H. KUNEY
American Chemical Society, Washington 6, D. C.
Received August 28, 1962

The question, "What does it cost to produce a preprint?" can only be answered relative to the place of preprints in the chemical literature. Today preprints provide primarily a service to members of the divisions which issue preprints and a convenience for those attending national meetings of the ACS.

If these objectives and criteria are satisfactory, then costs need be no concern for those contemplating publication of a preprint. Divisions currently in the business produce preprints of 100 to 300 pages at a cost between $1.00 and $1.60 per copy, including mailing and postage charges.

The secret to such low unit costs, even in the face of the small number of copies printed, lies in the maximum use of volunteer help, contributed time, and author cooperation. In effect, the costs have been reduced to printing, binding, paper, mailing, and postage. An equation can be set up which describes the situation and, in particular, emphasizes the important contribution of those who work without pay:

$$C_p = (C_o - H_v) + C_m$$

where

C_p = total cost of preprint
C_o = all costs other than mechanical and distribution
H_v = contribution of volunteer help
C_m = cost of printing, binding, paper, mailing, postage, etc.

Thus, when $C_o = H_v$, $C_p = C_m$.

Now, if a division can get someone to do the printing and furnish the paper and have all copies delivered without the use of the mails, then $C_m = 0$ and $C_p = 0$.

While the latter situation is possible but unrealistic, several divisions are showing that volunteer help and contributed time can eliminate all charges except those we class as mechanical and distribution.

For example, editors serve without fee or honorarium; secretarial and clerical help is furnished through company cooperation or volunteer time; authors type manuscripts in a form suitable for photographic reproduction; and other needed details are attended to by members of the respective divisions willing to give of their time and effort in such a project. Niceties of publication, such as careful editing for technical content, grammatical structure, and literary quality are eliminated as an editorial function and left largely to the authors.

Problems of selling, promotion, and distribution are practically nonexistent because of limited print orders. Back copies are not available except for a short period following the meeting for which the preprint was prepared, and reprints are not made available to authors.

In four of the six preprints now published—including the postprint issued by the Division of Chemical Marketing and Economics—the authors are asked to furnish their manuscripts typed single spaced on a size 8.5 × 11 paper. At least one division provides forms to authors to guide typing margins.

These manuscripts are photographed directly and, after reduction, offset printing plates are produced by the Xerox method or conventional photographic methods. In the other two preprints, the style of typing is constant, indicating a single source. Page sizes used in current preprints are 5.5 × 8.5, 6 × 9, and 6.875 × 9.75 in. The limiting factor is the amount of typing that will fit an 8.5 × 11 sheet of paper. The average page of typed matter is reduced 35% to fit the first format, and 30 and 25%, respectively, for the other two.

Paper used in the current preprints is adequate for the purpose and generally what is described in the printing business as the equivalent of 50-lb. offset. No tests have been run, but with the tendency today to produce printing papers with pH of six or higher, it would be guessed that the paper would have a shelf life more than adequate for any foreseeable use.

Print orders are limited normally by ACS regulation to 130% of the membership of the division. The Division of Fuel Chemistry, among the smallest divisions, prints 400 copies of its preprint, while the Petroleum Division, one of the largest divisions, prints about 3500 copies. Sales are no problem with most of the copies distributed to members at the meeting. The remaining copies generally are disposed of within a few months of the meeting, which eliminates the storage problem and any related costs.

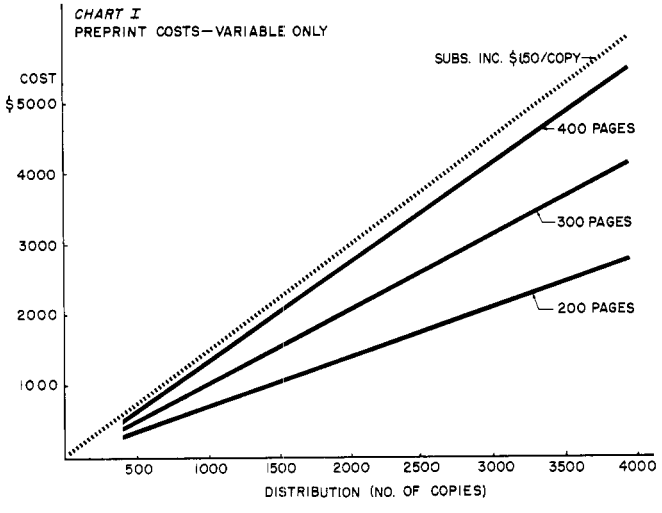
Promotional efforts may consist of a notice in mailings to the members, or a sign posted on a desk outside the meeting rooms where the divisions are holding sessions—minimum, but adequate to do the job.

