

wheat seedling growing in a small water culture container was placed midway between the two light filters. The container was rotated to a position in which the plant stem was exactly perpendicular to a straight line joining the two lamps. The box was closed and after a few hours the plant was examined and found to have grown toward the green light.

Since there is always the possibility of two similar electric lights differing in intensity enough to be detected by the plant they should be interchanged and the experiment repeated with another seedling. To insure more accurate results the intensity of light coming through each filter should be tested by means of a suitable thermopile and a galvanometer. If the intensities differ, one light should be moved to such a position that the galvanometer shows the same deflection for each light when the thermopile is placed at equal distances from the light filters. In the experiment noted above the calculated distances were corrected to those obtained by actual intensity measurements.

It is not the purpose of this paper to set forth results regarding the action of various light waves on growth but merely to indicate a method which promises to give quantitative results. This is especially true since the methods of measuring light have become more refined and a number of very good light filters are available which limit the wave-lengths to definite portion of the spectrum.—EARL S. JOHNSTON, *University of Maryland*.

SCIENTIFIC PUBLICATION

In the interests of economy of time and money it is very desirable to make scientific papers as brief as clearness of presentation permits. The output of scientific papers grows constantly, and it is increasingly difficult to keep abreast of the literature in any important field. Moreover, the costs of publication have become so high that authors should be willing to condense the presentation of their results as much as possible. Many papers would be greatly improved by more careful organization, and by concentrating upon the important features.

With reference to organization, writers can enhance the value of their work by a little attention to the order of presentation. Papers that have a brief and pointed approach to the problem, succinct statements of the methods used, clear cut presentation of data, and critical discussion of the problem as a whole, are usually briefer and more desirable than more diffuse papers in which no attempt has been made at orderly presentation.

As to the expensiveness of publication, the main difficulties arise in connection with the use of graphs, plates, and tabulated data. The physiologist must use these devices, but when they are used in excess of the real requirements, they add enormously to the costs of publishing. It is wise,

therefore, to restrict the use of such material as closely as adequate presentation will permit. It costs more than twice as much for a page of tabulated data, for instance, as for a page of text discussion. If writers were to select their material carefully, so as to illustrate their discoveries adequately, but not extravagantly, it would be much easier to cover the costs of publication. We hope that contributors to PLANT PHYSIOLOGY will remember these facts when they are preparing manuscript for its pages.

Frequently graphs are not made in the right proportion for reproduction. It is customary to reduce the size of a graph to about one third of the original size. The whole graph must then be made three times as large as it is to appear, the lines three times as thick, the figures and letters three times as large as they are to appear on the printed page. If the numbers and letters are too small, they become illegible on reproduction at reduced size. Careful attention to uniformity of size of figures and letters used to designate parts of the graphs will also help to give the final reproduction a good appearance.

The size of the journal page should always be kept in mind in preparing graphs, and plates, and tables. All of them should be so constructed that they will fit the pages of the journal when the reductions have been made.

Many authors make the mistake of placing the legends for graphs and plates on the margin of the drawing paper, or on an attached folder. As the legends must be sent to the typesetters, and cuts to the engravers, this practice entails unnecessary work on the part of the editor. The legends should be typewritten upon a separate sheet, numbered to correspond with the graphs and plates, which should bear numbers on their backs, and the name of the author.

In the preparation of literature lists, contributors are requested to use alphabetical order, and to adopt the style of citation employed in this number, name of author, title of paper, name of journal properly abbreviated, volume number, limiting pages, and year of publication. It will lighten the work, and expedite the issuance of the journal if all of our contributors will remember these simple rules. Such cooperation will be very greatly appreciated.—C. A. SHULL, *Editor-in-Chief*.