

CHAPTER IV

MORAL STATISTICS

IT has already been stated that Quetelet's studies in moral statistics opened a new field to statistical research, the sphere of human actions, where all is apparently indeterminate and individual. His venture into this field created very wide discussion, especially in Germany, furnished a statistical basis for some of the generalizations in the early pages of Buckle's *History of Civilization in England*, and was significant in the development of the methods, concepts and scope of statistics. The purpose of this chapter is to survey the principles and methods of moral statistics as Quetelet presented them.

By moral statistics is meant that portion of the general science dealing with such individual actions as are commonly classed as moral or immoral. The phenomena usually dealt with are crimes, suicides and marriages. These actions have the characteristics of occurring more or less frequently in a social group, of giving opportunity for the exercise of individual discretion, judgment, will, and of being correlated quite directly with social conditions. Any similar acts would supply data for moral statistics. The first aim is to establish the norms for various kinds of moral actions, that is, the average number that occur under given conditions during a period of time. These norms form the statistical regularities, for it is found that in a series of years the numbers of crimes, suicides or marriages vary about

their average, showing a tendency for the average number to be repeated from year to year. These regularities are often called statistical or sociological laws. Moral statistics then attempts to correlate the phenomena under investigation with certain physical and social conditions, by showing variations in the numbers as the conditions are changed. To do these things it follows certain well-defined canons and methods. The following pages will present briefly Quetelet's work and conclusions in this field, and will consider the nature and value of statistical regularities and the principles of the method followed.

In the "*Recherches statistiques sur le Royaume de Pays-Bas*,"¹ Quetelet makes his first study in moral statistics. Aside from the comparisons of France and the Low Countries he studies the ratio of condemned to accused, the distribution of crimes by the age and sex of the perpetrators, and the number of crimes against persons and against property committed by the persons of each age group. This last matter is presented in a table, there being twelve age groups between those under sixteen and those over eighty. In this he gives for the first time a scale of the *penchant au crime* for the various age groups, that is, the ratio between the number of persons and the number of crimes for each group. He then compares the numbers for three years under various aspects, emphasizing the remarkable uniformity of the numbers from one year to another.²

The "*Recherches sur le penchant au crime aux différents âges*,"³ is easily Quetelet's most comprehensive study of crimes. It contains sections on the *penchant au crime*

¹ *Nouv. mém.*, vol. v, pp. 25-38.

² See quotation, chap. II, p. 55. *supra*.

³ *Nouv. mém.*, vol. vii, 88 pages.

in general, and on the influence of education, climate, seasons, sex and age on this propensity. The distinction of crimes against persons and against property is preserved throughout. At this point we wish to note only his emphasis on the constancy of the numbers from year to year. He places as much confidence in his scale of propensity to crime as in his scale of stature or of mortality.¹ After pointing out that murders often follow quarrels and other apparently fortuitous encounters, he says, "Nevertheless experience has proven, that not only murders are annually almost in the same number, but even the instruments which are used to commit them are employed in the same proportions. . . Thus . . . we pass, *etc.*,"² as quoted in chapter II, p. 55. And he closes with the famous sentence, "There is a budget which we pay with a frightful regularity; it is that of prisons, chains and the scaffold."³

The *Sur l'homme* of 1835 added to the preceding essay a chapter on suicides and duels in the characteristic manner, and several brief articles of 1835 and 1836 in the *Bulletins de l'académie royale de Bruxelles*⁴ were devoted partly to general considerations on the freedom of the will and the regularity of certain social phenomena. So great does he find the constancy in the number of marriages by age groups that in the essay of 1847 he is able to present a scale of the propensity to marry,⁵ and similarly in the essay of 1848 he calculates a scale for

¹ *Op. cit.*, p. 71; also English trans. of *Sur l'homme*, p. viii.

² *Ibid.*, p. 79.

³ *Ibid.*, p. 81.

