make an added judgment in switching the order. Note also that seven fewer words convey the meaning.

Like the impersonal construction, the passive voice too often weakens scientific writing. Usually the active voice makes for a more effectively direct sentence. Too much passive voice in this example from a psychologist's article:

> For instance, a boy may be able to catch a ball, to dodge and to run. Ultimately it will be necessary for him to receive a punt with opposing ends bearing down upon him. In this total situation, account *must be taken* both of the ball and of the approaching ends. If only the ends *are perceived,* he is likely to fumble; if account only of the ball *is taken,* he is likely to be thrown for a loss.

Altered to active voice: . . . Ultimately he may have to receive a punt when opposing ends are bearing down upon him. In this total situation he must take account both of the ball and of the approaching ends. If he is aware only of the ends, he is likely to fumble; if he watches only the ball, he is likely to be thrown for a loss.

The passive voice frequently leads to vagueness. Notice the third sentence in the above excerpt. The words "account must be taken both of the ball and of the approaching ends" arouse the question, "By whom?" "By the boy" or "By the reader" are both good answers. In fact, I happened to take the second answer when I first read the paragraph, feeling that the writer was calling attention to the totality of the situation.

MIXED FIGURES OF SPEECH

I am at a loss to account for the flair that scientists show for figures of speech, a great many of which they use badly. Either they have formed the metaphorical habit, trying as they must so often to see new concepts in terms of the old, or perhaps they feel that their writing requires some sort of "literary" adornment.

> These books put not emphasis but a wet blanket on one or all aspects of the evolution principle; and they often succeed in leaving only a pale ghost of our science in the student's hands.

What legerdemain can cover an aspect of a principle with a wet blanket and produce a pale ghost in a student's hands?

> . . . far more important than important new biological discoveries is now the matter of getting a great many more new *ultimate consumers for the body* of biological knowledge that is already at hand.

"Body of biological knowledge" is a perfectly good expression referring to the close, almost organic integration of biological knowledge. Doubtless a figure of speech originally, the phrase has no longer the force of a figure. When in this particular passage, however, the writer combines "ultimate consumers" with the idea of "body of biological knowlege," the latent, long-forgotten metaphor pops out. And for me at least, appears the picture of a maggot-infested carcass.

> . . . his influence was far-reaching through the activities of a considerable number of his students who were privileged to *bask* in the atmosphere of his enthusiastic leadership.

Bask connotes indolence, certainly not encouraged by enthusiastic leadership. A possible revision: . . . of his students who were privileged to work in the exhilarating atmosphere of his leadership.

> A hundred years of a germ of truth, or seventy-six years since its bloom in publication, has either catalyzed or attended a very wide-ranging body of facts relating worthily to the nature, origin, and destiny of man.

By way of contrast with the above, consider the effectiveness of a complex figure adroitly handled:

> Theory is the scaffolding of science, and just as in ordinary building operations, though some parts of it may be used for a short time before removal, others may function for so long a period that they may well be mistaken for the permanent structure itself.

In the hope that the individual scientist may profit at least slightly, I have called his attention to the most typical of the errors appearing in current scientific writing. In general, all men of science need to be constantly aware of the problems of written communication, since in reality the widest diffusion of scientific knowledge depends upon the written word.

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PHLOEM DEVELOPMENT AND BLOSSOMING[1]

As part of a study of why plants blossom, the idea is being developed that the reproductive state results from a similar physiological condition in different plant varieties, although very unlike or even opposite environments, as long- and short-days, are necessary to induce blossoming. It is being reported that an irregular rate of CO_2 exchange accompanies flowering in contrast to a more regular rate in non-flowering plants.[2] Also, that certain anatomical characteristics

[1] Published with the permission of the director of the Wisconsin Agricultural Experiment Station.

[2] R. H. Roberts, James E. Kraus and Norman Livingston. "CO_2 Exchange Rhythm and Reproduction." To appear in *Jour. Agr. Res.*

and a reduced cambial activity accompany flowering.[3] The further similar observation has been reported that the condition of the phloem appears to be particularly correlated with blossoming in a number of dicotyledonous plants.[4] These represented a wide range of reproductive habits.

