

BIOMETRIKA.

EDITORIAL.

(I.) *The Scope of Biometrika.*

It is intended that *Biometrika* shall serve as a means not only of collecting under one title biological data of a kind not systematically collected or published in any other periodical, but also of spreading a knowledge of such statistical theory as may be requisite for their scientific treatment.

A very few years ago, all those problems which depend for their solution on a study of the differences between individual members of a race or species, were neglected by most biologists. The complexity of organic structure is so great, and the number of distinguishable forms so enormous, that morphologists were obliged to simplify their conceptions by constructing for every species an ideal type, to which the individuals composing it conform with more or less exactness, and to neglect those deviations from the type which actually occur. Such simplification was not only justifiable, but absolutely necessary for many purposes; it has rendered enormous service to biology in the past, it does so still, and will continue to do so; nevertheless, there are many problems which cannot be dealt with by its aid.

The starting point of Darwin's theory of evolution is precisely the existence of those differences between individual members of a race or species which morphologists for the most part rightly neglect. The first condition necessary, in order that any process of Natural Selection may begin among a race, or species, is the existence of differences among its members; and the first step in an enquiry into the possible effect of a selective process upon any character of a race must be an estimate of the frequency with which individuals, exhibiting any given degree of abnormality with respect to that character, occur. The unit, with which such an

enquiry must deal, is not an individual but a race, or a statistically representative sample of a race; and the result must take the form of a numerical statement, showing the relative frequency with which the various kinds of individuals composing the race occur.

As it is with the fundamental phenomenon of variation, so it is with heredity and with selection. The statement that certain characters are selectively eliminated from a race can be demonstrated only by showing statistically that the individuals which exhibit that character die earlier, or produce fewer offspring, than their fellows; while the phenomena of inheritance are only by slow degrees being rendered capable of expression in an intelligible form as numerical statements of the relation between parent and offspring, based upon statistical examination of large series of cases, are gradually accumulated.

These, and many other problems, involve the collection of statistical data on a large scale. That such data may be rendered intelligible to the mind, it is necessary to find some way of expressing them by a formula, the meaning of which can be readily understood, while its simplicity makes it easy to remember. The recent development of statistical theory, dealing with biological data on the lines suggested by Mr Francis Galton, has rendered it possible to deal with statistical data of very various kinds in a simple and intelligible way, and the results already achieved permit the hope that simple formulæ, capable of still wider application, may soon be found.

The number of biologists interested in these questions, and willing to undertake laborious statistical enquiries, is already considerable, and is increasing. It seems, therefore, that a useful purpose will be served by a journal especially devoted to the publication of statistical data, and of papers dealing with statistical theory. Many persons are deterred from the collection of biometric data, by the difficulty of finding such a means of publishing their results as this journal will afford, and those results which are published frequently lose much of their value because the data on which they are based are withheld, or because they are isolated in publications largely devoted to other forms of investigation. Further, *Biometrika* will endeavour to introduce a uniformity of statistical treatment, terminology, and notation, so that results obtained by different investigators on different types of life may be easily and effectively compared.

Biometrika will include (a) memoirs on variation, inheritance, and selection in Animals and Plants, based upon the examination of statistically large numbers of specimens (this will of course include statistical investigations in anthropometry); (b) those developments of statistical theory which are applicable to biological problems; (c) numerical tables and graphical solutions tending to reduce the labour of statistical arithmetic; (d) abstracts of memoirs, dealing with these subjects, which are published elsewhere; and (e) notes on current biometric work and unsolved problems. It is proposed to include memoirs written in English, German, French, or Italian.