⁴ "Sur les maladies des conscrits en France," vol. ii (1835), pp. 277-279; "Sur la justice criminelle en Belgique," *ibid.*, pp. 369-372; and "De l'influence de l'âge sur l'aliénation mentale et sur le penchant au crime," vol. iii (1836), pp. 180 and 210.

⁵ "Statistique morale," *Bulletin de la com. cent. de stat.*, vol. iii (1847), especially note pp. 140 and 141.

suicides.¹ In these later studies he repeatedly emphasizes the impressive regularity in the figures from year to year.²

It was this emphasis upon the constancy of the social "budgets" which brought upon Quetelet the charge of being a fatalist and a materialist. It was this also which called forth the widest discussion and an abundant literature on the meaning and implications of the regularities revealed by moral statistics.³ Quetelet's explanation of this constancy is therefore not without interest. He has nowhere given a formal and thorough discussion of this question, hence it will be necessary to bring together some of his most pertinent ideas.

Quetelet held quite consistently to the proposition that there is no such thing as a real chance occurrence, that is, there is no such thing as an uncaused or unrelated event.⁴ If events have causes, and the same causes persist from one period of time to another, then the same events may be expected to reoccur. This principle received its first expression in the *Recherches statistiques* of 1829 in the form, "The same causes persisting we ought to expect the same effects to be reproduced."⁵ "The laws presiding over the development of man, and modifying his actions are in general the result of his organization, of his education or knowledge, means or wealth, institutions, local influences and an endless variety

¹ "Sur la statistique morale," *Nouv. mêm.*, vol. xxi, p. 36.

² See particularly "Statistique morale," p. 143, *et seq.*, where he speaks of the number of marriages as another "budget controlled by the customs and the needs of our social organization."

³ See Von John, *Geschichte der Statistik* (Stuttgart, 1884), pp. 362, *et seq.*; for a summary of views of many writers on this subject see Block, *Traité statistique*, pp. 137, *et seq.*

⁴ See chap. i, p. 18, *supra*.

⁵ Page v, and repeated many times, especially English trans. of *Sur l'homme*, p. vii and p. 6.

of causes . . .”¹ Quetelet lays much stress on the influence of physical environment² and of social conditions and institutions. Man not only possesses individuality, he is also a member of society. “From this point of view, the regularity which we note in the formation of marriages ought to be attributed not to the volition of individuals, but to the habits of this concrete being which we call a people, and which we regard as endowed with a volition of its own and with habits from which it frees itself with difficulty.”³ “Moral causes which leave their traces in social phenomena are then inherent in the nation and not in the individual.”⁴ Variations in the marriage statistics of different provinces are due “to moral causes which exist outside of the individual and which are peculiar to each people. These moral causes have not essentially a character of fixity, as have causes in nature, but they fluctuate and vary with time.”⁵

It seems to me that that which relates to the human species, considered en masse, is of the order of physical facts; the greater the number of individuals the more the individual will be effaced and leaves predominating the series of general facts which depend on the general causes, in accordance with which

¹*Ibid.*, p. 7; first stated in “Recherches sur la loi de croissance de l’homme,” *Nouv. mém.*, vol. vii, p. 1 of the essay.

²*Du Système social*, p. 8.

³“Statistique morale,” p. 142.

⁴“Sur la statistique morale,” *Nouv. mém.*, vol. xxi, p. 6. In “Statistique morale,” p. 138, he says, “All occurs as if a people had intended to contract annually almost the same number of marriages and to divide them in the same proportions among the different provinces, between city and country, and between bachelors, maidens, widowers and widows.”

⁵“Statistique morale,” p. 142; in *Sur l’homme*, § 2, he says, “The laws which relate to the social body are not essentially invariable; they change with the nature of the causes producing them.”

society exists and maintains itself. These are the causes we seek to ascertain, and, when we shall know them, we shall determine effects for society as we determine effects by causes in the physical sciences.¹

This last quotation contains the gist of Quetelet's explanation. General social conditions influencing the greater part of the social group, result in tolerably constant social phenomena, because, according to the law of large numbers, the effects of general causes gradually prevail amidst the multitude of variations due to minute causes.