In any discussion of preprint costs, the subject of advertising is sure to come up. Limited circulation and infrequent publication are weak bases on which to build sale of advertising. The one preprint which does carry advertising covers only 15 to 20% of its total cost with advertising income. The comments of the managing editor of that preprint are worth noting: "My recommendations

*Presented before the Division of Chemical Literature, ACS National Meeting, Atlantic City, N. J., September 10, 1962.

regarding the sale of advertising for preprints is 'don't' if the preprints can be financed in any other way. Advertising is very difficult to obtain, and a lot of volunteer time goes into soliciting it. If we had to pay for this time it certainly would not pay."

We may get a little better idea of the economic picture if we prepare a breakdown chart to illustrate how changes in the cost structure can affect the over-all situation (see Chart I).



A minimum preprint operation in which the only costs are printing, paper, binding, mailing, and postage has, for practical purposes, variable costs only; that is, the cost varies approximately as the number of pages and number of copies printed and distributed.

To prepare Chart I, we have assumed a rate of $3.50 per page per thousand impressions as a reasonable average to cover mechanical and distribution costs, including postage for publications within the circulation range of present preprints. Thus, if we print 1000 copies the cost is $700 for a 200-page book or $1050 for a 300-page book.

Economic feasibility includes the question of available income as well as cost of production. It has been assumed that a charge of $1.50 per issue, or $3.00 per year for two preprints per year, would be well within the willingness-to-pay range of potential subscribers. The chart shows how this sum adequately covers costs for the average preprint operation. But as reported by one division here today, a dues increase of $1.00 per year to $4.00 was a major factor in the failure of about one third of the members to renew their membership in the division. The purpose of the increase was announced as necessary to cover preprint costs. It is safe to assume that at any price there are marginal readers who will be lost if the price is increased. Replacing these readers may require added promotional efforts.

Other potential sources of income include page charges, sale of subscriptions to non-division members, subsidy from industry, sale of reprints, and, as mentioned by one speaker today, royalties from book publication. But, once again, each of these adds to the complexity of the publishing operation and increases the demands that must be put on volunteer help. If and when that source dries up, another increment of cost must be added. There are no rules by which we can forecast such eventualities, but a prime factor in maintaining the interest of volunteer workers will be the usefulness of the preprints to scientists, and particularly to the members of the respective divisions.

Up to this point, we have talked largely about preprints as they are being published today. But much of the discussion about the role of preprints revolves around their potential as additions to the permanent literature. If the preprint program should be expanded or broadened in order to give preprints more vestiges of the permanent literature, can we expect to operate on the present low-cost basis?

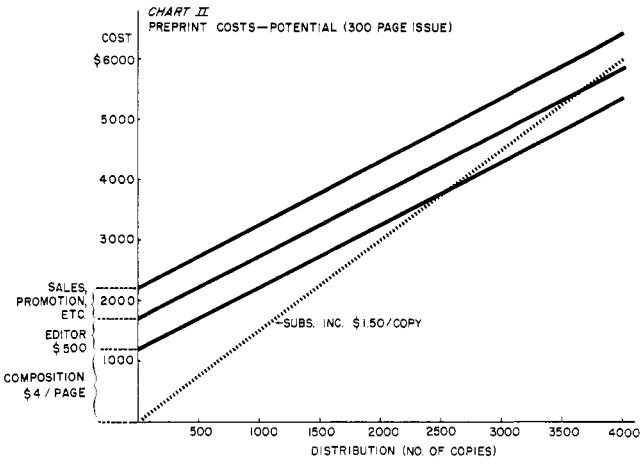
The first refinement likely to be demanded is a more uniform appearance of the finished preprint. This means retyping all the manuscripts by a single source following a set sytle or arrangement. If manuscripts are to be retyped, it also introduces the potential for more editorial control; that is, grammar can be corrected, excessive wordage can be eliminated, and clarity of expression can be sharpened up.

But these refinements will add to the cost of the preprint operation. While it is conceivable that someone would be willing to type 200 to 300 pages of complex technical material as a service to the division, it is more likely that an organization specializing in this type of work must be called on to do the work. Costs vary from $2.00 to $8.00 per page, depending on the complexity of the material (tables, formulas, mathematics, etc.) and the amount of reduction, that is, the amount of material per page. If justified right-hand margins are desired, the cost will run 75 to 100% higher.

