

periodism"⁴ which appeared in 1923 the authors stated that they were "indebted to Mr. O. F. Cook of the Bureau of Plant Industry for suggesting the term photoperiodism, which seems to meet all requirements as to both aptness and simplicity." Following Garner and Allard's lead, other botanists working in this field adopted the term and have used it exclusively in both this country and Great Britain ever since.

The first experimental report on the influence of the photoperiod on animals was that of Marcovitch⁵ on plant lice in 1923. However, comprehensive studies of this phenomenon in animals did not begin until 1930, when the first of Bissonnette's numerous papers appeared. Bissonnette was the first to use the term "photoperiodicity." In a letter to the writer he described the origin of the term as follows:

This term arose when Ross Harrison, editor of the *Journal of Experimental Zoology*, objected to my use of the term "photoperiodism" after Garner and Allard in a paper⁶ back about 1930. He said he saw that I had coined a new word "photoperiodism" in place of "photoperiodicity," and I let it go at "photoperiodicity," which now has come to include any periodic or rhythmic process controlled by photoperiods. It is not only reproduction controlled photoperiodically, but includes pelt cycles, plumage cycles in birds and migrations also. So I guess I am responsible for its appearance in biological literature.

Zoologists have in general, but not exclusively, followed Bissonnette in his use of the term photoperiodicity, rather than Rowan,⁷ who in 1926 took over Garner and Allard's term. As examples of the exception, Baker in 1936⁸ and Rollo in 1941⁹ both use the term "photoperiodism."

There seems to be some doubt in Bissonnette's mind as to the strict synonymy of the two terms, as indicated by the above quotation and the following one¹⁰: "Garner and Allard . . . coined the word 'photoperiodism' for the response of plants to changes in relative lengths of day and night by beginning to bloom, or their exhibition of 'sexual' photoperiodicity." It seems clear, however, from the use of the term by Garner and Allard and other botanists and from the dictionary and encyclopedia definitions, that "photoperiodism" is not a term applied solely to the reproductive aspects of the phenomenon.

As far as the intrinsic merits of the two words are

concerned, "photoperiodicity" is probably the better, because "periodicity" is a recognized and widely used term, whereas there is no such word as "periodism." However, it appears to the writer that the term "photoperiodism" should be used by biologists instead of the term "photoperiodicity" for the following reasons: (a) It was the first term proposed. (b) It is much more widely used than the term "photoperiodicity." Not only do some zoologists use it, but all botanists use the term, and to date much more work has been done on plants than on animals in this field. (c) Both the *Encyclopedia Britannica* and Webster's *New International Dictionary* list the word "photoperiodism" but fail to list "photoperiodicity," even as a synonym. (d) Although this is perhaps a minor matter, it is somewhat shorter and easier to pronounce than "photoperiodicity."

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SPONGE NAMES

It is to be hoped that there will soon be renewed interest in physiological experimentation using Porifera. To-day the emphasis is on war-winning, but ultimately the lowly animals may again receive attention.

Unfortunately the names of Porifera require some notice. It is common practice for text-book writers to copy the mistakes made in earlier text-books until accuracy becomes an irritating intrusion.

Consider the commonest commercial or bath sponge genus. Linné in his "Systema Naturae" named it *Spongia*, and for exactly a century it was always called that. In 1859 a person named H. G. Bronn decided he didn't like Linné's name, and arbitrarily announced that it should be changed to *Euspongia*. Because Bronn was a professor in Heidelberg University, he was meekly followed in his utterly unwarranted act, and to this day most texts of zoology call it by his presumptuous name. Shall we pick out some American University and say that its professors may change scientific names at their whims? The correct name is still *Spongia*.

The second most common commercial or bath sponge has had a miserable time with names. F. E. Schulze in 1879 described it in general, and named it *Hippospongia*, and so it has been known. Yet it seems that Professor Schulze failed to set up a type specimen, and therefore in 1934 Maurice Burton designated a specimen as type of *Hippospongia*. But alas, Dr. Burton's specimen is of the other genus, that is to say, a *Spongia*. Now we begin to go around in dizzy circles. If Burton has the right to select the type specimen (and this is probable) then *Hippospongia* falls in synonymy.

A partial solution occurred to me. In 1936 I de-

⁴ W. W. Garner and H. A. Allard, *Jour. Agr. Res.*, 23: 871-919, 1923.

⁵ S. Marcovitch, *SCIENCE*, 58: 537, 1923.

⁶ T. H. Bissonnette, *Jour. Exp. Zool.*, 58: 281-319, 1931.

⁷ W. Rowan, *Proc. Boston Soc. Nat. Hist.*, 38: 147-189, 1926.