Several consequences followed, in Quetelet's view, from these principles. In the first place, if the general social conditions act upon man in such an apparently irresistible manner when a social group is observed, then society as a whole must be made responsible for the moral "budgets" due to social conditions.

The crimes which are annually committed seem to be a necessary result of our social organization. . . . *Society prepares the crime and the guilty is only the instrument by which it is accomplished.* Hence, it happens that the unfortunate person who loses his head upon the scaffold, or who ends his life in prison, is in some manner an expiatory victim for society. His crime is the result of the circumstances in which he finds himself, and the severity of his punishment is perhaps another result of it.²

A second consequence is that the sphere of individual freedom is very narrowly limited. Quetelet seems some-

¹ "Recherches sur le penchant au crime," pp. 80-81 of the essay; see also "Recherches sur le poids de l'homme," p. 10.

² *Sur l'homme*, last section; English trans., p. 108; see also p. 6 of the translation.

times wholly to deny the existence of free will, but, as a rule, he speaks of it as a capricious element acting within a narrow circle of possibilities.¹ In this view man's will is capable of producing the infinite variety found in individual action, but cannot upset the rules of the social organization. The individual becomes an accidental cause, and its effects mere accidentalities; hence, when a social group is viewed, these effects are neutralized in the same manner that accidental errors are eliminated in making a series of measurements.

Charged with being a fatalist Quetelet answered by asserting a positive conviction that man can ameliorate his own condition by his own efforts.² We have seen that he believed the "moral causes which leave their traces in social phenomena" to be capable of change.³ Such changes are, in his view, to be brought about through the action of "moral forces" exercised by man in modifying the conditions in which he lives.⁴ But these "moral forces" are perturbative in their manner of action and the changes they bring about are very slow, like the secular changes in the solar system: for this reason the "moral causes" which predominate in the social system cannot undergo any sudden change.⁵ This perturbative action of man, according to Quetelet, depends upon the exercise of his reason and increases with the growth of

¹ *Sur l'homme*, Eng. trans., p. vii; *ibid.*, "Introductory," § 2, p. 6; *Du Système social*, pp. ix, 8, 9, 65, *passim*; "Statistique morale," p. 136; "Sur la statistique morale," pp. 6, 22 and 35, *et seq.*

² "Recherches statistiques" (1829), note, p. 25; English trans. of *Sur l'homme*, p. vii.

³ *Supra*, p. 87.

⁴ "Recherches sur la loi de croissance," pp. 1 and 2, and "Recherches sur le penchant au crime," pp. 2 and 80.

⁵ "Recherches sur le penchant, *etc.*," p. 80.

knowledge.¹ The causes over which man has some control are the social institutions; and since the modification of effects must begin with the modification of causes, the betterment of results must begin with a reform of social institutions.² In order that this reform may be carried out with wisdom and intelligence, it should be the part of the statistician, thought Quetelet, to make known, so far as possible, the social effects traceable to special institutions, and the part of the legislator, in the light of this knowledge, to ameliorate social conditions.³

The preceding paragraphs make more or less clear Quetelet's explanation of statistical regularities, his deliverances on the question of social responsibility for crime, and his hope for a positive progress as man grows in scientific knowledge. Is his position satisfactory?

Attempted explanation of the regularities of moral statistics has been the cause of much fruitless discussion, because attention has been centered upon the implications that may or may not be drawn with reference to the freedom of the human will. We may avoid this barren philosophical discussion by starting from a principle which makes it impossible and by limiting ourselves strictly to the field of scientific inquiry. It does not seem possible for any science to take any other attitude toward the phenomena with which it deals, than that they are related in direct and complete continuity with

¹ "Recherches sur la loi de croissance," p. 2.

² "De l'influence de l'âge sur l'aliénation mentale et sur le penchant au crime," *Bull. de l'acad.*, 1st Series, vol. iii, p. 185.