If retyping were adopted and a policy of greater editorial control instituted, then the matter of getting an editor to serve without some remuneration may become a problem. The increased time demands on the editor, plus added needs for secretarial help, probably would lead to some added expense. At the very least this involves payment for secretarial and clerical help. Most companies and schools permit a staff member to spend some company time on editorship activity. In some cases this may include secretarial help, but with lesser frequency than they would contribute the time of an editor. A guess of additional costs is somewhere between $500 and $1500 per year. Another item of cost which may be necessary is for artwork to bring charts and graphs up to reproduction standards.

If the preprint is to take a place as part of the permanent literature, there are several added responsibilities which may add to the total cost. The printing of more copies means storage problems and sales of back numbers. Somebody will have to handle details, and the manpower and space required may cost money. If more use is to be made of the preprint, then there is the responsibility to let potential users know that such a publication is available and at least some minimum promotion efforts are called for.

Incorporating such refinements and the added costs into preprint publication will change the break-even situation as shown in Chart II. The variable costs of Chart I are affected slightly, but the new costs are independent of the number of copies printed. The effect on total costs and income requirements is shown in Chart II.



This, then, is the basic information which can be used to guide decision making with regard to preprint publication. The cost figures which have been used are, to the best of my knowledge, reasonable approximations of what can be achieved in today's market. In some special situation where the print order and the number of pages is much smaller than average, or where there is an unusual amount of chart and photographic material to be reproduced, the costs will run higher.

In summary, a minimum preprint program can be achieved at a cost of little more than $1.00 per copy. To do this, concessions must be made to editorial quality and appearance, but at little sacrifice to the usefulness of a preprint as a preprint. Whether these concessions are acceptable in preprints as part of the permanent literature remains an unanswered question.

Advances in Chemistry Series as a Publication Outlet for Divisions*

By ROBERT F. GOULD
American Chemical Society, Washington 6, D. C.
Received September 26, 1962

Most journals dislike printing symposia, especially when they contain review papers. Twelve years ago many ACS meeting symposia never were published as units. Selected papers might be published in various journals, but the rest fell by the wayside. Fragmentation was the general rule, and the divisions sponsoring the symposia were getting disturbed about it.

The ACS Applied Publications met this situation by founding "Advances in Chemistry Series" as an outlet for collections of papers and data that were too big or too diverse for publication in journals but were still worth preserving and publishing as units. For the ten years following 1950, volumes appeared at about the rate of two or three per year. Most of these volumes were symposia sponsored by the Division at ACS national meetings. Since the present editor assumed responsibility for this series in 1961, the rate has been accelerated. Six volumes appeared in 1961. So far in 1962 two volumes have appeared, and four others are working.

So far, volumes have been published in this series for 14 of the divisions. Ag and Food has sponsored or cosponsored eight; Chemical Literature, six; Petroleum, I&EC, and Colloid, three each; Medicinal and Inorganic, two each; Analytical, Carbohydrate, Chemical Education, Chemical Marketing, Organic, Organic Coatings, and Water have each had one volume. Eight Divisions have not taken advantage of the opportunities offered by "Advances in Chemistry Series," but of these three publish their papers as preprints.

Volume 36 is a preprint of a division symposium that has just been published in the "Advances in Chemistry Series," It is the symposium on "Free Radicals in Inorganic Chemistry" that is being sponsored by the Division of Inorganic Chemistry at this meeting. Let me tell you a little about the schedule under which this was produced. The first contact on this symposium was a letter last December 27 to Dr. Charles B. Colburn of Redstone Arsenal. In this letter I noted that Dr. Colburn was Symposium Chairman and invited him to consider "Advances"as an outlet for his papers. This is similar to the letter I send to every symposium chairman as soon as his program is announced and where there seems to be a good likelihood that the symposium would be one we could publish in "Advances in Chemistry Series." Dr. Colburn responded immediately and agreed to explore the matter with his authors. While the symposium chairman is the first point of contact, it is the authors who have to decide whether the symposium will be published one way or another.

After exploring the matter on both sides, we confirmed the agreement on March 7th to publish the symposium with a deadline for papers of May 1. The first papers arrived in my office on April 30 and the others soon afterward. All papers were reviewed at least twice by reviewers chosen in this office. Some reviewers suggested revisions, and these revisions were effected on schedule. Only one author failed to get his manuscript in on time so that the symposium as printed here represents $17/18$ or 95% of the symposium that will be presented during the next several days. Copies were delivered by the printer on Aug. 21 and are on sale here at the meeting.

This particular book has an index because we had the editorial time available to do it. We don't always have this time, and we are not yet certain that indexes are

* Presented before the Division of Chemical Literature, ACS National Meeting, Atlantic City, N. J., September 10, 1962.