

Raw plankton from the fjords or the open Kattegat collected during the spring increase was repeatedly introduced into the culture column and the growth of the population followed by plankton counts. The distribution of suspended particles was also observed by means of a small transparency meter<sup>1</sup>. Water samples from the shaft were inoculated with pure cultures of diatoms, and their growth, which was quite rapid, was recorded photometrically. This proved that the water in the shaft retained its non-toxic properties for at least several weeks.

Of the diatoms, *Skeletonema costatum* showed abundant growth; the number of cells introduced increased from 43 millions to about 3,120 millions, that is, seventy-three times, in the course of twenty-one days. In another experiment the number of *Rhizosolenia alata* f. *gracillima* increased fivefold in eight days while other diatoms remained in good condition during the same time although without increase in number. Several autotroph flagellates, 2-6  $\mu$  in length, showed an enormous increase during the first experiment. Convection currents deposited many diatoms on the cooling coils and these, together with the flagellates, formed a green coating around the pipes. It is hoped in future to eliminate this complication.

In later experiments the plankton samples introduced consisted mainly of copepods which thrived well in the shaft, a considerable number remaining alive as long as three weeks. They showed a remarkably uniform phototactic response involving rapid migrations towards or away from sources of light of different intensity.

Experiments are now being undertaken with pure cultures of diatoms in order to investigate the interaction between the plant cells and the surrounding medium under carefully controlled conditions. Later, attempts will be made to grow fish larvæ in the shaft and to study their growth and their distribution under varying light, temperature and salinity conditions.

H. PETTERSSON.  
F. GROSS.  
F. KOCZY.

Oceanografiska Institutet,  
Göteborg.

<sup>1</sup> NATURE, 137, 68 (1936).

### Demes: a Suggested New Terminology

In the course of work on the experimental delimitation of botanical groups, the need has arisen for a term which can be applied to any specified assemblage of taxonomically closely related individuals. Such phrases as 'local intrabreeding populations' or 'populations occupying a specific ecological habitat' are cumbersome, and it is felt that a more concise terminology would be useful and, further, would focus attention on certain concepts undoubtedly of great importance in the study of intra-group variation. We propose the term *deme*\* (from the Greek δῆμος) for this purpose, with appropriate prefixes to denote particular kinds of demes. For example, in a taxonomic group consisting of a number of potentially interfertile individuals all the individuals do not have an equal chance of interbreeding in nature. The tendency is for individuals in close proximity to interbreed more frequently with each other than with individuals at a distance, and thus small, more or less isolated intrabreeding colonies are set up. The distinctive features so commonly

exhibited by local communities, for example, of sea plantain, provide evidence of this. These 'breeding communities' are likely to become increasingly important in the intensive study of evolutionary problems and we propose to name them *gamodemes*. It is clear that there are various degrees of isolation between such gamodemes, and when more experimental work has been done on this point it should be possible to devise a method of expressing degree of isolation quantitatively. At present, however, the concepts must remain somewhat vague, as is indicated in the definition given below.

Similarly we propose the terms *topodeme* and *ecodeme* to denote demes occupying specified geographical areas and specified ecological habitats respectively. These demes, however, must not be confused with the categories of experimental taxonomy. For example, the term *ecodeme* is not a substitute for the experimental taxonomic term *ecotype*. Ecotypes can be established only after an examination of numerous habitat populations, whereas the term *ecodeme* has reference to any habitat population irrespective of whether its ecotypic significance is or is not known. Whether the deme concept may entail a system of nomenclature for naming individual demes is a matter for future experience; but we would emphasize that any such system should be kept quite separate, both in form and in function, from systems of taxonomic nomenclature.

It should also be emphasized that these concepts do not necessarily imply the possession of any morphological characters in common between the individuals comprising a *gamo*-, *topo*- or *ecodeme*, other than those characters possessed in virtue of membership of the taxonomic group under consideration. For example, the populations of *Helianthemum polifolium* in Somerset and Devon would belong to separate gamodemes in virtue of the impossibility of their interbreeding in nature, even if no morphological differences could be discovered between them. The same considerations apply to topodemes and ecodemes. For example, two populations of a species from sand-dunes in Devon and in Scotland would belong to the same 'sand-dune ecodeme', even if the morphological differences between them were considerable.

At the same time, there will frequently, of course, be some degree of correlation between demes and intra-specific categories based on morphological criteria. It is hoped that one of the advantages resulting from this new terminology will be to bring out the degree of correlation in particular cases.

The definitions of the new terms are as follows:

*Deme*: any assemblage of taxonomically closely related individuals.

*Gamodeme*: a deme forming a more or less isolated local intrabreeding community.

*Topodeme*: a deme occupying any specified geographical area.

*Ecodeme*: a deme occupying any specified ecological habitat.

J. S. L. GILMOUR.

Royal Botanic Gardens,  
Kew.

J. W. GREGOR.

Scottish Plant Breeding Station,  
Edinburgh, 12.

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\* This word has already been used by Geddes ("Encycl. Brit.", 18, p. 843; 1883) and by Perrier ("Les colonies animales et la formation des organismes", p. 721; 1893), to denote an aggregate of single cells, but so far as we can discover this use is now quite obsolete, and it appears permissible to revive it in another sense.