inches, and if they had been collected by chance. The extent of the divergence of the items composing an average from the average itself may be accurately measured and expressed in percentages of the average, the algebraic signs + and - being employed to indicate the direction of the variation from the mean. An average may, therefore, advantageously be supplemented—(1) by a figure showing what proportion of the members from which it is derived differ from the average by a relatively small quantity, and (2) by figures show­ing the maximum and minimum deviations from the average. The meaning of the term “relatively small” must be considered inde­pendently in each investigation. Further remarks on averages will be found in the works mentioned at the conclusion of this article.

*Prices.—*Reference has already been made to the peculiar class of statistical quantities known as *prices.* Prices in their widest sense include all figures expressing *ratios of exchange.* In modern society the terms of exchange are always expressed in money, and the things for which money is exchanged are—(1) concrete entities with physical attributes, such as iron or wheat; (2) immediate rights, such as those given by interest-bearing securities of all kinds, by bills of exchange, by railway or steamship contracts to carry either passengers or goods, and by bargains relative to the foreign exchanges ; (3) contingent rights, such as those implied in policies of insurance. All these rates of exchange belong to the same category, whether they are fixed within certain limits by law, as in the case of railway charges, or are left to be determined by the “higgling of the market.” All these cases of price may con­ceivably come within the operation of the statistical method, but the only matter connected with price which it is necessary to refer to here is the theory of the *index number.*

*Index Numbers.—*The need for these became conspicuous dur­ing the investigations of Tooke, Newmarch, and others into the general cyclical movements of the prices of commodities; and to construct a good system of these may be said to be one of the highest technical aims of the statistical method. In comparing the prices of different years it was soon observed that, though whole groups of articles moved upwards or downwards simultaneously, they did not all move in the same proportion, and that there were nearly always cases in which isolated articles or groups of articles moved in the opposite direction to the majority of articles. The problem presented to statisticians therefore was and is to devise a statistical expression of the general movement of prices, in which all prices should be adequately represented. The first rough approximation to the desired result was attained by setting down the percentages representing the movements, with their proper algebraic signs before them, and adding them together algebraically. The total with its proper sign was then divided by the number of articles, and the quotient represented the movement in the prices of the whole body of articles during the period under considera­tion. It was soon seen, however, that this procedure was fatally defective, inasmuch as it treated all prices as of equal weight. Cotton weighed no more than pimento, and iron no more than umbrellas. Accordingly an improvement was made in the pro­cedure, first by giving the prices of several different articles into which cotton, iron, and other important commodities entered, and only one price each in the case of the minor articles, and secondly by fixing on the price of some one article representing iron or cotton, and multiplying it by some number selected with the view of assign­ing to these articles their proper weights relatively to each other and to the rest. The objection to both these plans is the same,—that the numbers attached to the various articles or groups of articles are purely arbitrary ; and of late years attempts have been made to obtain what may be called *natural* index numbers, the most suc­cessful so far being that of Mr Robert Giffen, whose index numbers are obtained from the declared values of the imports or exports into or from the United Kingdom of the articles whose prices are dealt with. In the case of both imports and exports Mr Giffen worked out the proportion borne by the value of each article to the total value for a series of years. Deducting the “unenumerated ” articles, a series of numbers was thus obtained which could be used as the means of weighting the prices of the articles in an investigation of a movement of prices. This procedure is no doubt susceptible of further improvement, like its predecessors, but it is a great advance on the arbitrary systems of index numbers employed in them.

*The Desirability of Increased Uniformity in Statistics. —*One of the most serious difficulties in connexion with statistical investigations is the variety of the modes in which primaries of the same order are obtained, as regards dates and periods. This is a matter of which all persons who have occasion to use statistics are made painfully aware from time to time. Some attempts have lately been made to introduce more harmony into the official statistics of the United Kingdom, and some years ago a committee of the Treasury sat to inquire into the matter. The committee received a good deal of evidence, and presented a report, from which, how­ever, certain members of the committee dissented, preferring to express their views separately. The evidence will be found very interesting by all who wish to obtain an insight into the genesis of the official statistics of the country. The report and evidence

were published in the June number of the *Journal of the Statistical Society* for 1881, as well as in the usual official form.

