to some extent, and the presentation of the results of research. Furthermore, in inaugurating the Stephen Hales Prize, the Society of Plant Physiologists will provide a means whereby, from time to time, an excellent contribution in plant physiology may be appropriately signalized as exemplary for its period. As the number of papers thus distinguished grows, the younger investigators in this science may turn to them as models. Finally, each award will constitute a democratic expression of approval and appreciation by the colleagues of the investigator thus honored, and the honor of being selected for the Stephen Hales Prize will surely come to be highly valued. Such considerations as these are in the minds of those who are taking part in this cooperative project.

Persons who desire to take part in the foundation of the Stephen Hales Prize Fund should send contributions at once to Professor Charles A. Shull, Department of Botany, The University of Chicago, making checks payable to American Society of Plant Physiologists, Hales Fund. Contributions of any size will be accepted and greatly appreciated by the society. To make the best showing in the records it is highly desirable that a very large number of American plant physiologists should take part in this foundation.

The name of Stephen Hales occupies a very important place in the history of plant physiology, but his was a mind of very broad interests and he made great contributions in many other fields as well. His earliest botanical studies were made afield, in the region about Cambridge, where he collected specimens and catalogued them with the aid of Ray's *Catalogus plantarum*. He was elected to the Royal Society of London at the age of forty and soon made his first communication to that society, on the effects of the sun's warmth in raising the sap in trees. Encouraged by the great appreciation with which this contribution was received, he continued his experimental work along this line and ten years later published his famous book on "Vegetable Staticks."

Hales was curate of Teddington, near London, from 1708 until his death in 1761, at the age of eighty-four. He was interested in nearly all phases of the science of his time. He made the first important contributions to our knowledge of blood pressure and won the Copley medal for studies on bladder and kidney stones. He turned his inventive genius toward practical problems of human welfare. Among his inventions were ventilating devices for use in mines, hospitals, prisons, ship holds, granaries and the like. In his later years he became interested in the ventilation of heated melon frames and greenhouses.

Among students of plant physiology Stephen Hales will always be known especially for his ten years of experimental study of the intake and movement of water in plants. This was the first scientific investigation of one of the major processes of plant life.

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## LOSSES IN TROUT FRY AFTER DISTRIBUTION

I HAVE been asked to reply to some objections which have been urged against Mr. White's (seining) method of determining trout fry losses after distribution.

1. The traps maintained at each end of the area over which it was expected the fry might spread evidently gave them ample range. For example, the upper boundary on Forbes' brook was an impassable mill dam; the lower boundary was a wire screen and trap which caught only one hundred and two fry, and this trap was located only thirty-three rods below where the main body of fry (4,020) were deposited. *Fry have a tendency to stay near the point of planting.*

2. That débris is caught on the upper boundary screen is perfectly true, and if allowed to accumulate would obstruct the floating food which comes down stream; but débris was always carefully, regularly and frequently removed.

3. "Fry play hide and seek with the seiners and are often, after the seining is over, counted as dead when they are in reality only hiding."

There is not the slightest doubt that the percentage of missing fry (71 per cent. to 100 per cent.) quoted in White's reports can always be obtained in the vicinity of many places where fry had been planted by dumping them in large numbers. Now that the folly of this practice has been exposed, and that distribution is taking the place of dumping, there may be an increase of survivals.

4. No injury was inflicted upon the fry or fingerlings while they were confined in the observation compartments—either small or large—on Forbes' brook. They were on shorter rations, of course, but this must be a common experience in fish life, if not an everyday occurrence.

5. Contrast Mr. White's experiments with those of Professor Frederic Lee (of Columbia University) on dog fish in 1888–89, at the Woods Hole laboratory. The former did no injury to the trout; the latter cut open the skull and stimulated the inner ear in order to demonstrate the functions. (And he was justified in doing so.) In this injured condition the dog fish were kept alive for days at a time. Yet no scientist ever objected to the validity of Lee's conclusions. Indeed, if the objections to White's seining experiments are held to invalidate his investigations then a vast amount of outstanding research in experimental zoology and physiology by some of the best biologists in America will have to be discarded.