³ *Sur l'homme*, bk. iv, final section; Eng. trans., p. 108; "Statistique morale," p. 146; "Sur la statistique morale," pp. 18-19 and 36; "Sur la statistique criminelle du Royaume-Uni. de la Grande-Bretagne. Lettre à M. Porter, à Londres, par M. A. Quetelet," *Bull. cent. com. de sta.*, vol. iv, p. 121.

preceding or contemporaneous phenomena. That is, the causal explanation of a phenomenon must be found in antecedent and coexisting conditions where it arises, without resort to some extraneous, unrelated or capricious element. In so far as a phenomenon is a pure accidentality it is not material for scientific inquiry. If any series or group of phenomena of a pure-chance sort were subjected to investigation, no order or relation would be discernible among them. Human reason would be useless and powerless in their presence, and inference would be impossible. If man's choices were of this sort, psychology would be forever a futile pursuit and education useless and purposeless. To illustrate such a condition by the usual figure of drawing balls from a bowl, one must conceive a bowl to contain a multitude of balls of an equal number of shades of color.¹ The problem to be solved would be to ascertain from a finite number of draws the probable order of future draws, or the ratio of balls of one shade to those of other shades. Even the largest conceivable number of draws would give no grounds for inference. Under such circumstances we must forever remain in the dark with no guide for our conduct other than unreasoning fear and superstition. The reasoned and ordered knowledge which science seeks is possible only under the assumption that the efficient causes of events are found in antecedent conditions.

This principle of efficient causation must then be extended to the sphere of human conduct. This is where the rub usually comes. The older view of a self with a will extraneous to the motives to action and with a power

¹Jevons, *Principles of Science* (London, 1905), p. 2, refers to Condorcet's expression, "an infinite lottery."

of fiat regardless of the conditions of life has generally been discarded. But many, like Quetelet, who give great emphasis to the necessities which the conditions of life force upon us, still reserve a little circle within which this old-time self may disport at pleasure, and exercise its will without let or hindrance. According to the view which we present as the only basis for scientific inquiry, even this little circle and the self, independent of character, motives and conditions, must be given up. This is a completely and frankly deterministic basis. It still preserves that conception of free will which means ability to act in accordance with our own character and motives—the sort of freedom of which all are conscious. Moreover, when it is once seen that scientific knowledge is dependent on their being an order in man's world, and that true freedom for man is dependent upon the acquisition of a knowledge of that order, it may be added that the deterministic basis makes possible the only freedom that is worth while or even possible for rational creatures.

It seems perfectly sound then to find the explanation of statistical regularities in the persistence of causes. Were we in imagination to reduce society to a state akin to the static state of the economist, in which the internal and external conditions obtaining throughout the population were exactly duplicated from one year to the next, we should not be astonished at the repetition with a dull monotony of the whole gamut of social budgets. But in actual dynamic society, conditions change slowly. Certainly the physical environment does not greatly vary from one year to the next; the physical qualities and the mental traits of the population, and its distribution by age groups, change little in two succeeding years; the social institutions, the customs and beliefs, and knowledge likewise change little. Hence the approximate repetition

of the numbers of social events from year to year. There will be, for example, about the same number of persons in the population, who by hereditary qualities and experience, are capable of committing murder under certain incentives. From one year to another about the same number of persons thus prepared meet the needed incentives, and the deeds are done. Similarly with the number of suicides, or births or marriages. The explanation is at bottom not different from that of the recurrence of approximately the same number of deaths from year to year.

