Our thanks are due to our former colleague, Russell E. Marker, now in Mexico, for the methods used.

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UNUSUAL MORTALITY AMONG GEOLOGISTS

DURING the slightly over five months ending April 19 no less than sixteen fellows of the Geological Society of America have died. Only twice in the entire fifty years of the society's history has the entire annual loss of its personnel been as heavy as in this five-month period. Never has the distinction of the deceased fellows been so outstanding. The list follows:

	Date of death		Age
	1943		
Frank Leverett	November	15	84
H. L. Fairchild	"	29	94
	1944		
G. O. Smith	January	10	73
E. B. Mathews	February	4	74
Arthur Keith	"	7	79
F. G. Clapp	"	18	65
E. O. Ulrich	"	22	86
Douglas Johnson	"	24	66
R. E. Dickerson	"	24	66
J. A. Taff	March	8	81
H. A. Buehler	"	14	68
B. L. Miller	"	23	69
H. L. Smyth	April	3	81
H. N. Eaton	"	12	64
F. C. Schrader	"	16	83
R. C. Wells	"	19	66
	Average		74.5

This list includes our foremost glacial geologist (Leverett); three former presidents of the Geological Society of America (Fairchild, Keith and Johnson); a former director of the U. S. Geological Survey (Smith); a Penrose Medallist (Ulrich); four members of the National Academy of Sciences (Leverett, Keith, Ulrich and Johnson) and two of the American Philosophical Society (Leverett and Johnson).

Three other geologists not fellows of the society died within the same period. They were George Steiger, who died on April 18 at the age of 74, R. C. Wells, who died on April 19 at the age of 66, and F. B. Hanley, who died on April 24 at the age of 45.

Can these losses, notwithstanding the ripe age of the men, be regarded as war casualties? Some we know have been called back into strenuous active service, and all have probably suffered disillusionment by reason of the world catastrophe with its destruction of cultural institutions and values, to which their lives have been devoted. Few have been without close friends or relatives in supreme danger on the fighting fronts.

WM. H. HOBBS

THE PAPER SHORTAGE AND SCIENTIFIC PUBLICATION

WARTIME limitations of paper are making serious difficulties for our scientific periodicals, and the paper shortage is more likely to increase than to diminish.

Three adjustments are possible: (1) Scientific journals might be officially recognized as of greater value than, say, newspapers, and so obtain higher priorities; (2) there could be a drastic curtailment of publication; (3) better printing, editing and other means could secure publication of substantially the present material in less space.

Doubtless scientific publications are more valuable than much of the stuff that is printed in the popular newspapers and magazines. But it is altogether unlikely that scientific journals could compete with popular magazines in bringing pressure on allocating authorities.

Drastic curtailment in the publication of scientific results would be a calamity to the nation. As a matter of fact, the paper shortage merely brings to a head a crisis in scientific publication which has been long developing, and it is high time that it be given careful consideration. The effectiveness of scientific investigation is menaced by increasing difficulty and delay in publication. Prior to this present squeeze in paper the chief difficulty has been due to rising costs which compelled restriction of output with consequent congestion until papers often become almost obsolete before publication. Nothing is more important to the advance of science than the prompt interchange of results. This has been accomplished by printing, but present conditions have fostered other and quicker modes of diffusion. These should be stepped up in frequency and in effectiveness.

The easiest method for prompt dissemination of results is by the exchange of manuscripts within the small circle of workers known to be actively concerned. This gives insiders a great advantage. During the war when much is secret, outsiders have little chance of making useful contributions. No one doubts the necessity for secrecy in war research, but science advances mostly through the stimulation of mind on mind. The chief function of technical societies is to keep their members abreast of progress, and desire to keep up with developments is the principal motive for maintaining membership. In elementary self-interest, therefore, a technical society ought to be alert for every means of increasing its usefulness to its members.