6. Granted, of course, that there are many streams which can not be seined (excepting in places) because of numerous boulders, logs, rapids, falls or dense vegetable growth along their banks. There are also streams which can be seined in many places. The fish commissioner for Ontario in 1925 dumped trout fry into two hundred and ninety-one ponds and streams. Not one stream out of the lot could be seined throughout its length. Parts of every one of them could be seined. It must be the average number of surviving fry in these streams which will determine the utility of fish hatching. In engineering problems, averages must be relied upon, otherwise estimates of cost would be pure guess work. There need be no guess work in approximating the losses in trout fry, if only the seining is carefully and repeatedly done.

The people of Canada and the United States have in the past sixty years spent millions of dollars upon fish culture. They have, therefore, a right to know the approximate average cost of the artificial propagation of fry, fingerlings and adult trout in any given year. And they have also a right to know what becomes of them after they are spread in lakes and streams.

If seining is not a valid method, perhaps some of the fish culturists will suggest a better one and furnish the public with a description of its working and a statement of the losses which it uncovers. The fish culturists are spending the money. It is their duty to show that fish rearing is worth the money which is being spent upon it.

Any sensible man with a government at his back can run hatcheries and distribute fry, especially if there is to be no accounting for dead fry, and if in effect no instruction is given to the superintendent except: "Turn out fry and damn the cost."

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## THE USE OF THE TERM ALLOTYPE

THERE seems to be a diversity of opinion as to whether the term allotype should be employed for the first described specimen of the sex opposite to that of the holotype in case it is subsequently described. In the last analysis only the holotype can fix application of a specific name, and it is an academic matter as to whether the other sex be associated at the time of the original description or later. If there has been an error in associating the supposed sexes, the one will be just as incorrectly considered part of the species represented by the holotype if described with it, as though described a century later. Nevertheless, it is important to have the specimen from which the description of the second sex was taken, distinguished in some way, even though the fate of no name may hang thereon; for it is desirable at times to have a source from which the exact meaning of an author can be determined for other than nomenclatorial reasons. Without multiplying terms, allotype should suffice. If the allotype is described with the holotype it is also a paratype and has no more nomenclatorial significance than any other paratype, probably less value than a paratype of the sex of the holotype for there is greater likelihood of its actually representing a different species. If the allotype is described subsequently to the holotype it is not a paratype, and that is sufficient distinction.

R. A. Muttkowski (Milwaukee Publ. Mus., Bull. 1, p. 10, 1910) first proposed the term allotype. His original definition of it is quite in accord with my understanding of its proper use and does not sanction its restriction to paratype. It reads: "*Allotype*—(ἄλλος—other) for the sex not designated by the holotype. The allotype need not be described by the protologist (first describer); it can be contained in the original as well as any subsequent description by other authors. Thus if the protolog describes only a holotype male, the first female subsequently described is to be called the allotype."

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## CONSIDER THE USER OF BULLETINS

FEDERAL and state experiment station publications of various types constitute one of the principal reservoirs of stored knowledge regarding agricultural arts and sciences. They are the most common form of original record of experiment or research related to agriculture and, as such, become important tools for all professional workers in both agricultural and related biological lines. Lacking ready access to them the teacher and the experimenter find themselves seriously handicapped in their efforts.

Because of their constant and frequent use, most of these workers maintain private files of such station publications as relate to their specific subdivision of agriculture and quickly discover that, because of their great and ever-increasing numbers, some system of cataloguing is necessary to render ready reference possible. Two common bases for cataloguing of this type are in use: (1) the title or subject-matter of the publication, and (2) the name of the author. Arguments favoring either of these bases could be advanced but whichever is chosen the name of the author is nearly always recorded on the catalogue card. It is nearly as important to the user of the publication as is the title itself. It sometimes carries more definite information.