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.

All such bulletins display the title of the discussion on either a cover page or in a table of contents, but many of them fail to show the name of the author in these or similarly conspicuous places. Because of this oversight or poor form of publication the cataloguer has to search through several pages of the bulletin or report to discover the name of the author, thus greatly prolonging a disagreeable but necessary task.

The practicability of a form showing the name of the author on the cover page or title page, or in the table of contents if a number of articles were bound together, is assured by its being common usage in many stations. Others display the name of the author in a prominent position on technical publications, but conceal it if the treatment is of a more popular nature. Study of recent publications from 20 stations shows 9 which display the name of the author, 2 which always hide it, 7 which vary with the type of the publication, and 2 which are inconsistent in this feature.

Just a simple change in form by some of the station editors would make the use of their publications much more convenient to such workers as catalogue them, and no others can use them to the best advantage.

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SCIENTIFIC BOOKS

Catalogue of Cainozoic Plants in the Department of Geology, vol. I. The Bembridge Flora. By ELEANOR MARY REID and MARJORIE ELIZABETH JANE CHANDLER (with a section on the Charophyta by James Groves), 206 pp., 12 pls. British Museum (Nat. Hist.), London, 1926.

ALTHOUGH it is some months since copies of this work reached this country, I have seen no reviews of it, and such a scholarly work deserves being brought to the attention of a much larger group of botanists and geologists than are otherwise likely to be aware of its existence.

It is something of a paleobotanical event for the British Museum to start a catalogue of Tertiary floras, particularly since the floras of the earlier half of the Tertiary are abundantly represented in the south of England, and these have never been made available for students, in fact, practically no work has been done on them since J. Starkie Gardner stopped in the midst of his labors in 1886. Since that time, as both the authors and Dr. Bather point out, geology has advanced, improved methods of study have been devised, and, perhaps most important of all, botanical exploration, especially in southeastern Asia, has made available a wealth of new comparative material.

The present volume is devoted to the fossil plants of the Bembridge beds of the Isle of Wight, of Oligocene age. This flora is represented by foliar remains, usually fragmentary, and by a large variety of fruits and seeds. Hence the authors are especially well qualified for this particular type of study. The senior author—Eleanor M. Reid, or Mrs. Clement Reid as the friends of her late husband like to think of her, collaborated with him in his most important contributions to paleobotany; and Marjorie E. J. Chandler, the junior author, already has several important papers along carpological lines to her credit. James Groves, the well-known student of the Charophyta, has contributed descriptions of the 8 species of Chara discovered in these beds.

One hundred and twenty-one species are described, of which 42 are new. Dicotyledons are represented by over half of the total, and there are 24 monocotyledons, 10 conifers, 1 Equisetum, 8 ferns, and 8 charas. Among the more interesting new things are a splendidly preserved species of *Azolla*—the first convincing fossil remains of this type to be discovered: *Hooleya,* a new and extinct genus of the family Juglandaceae: and the demonstration that a number, if not the majority, of the fossil fruits referred to the Compositae under such names as *Cypselites, Bidentites,* etc., are not composites, but belong either to the Apocynaceae or Asclepiadaceae. For these the authors propose the new form genus *Apocynospermum.*

Naturally a flora so largely represented by carpological material is difficult to compare with the classic Oligocene floras of Europe based upon leaf impressions or amber inclusions, so that the authors confine their comparisons to selected floras. Among the results of their systematic study the conclusion emerges that, beginning with the upper Eocene and continuing to the end of the Pliocene, the European flora gradually changed from one mainly East Asian and American—largely by the progressive invasion of the region by genera called European, although the species in these so-called European genera still show most pronounced Asiatic and American affinities. They believe that this change in facies was brought about by a southward dispersal from some circumpolar source. They have some slight evidence (*Chlorophora* in the upper Eocene of Hordle) that in the early Eocene direct connections with Africa were not yet broken. They conclude that the climate denoted by the Bembridge flora was probably warm temperate or sub-tropical, and certainly the presence of such