⁸ F. C. Baker, *Canadian Entom.*, 67: 149-153, 1936.

⁹ M. Rollo, *Bird Banding*, 12: 161-164, 1941.

¹⁰ T. H. Bissonnette, *Quart. Rev. Biol.*, 11: 371-386, 1936.

scribed and named this extremely important genus by the name of *Hippiospongia*, adding only the one letter "i." Also there is a good type specimen in the National Museum to bind it. Now if Burton's action is valid, my name stands, and if not, Schulze's name is still good, and in either case the two names are so nearly identical that there should be no doubt as to what sponge sort is being discussed, with or without the extra letter in its name.

The fresh-water sponges are widely available to zoologists, and are therefore much noticed. Their first genus is *Spongilla* of Lamarek, 1815; well and good. However, a year earlier in 1814 a certain L. Oken had described a fresh-water sponge and given it the genus name *Tupha*. Then in 1816 Lamouroux set up another name *Ephydatia*, about which the one certain thing is that it is a synonym of *Tupha*. Lamouroux wasn't describing a specimen at all. He just made a name, and specifically referred to the identical specimen to which Oken had referred.

Spongilla is the main fresh-water sponge, but there is a second sort, nearly as common and important. Carter in 1881 described it well and named it *Meyenia*. A few years later some one named Vejdovsky got the notion, with no evidence whatsoever, that this *Meyenia* should be called *Ephydatia*, and to-day he is widely copied. If it were the same genus as *Ephydatia* (which is anybody's guess) it would certainly have to be *Tupha*. Yet in complete default of specimens, and with the utterly unrecognizable descriptions of the ancient authors, there is absolutely no justification for digging up the ancient names at all. The genus is *Meyenia*; first, last and always.

My article in *SCIENCE* for February 19, 1937, pointed out that the common Calcsponge that is used as standard class material in America had been carelessly mis-identified, and is really *Scypha*, not *Grantia*. There is a common European sponge correctly named *Grantia*, but not at all the same as the one we use so much in this country. Now recent text-books of zoology are calling this genus still another name, *Sycon*. It is a pity to have to dig up the history of this set of names, but apparently necessary. The name *Scypha* was given to this sponge in 1821 by J. E. Gray, but like so many biologists of that era, he thought that all sponges were vegetable, therefore he stated that this was a genus of plants. Five years later, in 1826, Mr. A. Risso decided that Gray was wrong, and that since the sponge had been named as a plant it was fair game for a new name as an animal. So he proposed to call it *Sycon*. Yet it has long been regarded that the sort of mistake Gray made does not invalidate the name he gave. We may not like the name *Scypha*, but unless official international action is taken, it is correct.

The term "*sycon*" is well established as the name of a certain type of sponge architecture. It is therefore here suggested that it would not be wise to have the earlier name set aside in its favor.

It has long been recognized that there are three classes of sponges. The prior names for these are

- (1) Calcspongiae—Blainville 1830 (or Schmidt 1862).
- (2) Vitrea—Wyville Thomson 1868.
- (3) Demospongiae—Sollas, 1875.

Priority does not need to be followed in regard to class names, although wanton shifting about is deplored. In 1886 Vosmaer proposed changing the second class from Vitrea to Hyalospongiae, which gives us three classes of the sponge phylum, all ending in the syllables "-spongiae." This harmony is very helpful to students, and it is therefore probable that Vosmaer's change does deserve to be followed.

Since the turn of the century there has been a growing tendency to alter the first name to Calcarea and to alter the second name further from Vitrea to Hexactinellida. It is not clear at all what advantage (if any) is served by these changes. There is, and has been for a very long time, in the Hyalospongiae a family named Hexactinellidae. In my publications it has therefore been suggested that it would be most helpful to adhere to the long-established class names: Calcspongiae, Hyalospongiae and Demospongiae.

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NOTES ON RUSSIAN AND OTHER EUROPEAN HERBARIA

FROM a communication recently received from Leningrad it is reported that the very large and important herbarium and library at the Komarov Institute of Botany (Principal Botanical Garden) suffered no damage during the siege of Leningrad although many bombs fell in the grounds. Most of the living greenhouse collections were lost because of breakage of glass by bombs. Likewise the Siberian part of the important Turezaninow herbarium at Karkov was removed to Leningrad, and is thus safe. The general Karkov herbarium, however, the Ukrainian Academy of Science at Kiev and the Nikita Botanical Garden near Yalta in the Crimea were confiscated by the German invaders and moved to Germany.

The one important herbarium and botanical library in France that we know to have been utterly destroyed is that of the University of Caen, for the university buildings were wrecked during the invasion of Normandy. However, it is reported from Paris that nothing was disturbed in the great historical collections at the Muséum d'histoire naturelle.

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