Some of the phloem characteristics which have been seen to accompany blossoming are: (1) Limited or slight formation of phloem cells following reduced cambial activity which precedes blossoming; (2) small size of later formed cells; (3) increase in cell wall thickness; (4) increase in callose formation on sieve plates and fields; (5) accumulation of inclusions in some cells; (6) mechanical compression.

These various characters appear in unequal degree in different plant species or varieties. For example, the fruitful branches of the ornamental lemon are characterized by much callose formation; the stems of blossoming *Chrysanthemum* by small secondary phloem cells; or the stems of fruiting *Phaseolis vulgaris* by very little phloem.

It also seems significant that plants which produce an abundance of flowers, as the precocious *Begonia semperflorens,* have a very slight development of phloem. In contrast to this group, those which rarely flower, as the variegated *Vinca major* in the greenhouse, have an abundance of phloem tissue.

The conditions of the phloem tissue which accompany blossoming appear to have their effects in much the same manner as artificial girdling. In fact, the question may properly be asked if blossoming is not the result of "natural girdling."

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THE BLACK WIDOW SPIDER

THE only spiders, excepting the Tarantulas, which have gained a wide and infamous reputation are species of *Latrodectus,* a genus of the family Theridiidae. Wherever these spiders occur all kinds of conflicting stories are current among the peoples. There are authentic reports of serious and disagreeable symptoms even fatal results from the bite of these spiders as well as equally authentic reports of bites causing no harm. The contents of the poison sac are controlled by muscular action, probably voluntary on the part of the spider. Thus a bite may be harmless or not, depending upon the amount of venom injected.

Within recent years the literature concerning the common American species (*Latrodectus mactans* Fabr.), the black widow, has greatly increased. It seems that during this time the spider has greatly extended its geographical range. In the United States it first attracted attention in the South and was thought to have a southern distribution only. Cases of arachnidism or spider poisoning have seemed to increase during recent years. In the majority of cases the spider concerned has been the black widow. Therefore its distribution and various activities have attracted attention.

The first comprehensive study and compilation of the literature was that of Bogen.[1] From this work the distribution of the spider could be ascertained, and it was noticeable that it had not been reported from any of the midwestern states.

The next work which gave the distribution of this arachnid was that of Burt.[2] This worker added to the distributional records of Bogen, but still the spider was not recorded from the states of the upper Mississippi valley. A few states on the east coast and Oregon on the west were not represented. Since the spider has such a general distribution one could be practically certain that it occurs in all the states. Nevertheless, the only authentic, scientific records should be based on actual specimens from a definite locality and accurately determined.

The present writer wishes to record this spider (*Latrodectus mactans* Fabr., det. W. M. Barrows) from the following localities in southern Illinois: 1 female, Flora, October 1, 1934 (E. Booker); 1 male, Thebes, December 5, 1934 (H. H. Ross); 1 male, Carbondale, May 30, 1935 (H. H. Ross and C. O. Mohr).

In addition to these records Mr. W. P. Flint has very kindly furnished the following ones from his files in the Section of Economic Entomology of the Illinois Natural History Survey: Bellville, September 24, 1934; Flora, October 4, 1934; Jerseyville, November 6, 1934; Irvington, November 12, 1934; Edwardsville, July 12, 1935 (Alfred Rant); Barry, September 28, 1935 (R. L. Poppenhager). The sex or number of specimens was not indicated. As in the previous paragraph all localities are in Illinois.

The writer desires at this time to mention a few additions to the literature of the black widow which have been made since the bibliographies of Bogen and Burt.

A circular[3] has been published from the Oregon Agricultural Experiment Station which records the spider from that state and gives general information. It is mentioned as being most numerous in the eastern portion of the state. Thus this spider has now been recorded from every state west of the 100th meridian.

[3] Ocra C. Wilton and R. H. Roberts, *Bot. Gaz.*, September, 1936.

[4] R. H. Roberts, "A Discussion on Fruitfulness." Conference of Pacific N. W. Horticulturists, Entomologists and Plant Pathologists, Bozeman, Montana, July 15, 1936.

[1] *Anns. of Internal Medicine,* 6: 375, 1932.

[2] *Jour. Kans. Ent. Soc.,* 8: 117, 1935.

[3] *Oregon Agric. Expt. Station, Circ.* 112, 1935.