Some societies distribute advance abstracts of the papers offered at their annual meetings. Not infrequently these appear more than a year before the papers themselves are printed. Authors and program makers should take great pains to improve abstracts.

Many of those published at present leave much to be desired. Often a list of procedures rather than a summary of results and conclusions is offered. But there is no reason for restricting advance abstracts to papers which are to be read at meetings. This is especially true in these days when meetings are curtailed. Why not publish an abstract of every paper as soon as it is received?

Microfilm or other copies of manuscripts awaiting publication could readily be made available immediately upon receipt of a paper. Much could be done by building up notification services linked with advance abstracts so that interested people would be apprised promptly of completed researches. If editors would publish "Advance Abstracts of Papers Received and Available in Microfilm" in every issue of their journals, I venture to predict that readers would habitually turn to this section of the journal before reading anything else.

Abstracts should be published immediately upon receipt of a paper, before decision was reached whether or not to print it (except for papers obviously unsuitable for the journal concerned). Whatever the editor may think of a paper, the writer is ready to have it broadcast, and immediate distribution would be highly desirable to both author and editor—in more ways than one. The circulation of copies privately would promote discussion and criticism which would greatly lighten editorial work, providing what would amount to a wider circle of referees than are now consulted. More extended criticism would cause authors to revamp and improve their papers, and the journals would benefit greatly.

Wide prepublication circulation of results would permit editors to view their tasks from a point of view entirely different from that which they must now take. One often hears it said of some of the most valuable scientific papers that they will be used by only a dozen men anyway and the opinion of the rest doesn't matter. If, now, the dozen people who would actually use the paper had already read it, there would be less need of publishing it in full. Under these circumstances the editor's job would be to publish such a condensation of the manuscript as would be useful or interesting to the majority of his readers. Copies of the original would still be available to all who need the details, and could be cited like published papers.

A concrete illustration of the service that advance abstracts could render to science will be useful: There has been discussion between British and Americans as to the proper daily allowances of certain vitamins. The British, perhaps unduly influenced by short supplies, have felt that their people could get along on one third of the American allowances. Some Americans have been fearful of the consequences to the English people. Decisions on both sides had been reached on the basis of inference from indirect evidence. In reviewing the situation a consultant alluded to a paper, referred to him by an editor, which gave the results of an experiment on human beings and fixed the needed level of intake. The authors promptly supplied a copy, and their researches began immediately to bear fruit.

Two months later a casual telephone conversation revealed the fact that the Office of the Quartermaster General was worrying about the same problem. They had not heard of the research, which was still unpublished. Again, because of knowledge possessed only accidentally, and only accidentally transmitted, the application of science was speeded up.

Four months later the paper was published, considerably recast and improved. This improvement was an important gain to both author and journal. But immediate use of the results was important. An advance abstract, making everybody aware of what was going on, would have saved at least three months time in an important war service.

Many times nowadays cost of printing compels editors to delete data essential to those doing related researches. Conversely, much material of no interest outside a small circle is published merely because this small group must have the material if research is to move forward. If editors knew that such data were already in the hands of those who would use them, or were readily available, they could then proceed to increase the utility of their journals to the general run of their readers. Perhaps this might permit sufficient condensation of the material published to pay for the microfilm or photostat copies needed by specialists. It would increase reader use and appreciation, and so, circulation—again, in turn, easing financial problems.

The wartime necessity for contracting publication can, in fact, be a blessing in disguise. Most people feel that much material—always, of course, other people's copy—appears in the scientific journals which should be edited out. Most editors would do more and better editing if they had the courage that their judgment dictates. Nevertheless, few scientific men realize how much improvement more and better editing could bring about. Authors who finally manage to "get their papers off" are stale and unable to go further in their presentation. After the author has done all he can to a paper, it can be improved by another hand. I remember when a friend of mine took a position on the staff of one of the leading magazines he told his chief, "I can write and I can edit, but one thing I can not do is to edit my own copy." The services of a good editor, though seldom enjoyable, are of inestimable value to any author. The most skilful of writers are no exception. One of the best of these once wrote a letter to the *Reader's Digest* somewhat in this wise, "I thought it was all well enough for you to

compress the work of ordinary writers into a third of the space it took originally, but I write carefully, weighing every word, and I knew that no such liberties could be taken with my stories without destroying them. I was, therefore, indignant when I heard you had done it also to me—but I must confess that you improved my work."