How then shall the fluctuations in the numbers from year to year be explained? Quetelet seemed to think that these fluctuations were the effects of man's free will.¹ For this reason the average of the numbers for several years shows the effect of general causes, to the exclusion of free will, even, as the true ratio of the balls in the bowl is approached as the number of draws is increased. This however must be viewed as an erroneous explanation of the fluctuations. It seems to assume that the causes are perfectly constant, but that the number of persons who capriciously willed to yield or not to yield to their influence varied. But if the tolerable constancy of results is explained by a tolerable persistence of causes, then the fluctuations must similarly be explained by variations in the causes. The number of causes is extremely large, and the fluctuations in the results are due to differences either in the intensities or in the combi-

¹This seems to have been the view also of Prof. Richmond Mayo-Smith. He says, "With all the regularities there are numerous irregularities which leave room for the freedom of the individual. And it is scarcely possible that statistics will ever be so perfect an instrument of investigation as to destroy these variations." *Statistics and Sociology* (New York, 1895). p. 27.

nations of the causes. Moreover these variations in the causes, instead of being an evidence of man's free will, are for the most part entirely, as yet, beyond his control. Biological variations in the structure of brain and nervous system, some unknown element in ancestral heredity, may be partially responsible for fluctuations in the rate of suicide; or a crop failure may account for an increase in crimes against property. The point is simply that we cannot assume a causal explanation with respect to the regularities and a fantastic free-will explanation with respect to the fluctuations.

This holds true also of the variations about the mean were the population distributed with respect to some moral trait, as tendency to crime.¹ Such a distribution would be more or less well represented by the normal law of error, the variations running through all degrees from abhorrence of crime to a keen delight in it. Such a distribution would thus approximate the distribution of chances. Does this not indicate that there is some purely chance or free-will element which makes it necessary to provide for more or less extensive deviations from the type form? The deviations undoubtedly exist but they are not due to some capricious element assumed to exist in each person. The deviations indicate a freedom on the part of each person in the group to act in

¹We may recall here a distinction made in the preceding chapter between those statistical studies which ascertain the so-called social budgets, and those which distribute the members of a social group with respect to some trait, the distribution being assumed usually to be normal. In the preceding paragraph the fluctuations from year to year, found by the former kind of studies, were considered. In this paragraph the variations represented by the law of error are considered. Quetelet suggested such a distribution as this for mental and moral traits, but did not actually make any such distribution. See chap. iii, pp. 75-76, *supra*.

agreement with his character and motives, but even as the location of each chance in a scale of chances is determined by a possible combination of causes, so the location of each person in the scale of distribution is determined by that combination of causes which has determined his character and motives. What that combination is in any particular case may be inscrutable, with the result that particular actions are as unpredictable as the result of a chance draw. But the word chance in this case differs from what we have called pure or absolute chance, in that it is merely a blanket term for our ignorance of and inability to weigh the many minute causes which determine the result. So the variations of the members of a group about their mean, and the location of every member in the scale of distribution are determined by the inscrutable and almost infinitely variable differences in heredity and environment. The differences in natural abilities, in experience, training, education, beliefs, are sufficient to explain, in the scientific sense, the variations about the mode or the mean.

It has often been stated by writers on this subject that the statistical regularities have no compelling power over the individual.¹ Recall at this point the manner in which the regularity is formed. It is formed by counting the repetitions of a particular moral act during equal periods of time in a population group. The number of suicides in the United States in a series of years would constitute such a regularity. Now what can be meant by the statement that the regularity exerts no compulsion over the individual, that the individual is free but the mass is not, that the rule exists, but the individual may or may not follow it? From the point of view

¹ See, for example, Mayo-Smith, *op. cit.*, p. 27.

adopted in this essay the only possible interpretation is that, whereas there is a high degree of probability that the group as a whole will show about the same number of suicides during the year following, it is impossible to say what particular individuals will do the deeds. But this is due merely to our ignorance of the causes¹ operating in particular cases. The regularity of moral statistics is in this respect similar to the figures of a mortality table, as has often been pointed out. The inability to predict the death of a given person from the data of a mortality table is no evidence that this person *willed* not to die at any particular time we might set. The conditions of life and character determine whether this or that individual shall be numbered among the suicides. Moreover, from the manner in which the statistical regularity is formed it is evident that the persons contributing to the so-called budget in any year are a small, and, in many cases, a selected group. They are found at one extreme of the curve representing the whole social group. They show the results of particular combinations of causes. The persons represented by the other slope of the curve are in no *danger* of becoming suicides; their conditions of nature and nurture prevent such a result. It would seem then that the statement that the regularity of the mass exerts no compelling power over the individual is at least unenlightening. It is only a truism or corollary from the method of finding the regularity. A more accurate description is given by the statement that the same causes which produce the regularities do, through differences in their intensity or their

