PART II.—THE THEORY OF VARIABLES.

CHAPTER VI.

THE FREQUENCY-DISTRIBUTION.

1. Introductory—2. Necessity for classification of observations: the frequency distribution—3. Illustrations—4. Method of forming the table—5. Magnitude of class-interval—6. Position of intervals—7. Process of classification—8. Treatment of intermediate observations—9. Tabulation—10. Tables with unequal intervals—11. Graphical representation of the frequency-distribution—12. Ideal frequency-distributions—13. The symmetrical distribution—14. The moderately asymmetrical distribution—15. The extremely asymmetrical or J-shaped distribution—16. The U-shaped distribution.

1. The methods described in Chaps. I.–V. are applicable to all observations, whether qualitative or quantitative; we have now to proceed to the consideration of specialised processes, definitely adapted to the treatment of quantitative measurements, but not as a rule available (with some important exceptions, as suggested by Chap. I. § 2) for the discussion of purely qualitative observations. Since numerical measurement is applied only in the case of a quantity that can present more than one numerical value, that is, a varying quantity, or more shortly a variable, this section of the work may be termed the theory of variables. As common examples of such variables that are subject to statistical treatment may be cited birth- or death-rates, prices, wages, barometer readings, rainfall records, and measurements or enumerations (*e.g.* of glands, spines, or petals) on animals or plants.

2. If some hundreds or thousands of values of a variable have been noted merely in the arbitrary order in which they happened to occur, the mind cannot properly grasp the significance of the record: the observations must be ranked or classified in some way before the characteristics of the series can be comprehended, and those comparisons, on which arguments as to causation depend, can be made with other series. The dichotomous classi-