*The International Institute of Statistics.—*The absence of uni­formity in statistics which is felt in England is not so marked in foreign countries, W’here the principle of centralization in arrange­ments of a political character is more powerful than it is here. In several Continental countries and in the United States there are statistical bureaus with definite duties to perform. In the United Kingdom, as already remarked, the nearest approach to a central statistical office is the Commercial and Statistical Department of the Board of Trade, on which the work of furnishing such statistics as are not definitely recognized as within the province of some other state department usually falls. Various attempts have been made to introduce more uniformity into the statistics of all countries. It was with this object that statistical congresses have met from time to time since 1853. An endeavour was made at the congress held in 1876 at Budapest to arrange for the publication of a system of international statistics, each statistical bureau undertaking a special branch of the subject. The experiment was, however, foredoomed to be only a very partial success, first because all countries were not then and are not yet furnished with central statistical offices, and secondly because the work w’hich fell on the offices in existence could only be performed slowly, as the ordinary business of the offices necessarily left them little leisure for extra work. In 1885, at the jubilee of the London Statistical Society, a number of eminent statistical officials from all parts of the world except Germany were present, and the opportunity was taken to organize an International Institute of Statistics with a view to remedying the defects already ascertained to exist in the arrange­ments made by the congresses. The only obstacle to securing a proper representation of all countries was the absence of any German delegates, none of the official heads of the German statistical office being allowed to attend,—apparently on political grounds. Since then assurances of a satisfactory kind have been given to the German Government that their servants would be in no way committed to any course disapproved by that Government if they gave their assistance to the institute, from the formation of which it is hoped that much advantage may result. For information as to the constitution and objects of the institute reference may be made to a paper by Dr F. X. von Neumann-Spallart in vol. i. (1886) of the *Bulletin de l’Institut International de Statistique* (Rome, 1886).

*Literature.—*Maurice Block, *Traité Théorique et Pratique de Statistique,* Paris, 1878 ; Luigi Bodio, *Della Statistica nei suoi Rapports coll' Econoιnia Politica,* &c., Milan, 1869 ; Antonio Gabaglio, *Storia e Teoria Generale della Statistica,* Milan, 1880; Max Haushofer, *Lehr- u. Handbuch der Statistik,* 2d ed., Vienna, 1882; K. Knies, *Die Statistik als selbständige Wissenschaft,* Cassel, 1850 ; Georg Mayr, *Die Gesetzmässigkeit im Gesellschaftsleben,* Munich, 1877 (abridged translation in *Journ. Stat. Soc.,* Sept. 1883; the work has also been translated into Italian with valuable notes by G. B. Salvioni, Turin, 1886) ; Adolphe Quetelet, various works, but especially that entitled *Sur l'Homme et le Développement de ses Facultés, ou Essai de Physique Sociale,* 2 vols., Paris, 1835, and *Letters on the Theory of Probabilities,* already referred to; Albert. C. F. Schäffle, *Bau und Leben des socialen Körpers,* Tübingen, 1881 ; Herbert Spencer, *Principles of Sociology,* especially part ii. pp. 465 *sq.;* Adolf Wagner, article “Statistik” in Buntschli-Brater’s *Staatswörterbuch,* vol. x. (W. HO.)

STATIUS, Publius Papinius, Roman poet, lived from about 45 to 96 a.d., so far as can be judged from indications afforded by his poems. He was, to a great extent, born and trained to the profession of a poet. The Statii were of Græco-Campanian origin, and were gentle, though impoverished, and the family records were not without political distinctions. The elder Statius, our poet’s father, was the Orbilius of his time, and taught with distinguished success at Naples and Rome. From boy­hood to age he proved himself a champion in the poetic tournaments which formed an important part of the amuse­ments of the early empire. The younger Statius declares that his father was in his time equal to any literary task, whether in prose or verse. Probably our poet inherited a modest competence and was not under the necessity of begging his bread from wealthy patrons. So far as appears he never pursued any occupation but that of poet, as poor an occupation in those days as in ours, if we may believe Juvenal and Martial. Statius certainly wrote poems to order (as *Silvae,* i. 1, 2, ii. 7, and iii. 4), but there is no indication that the material return for them was im­portant to him. In his seventh satire Juvenal speaks of the immense public enthusiasm which attended the recita­tion of the *Thebais,* when the benches “were breaking” with applause ; but the poet, he says, might have starved had not Paris, the favourite comedian of the day, bought from him the libretto of a comic opera. This reference