preparations of nitrogen mustard has been assayed in Swiss-Webster mice with Ehrlich ascites tumors. In repeated experiments, in each of which 300 mice were used, all untreated tumor-bearing animals died within 16 days (average 13.5 days), while mice that had received HN2 at *p*H 2 all lived more than 20 days, with average survival of 27 days, and some remain alive, without ascites, beyond that time.

It appears, therefore, that extremely low *p*H, while reducing the toxic effects of the nitrogen mustard in mice, does not interfere with the antitumor activity of the drug (*8*).

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24 December 1959

Emphasis on Holotype (?)

Abstract. The description of new species should not be confined to physical description of a holotype. One specimen cannot include all characters or be typical of any taxon. The holotype serves only a nomenclatural function and might also be termed the name-bearer (nomenifer) to avoid confusion of "type specimen" with "typical specimen."

Shenefelt protests about vague, indefinite species descriptions, made ambiguous "deliberately," to cover a range of variation inherent in an abstract group concept (*1*). He says: "The purpose of a description is to convey a concept of the object under scrutiny as clearly as possible by means of words, pictures, or diagrams." He recommends that the holotype specimen be described relatively exactly and that the range of specific variation be discussed with reference to the holotype description. In this manner physical and abstract concepts would be differentiated more easily, and the functions of description would be served more effectively.

It is appropriate to protest about the quality of taxonomic descriptions in many fields of biology. Many taxonomic descriptions are poor for want of adequate concern about organization and content. Scientific authors seem to have difficulty in visualizing means of being helpful to readers. Shenefelt's emphasis on description of the physical holotype is not justified, however, from the standpoint of the basic objectives in taxonomy.

It has been emphasized repeatedly, for the benefit of plant taxonomists, at least, that the nomenclatural type (holotype) of a species is not to be confused or implicated in anyone's concept of what is "typical" for a taxon. A nomenclatural type is simply *the specimen,* or other element, with which a name is permanently associated. This element need not be "typical" in any sense; for organisms with a complicated life cycle, it is obvious that no single specimen could physically represent all the important characteristics, much less could it be taken to show many features near the mean of their range of variation. Consequently, an exact description of the holotype specimen leads us exactly nowhere in the process of discovering "modes," "means," or other "norms" typical of species.

Some approach to the problem of variation may be made by biometric analysis, and this information is pertinent for taxonomic description. However, descriptive matter is concerned *only* with more precise indication of the nature of the abstract group concept (species); this information has no bearing on, and never can have any essential relation to, selection or function of the nomenclatural holotype.

Often it has been noted that the term *type specimen,* in the sense of a nomenclatural type, is misleading because this "type" cannot be properly construed as being "typical." The terminology has been a source of misunderstanding, confusion, and misconception ever since the type "system" was introduced. The only function a nomenclatural type can serve is that of name-bearer. This function is perfectly mechancial in the technical manipulation of taxonomic nomenclature. Whatever may be said of its nomenclatural advantages, a discussion of the "type method" must always be phrased to avoid the misleading etymologic implications inherent in the term.

Perhaps if we were to speak of the name-bearer, or "nomenifer" method (L: *nomen*, name, + *ferre*, to bear), the proper implication would be more easily conveyed. Comprehension of the wholly arbitrary nature of the name-bearer specimen, however, is of the essence for understanding the meaning of "type method" in modern systematics. The term *type method,* usually properly used in the arbitrary sense, is now so entrenched in systematic literature that it would be most confusing to attempt to substitute any different term for it. However, if one wished especially to emphasize the name-bearing function, it might be permissible to insert the term *nomenifer* parentheticallly, following the term *holotype* ["holotype (nomenifer)"] at the place where the type specimen is designated after a species description. Evidently, judged by frequent recurrence of the misconception, something of this nature sometimes is needed to signify that the type specimen is not necessarily typical in any particular.

The concept of the "typical" representative is frequently misused in biology. When the term is used, a question always can be raised regarding the nature of the measuring operation and the adequacy of sampling. If the term is used, it should be carefully qualified; commonly better meaning is conveyed by avoiding use of the term *typical* and stating definite facts, rather than by providing a "typical" interpretation. Pre-Darwinian "typology," with implications harking back to fixity of species and special creation, is frequently involved with a "typical" concept of "type." Emphasis on description of the holotype, rather than on the concept of a species population, does not seem likely to improve our means of classifying organisms or in understanding other essential aspects of biologic problems (*2*).

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14 December 1959

Histochemical Distribution of Succinic Dehydrogenase in Bone and Cartilage

Abstract. Large amounts of succinic dehydrogenase have been demonstrated histochemically in osteoclasts and chondroclasts. The same enzyme was also found in the giant cell of giant cell tumors of bone. This distribution suggests a relation to bone and cartilage resorption.

Many histochemical studies of bone formation and resorption have appeared in recent years. These studies are of great interest, since processes take place in areas separated only by a few microns, and this makes the analysis of biochemical data of even very small samples very difficult.

It has been shown histochemically