The most notable event among the popular magazines of the last decade has been the phenomenal success of the *Reader's Digest,* which has not only outstripped in popularity all the old-line magazines in its general field, but has driven several of them to the wall. Indeed, some of those magazines which survive do so only from the proceeds of abstracting rights sold to the *Reader's Digest.* It is noteworthy that the advertising carried by the old-line magazines does not suffice to save them. It would be worth while for the scientific journals to study the factors in the success of the *Reader's Digest.*

If one takes the trouble to compare the abridged articles of the *Reader's Digest* with their originals, he finds not only that often nothing has been lost by abbreviation, but that frequently something has been gained. Could research papers be improved by similar treatment? For the most part, I believe that they could except for the few investigators in cognate fields who must have detail. Skilful editing by one closely in touch with the science concerned could solve the problems of many a journal.

Another strong factor is operating to compel condensation of scientific publication. No man can read all the material published even in a small field. If the volume of publication is reduced, there will be better support for what remains.

After the editor has done his work, still further economies (and improvements) can be made in type and format. Scientific periodicals have made very great progress toward better printing in the last decade. But there are still very great differences in the printing of scientific publications. Study of the organs of the member societies of the Division of Biology and Agriculture of the National Research Council reveals that some of them get three times as much print onto a square foot of paper as others. Clearly a good deal of improvement could be made here.

Recent researches into the visual task imposed by reading point the way to further improvements beyond the best of our scientific serials to-day. Matters concerning type and format, however, can not be profitably discussed within the limits of this paper. The means of meeting congestion and delay in publication here advocated are, however, independent of typography or format. It is believed an effective advance notification service would permit substantial contraction (without loss to science) of published papers. This would be brought about by prompt publication of advance abstracts of researches as soon as completed accompanied by wide availability of copies, by microfilm or otherwise, of the manuscripts to those directly concerned.

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SCIENTIFIC BOOKS

CHEMISTRY

Organic Chemistry for the Laboratory. By C. W. PORTER and T. D. STEWART. vi + 222 pp. $5\frac{1}{2} \times 9$ in. The Athenaeum Press. Boston, New York, etc.: Ginn and Company. 1943. $2.00.

THIS little manual has been prepared as a guide for an introductory laboratory course in organic chemistry. As the authors explain in their preface, the manual provides for work extending through a period of one year, but it is particularly designed for a half-year course of thirty to forty laboratory periods. The manual is divided into four sections: I. General Directions; II. Experiments; III. Mechanical Operations; IV. Appendix. The first section is very brief (5 pp.), and the next section (154 pp.), comprising theoretical discussions and laboratory procedures for some fifty experiments, divided about equally between aliphatic and aromatic compounds, constitutes the main part of the manual. After the first three experiments, "Distillation," "Crystallization" and "Qualitative Tests for the Elements," the experiments are largely of the preparative type and similar in nature and arrangement to those that are to be found in other organic laboratory manuals. Optional procedures and short "reaction" experiments frequently follow the preparation directions. The latter are quite explicit in the earlier experiments and are given in more general terms as the student advances. Most of the experiments end with a set of five or six suggestive and helpful problems. The experimental section is concluded with a very brief discussion and series of tests on "The Classification and Identification of Compounds."

The third section (51 pp.) presents a simple and straightforward discussion of the theory and principles underlying the following mechanical operations: "Distillation," "Extraction," "Filtration," "Crystallization," "Sublimation," "Determination of Boiling Point," "Determination of Melting Point," "Calibration and Use of Thermometers" and "Methods of Dry-