¹By causes as used throughout this essay is meant simply the antecedent conditions of an act, that is, inherited structure and the impresses of past experience.

combination, determine the course of the individual; but that only a very small part of the group is subject to those particular combinations of causes, whose effects appear in the regularities. If the statement in question should be interpreted to mean that the individual is not subject to the general conditions of the life of the group in which he lives, then we may invoke the whole body of social science to show that it is distinctly not true.

It is usually assumed as a corollary of the statement considered in the preceding paragraph that the demonstration of the regularities does not disprove the doctrine of free will. This is true if by free will is meant action in agreement with our character and motives, but not true if a capricious element is meant. As already stated, if we explain the regularities by constancy of causes, it is at least inconsistent not to explain the variations by changes in the causes. Furthermore, when it is shown that the regularity changes with a change in the conditions, what other interpretation is possible, than that human action is determined by the conditions of human life?

Similar to the foregoing is the statement that the doctrine of free will cannot be disproven by statistics. With equal facility it might be said, the doctrine can be proved or disproved only by statistics.¹ If by this doctrine is meant an uncaused cause, a self-originating something without an antecedent but with a consequent, though having only a small circle of activity, then it is certainly true that statistics cannot *demonstrate* its non-existence. For statistics deals only with groups, and it will never be able to eliminate one cause of group variation after an-

¹ Quetelet, English translation of *Sur l'homme*, § 2, says, in answer to his question "Are human actions regulated by fixed laws," "Experience alone can with certainty solve a problem which no *à priori* reasoning could determine;" also *Du Système social*, p. 65.

other, and correspondingly reduce the group, until the individual is reached. The causes of variation are practically innumerable, and to attempt to eliminate them one after another to see whether a final capricious and unaccounted-for element remains is not only impossible but would be unending were it possible. If however the doctrine means only that we are able to do this or that if we wish to do it, then it is not at all in conflict with the explanation of statistical regularities here set forth. For this would simply mean that our character and motives determine our actions—character and motives being themselves products of the past brought into contact with present stimuli.

Are the statistical regularities of such a nature as properly to be called social laws? Quetelet seems to have thought that his regularities were social laws comparable to the laws of physics. He speaks frequently of the social system in such terms as suggest the *Système du monde* of the astronomer. After defining the average man as analogous to the center of gravity in bodies, he says, "If we wish in some way to establish the bases of a social mechanics, it is he whom we ought to consider, without stopping to examine particular or anomalous cases."¹ In the *Recherches sur le penchant au crime*² he states that the average man will undergo modification in time. It should then be determined

whether these modifications are due to nature or . . . to certain forces, of which man disposes according to his free will. . . The science which would have for its object such a study would be a true *social mechanics*, which, no doubt, would

¹ *Recherches sur la loi de croissance de l'homme*, p. 4.

² Page 2. See also "Recherches sur le poids de l'homme," pp. 10, 11 and 12.

present laws quite as admirable as the mechanics of physical bodies, and would bring to light principles of conservation which might be perhaps only analogous to those which we already know.¹

He often repeated the statement that the results obtained by viewing a large group of men were of the order of physical facts.² In the *Letters*³ he says:

This great body (the social body) subsists by virtue of conservative principles, as does everything which has proceeded from the hands of the Almighty. . . . When we think we have reached the highest point of the scale we find laws as fixed as those which govern the heavenly bodies: we turn to the phenomena of physics, where the free will of man is entirely effaced, so that the work of the Creator may predominate without hindrance. The collection of these laws, which exist independently of time and of the caprices of man, form a separate science, which I have considered myself entitled to name *social physics*.

In the first place it is doubtless an exaggeration, or an inaccuracy to speak of the regularity itself as a statistical or social law. The average number of suicides in Belgium, for example, merely acquaints us with a social fact. Such a fact is itself variable and has only a greater or less degree of probability of being repeated in the succeeding year. Such a fact however becomes the basis of more or less inclusive social laws when relations of co-existence and sequence are established between it and the conditions in which it arises. The establishment of such relations will of course pass through all the stages

¹Page 2. See also "Recherches sur le poids de l'homme," pp. 10, 11 and 12.

²See *supra*, p. 87.

³Page 178.

from hypothetical generalization to more or less exact quantitative statement. Changes in the fact thus become clearly and even quantitatively correlated with changes in its conditions. But while both the statistical fact and the social laws found through its correlations have considerable scientific value, when tested by their usefulness in prevision, such value is not so great as that of many of the laws of astronomy and physics. In the case of these latter, inferences have a degree of assurance only slightly removed from certainty, owing to the completeness of the induction, the permanency and simplicity of conditions and the facility with which effects attributable to a certain condition or to certain conditions may be isolated. But in the statistical study of social phenomena the complexity and variability of conditions and the very great difficulty of isolating the effects of particular causes give to inferences from established causal relations to future events more or less uncertainty. Not only do we not know with exactness the influence to be attached to each one of the conditions essential to the production of a social event but we do not know the proportions which will persist among the conditions themselves. Thus it may be shown that the marriage rate in England tends to vary directly with the amount of foreign trade per capita of the population,¹ but a quantitative statement of the degree of change in the former following a specified change in the latter can be made only with a considerable margin of error. This is because the influence of the amount of imports and exports (or any other index of industrial activity) on the marriage rate cannot be sufficiently isolated from other

¹A. L. Bowley, *Elements of Statistics* (2d ed., London, 1902), pp. 174, *et seq.*

influences, such as age grouping of the population, standards of living and social customs. It is also due to the fact that all the conditions determining the marriage rate, and consequently the marriage rate itself, change more or less rapidly from decade to decade.

It does not seem probable therefore that social laws derived from the study of the regularities of moral statistics will ever become sufficiently general to be "independent of time and the caprices of man," as Quetelet expected. Even the law of mortality changes slowly with succeeding generations. But concrete social phenomena change from place to place and time to time and may come quickly into vogue and as quickly disappear. Not only are there variations about the average result for a series of years but the type itself changes with its conditions. Quetelet's hope of arriving at statistical laws independent of time and place was based apparently on his assumption of constant causes. He always spoke of the average as resulting from such causes and hence free from the effects of variable and accidental causes. But yet he believed man capable of bringing about secular changes in the social budgets.¹ Quetelet however did not reconcile these conflicting notions,² nor did he anywhere demonstrate the existence of a constant cause. Were the types of social phenomena the results of really constant causes, then their true values could be indefinitely approached by more and more observations. But the average keeps shifting in obedience to the changing conditions of dynamic social life. The illustration of drawing balls from a bowl in

¹ See pp. 87 and 89, *supra*.

² For the same conflict with reference to the Average Man, see chap. iii, p. 78, *et seq.*, *supra*.

which are an infinite number of white and black balls in a fixed or determined ratio, which may be forever approached, is not true to the conditions in society. The ratio must be represented as changing slowly. While therefore holding to the mechanical nature of social causation, which was fundamental in Quetelet's view, the problem of discovering or verifying social laws by a statistical process must be made immensely more difficult than he ordinarily represented it to be. For the want of the concept of evolutionary change Quetelet's social physics did in fact provide only for a "social statics." To this must be added the more difficult sphere of "social dynamics." Not only must the statistical regularity be correlated with certain dominant social conditions, but the order of changes in the regularities themselves as correlated with developing social life must be discovered and epitomized in the form of scientific law.

The preceding paragraph makes it unnecessary to emphasize a point made much of in Venn's *Logic of Chance*¹ that, inasmuch as the type in moral statistics is constantly changing, not only can it not be indefinitely approached by long-continued observation, but it may be even missed altogether if statistics are collected through so long a time that the results arise under different sets of circumstances.

It remains in this chapter to state certain basic principles of procedure followed by Quetelet in the study of the moral actions of men. In estimating the physical qualities of men; some, as height and weight, may be measured directly, while others, as strength, can be appreciated only by their effects. It is not absurd to say that one man is twice as strong as another with respect

¹ Second edition (London, 1876), pp. 15, 16 and 83 to 89.

to pressure of the hands, if this pressure applied to an obstacle produces effects in the ratio of two to one, conditions being the same for the two men.¹ Similarly in the appreciation of man's moral and intellectual traits it is necessary to admit as fundamental that "causes are proportional to the effects produced by them."² Thus, from a study of actions, literary products, or other effects which may be attributed to the presence of a particular mental or moral trait, there is sought a knowledge of the trait itself. This principle was probably derived by Quetelet from the principle of probabilities that the ratio of white to black balls in an urn is that shown by many drawings. Quetelet applied it in the measurement of certain mental and moral traits at different ages, in the same way in which it would be used by the psychologist in the study of mental traits and abilities. This principle is however precisely the same as that which must be used by the sociologist in the inductive study of "types of mind" and "types of character" of a population.³

The second principle posited by Quetelet is one that is essential to all statistical inquiry, namely, that reliable results can be obtained only by the study of many rather than few individuals. It is the group rather than the individual upon which attention must be centered. It is only thus that any order or generality can be ascertained amidst the apparently chaotic diversity that is so bewildering when the members of a social group are viewed singly. Here again we meet with a principle derived from the study of probabilities, namely, "that many in-

¹ "Recherches sur le penchant au crime," p. 6.

² *Ibid.*, p. 7. "Sur la statistique morale," p. 7.

³ Giddings, *Inductive Sociology* (New York, 1901), chap. ii.

dependent disturbing causes of small individual effect neutralize one another in the mass.”¹ To these two general principles might be added many particular ones derived from Quetelet’s discussion of the necessity of comparability of data, of the extent to which small diversities in the data may be neglected when the numbers are large, and of the incompleteness of the records of moral actions.”²

It is possible to make a number of criticisms of Quetelet’s results, both in the study of the development of dramatic talent and in the study of the *penchant au crime* by ages. Suffice it to say that he was inclined to make an exaggerated use of the second principle noted above. He relied too much on mere multiplication of instances to overcome divergences in the instances themselves.³ But such criticisms by no means affect the validity of the general principles of his procedure. A scale of *penchant au crime* derived from the mere number of crimes by age groups, without regard either to the differences in the gravity of the crimes or to the varying proportions in which different kinds of crime are detected,⁴ would not be thoroughly accurate. But this means only that attention must be given to these causes of error. To study man’s nature from the manifestations

¹ Bowley, *op. cit.*, p. 263.

² See “Recherches sur la Roy. de Pays-Bas,” pp. 29-30; “Recherches sur le penchant au crime,” pp. 10 and 17, *et seq.*; *Bull. de l’acad.*, vol. ii, note p. 370; *Letters*, p. 219, *et seq.*, and especially the first pages of “Sur la statistique morale.”

³ That he was not unaware of the error here involved is shown by his statements in *Sur l’homme*, bk. iii, chap. i, § 3, fourth paragraph.

⁴ A larger proportion of crimes of violence are detected and brought to justice than of petty thefts. Since therefore crimes of violence, by Quetelet’s tables, are more numerous at ages 21-25 and 26-30 than at others, the scale based on numbers only is unduly large for these groups.

of that nature, to study social conditions by means of their products, and to study groups rather than individuals in order to neutralize individual peculiarities are not only valid but absolutely indispensable in statistical research.

It is thus in Quetelet's studies of the moral actions of men that is to be found the basis of the quantitative study of social life. The Berlin Academy of Science and Náum Reichesberg doubtless exceeded strict accuracy in hailing Quetelet as "the founder of a new science," "social physics," or "sociology."¹ Sciences pass through various stages before they become quantitative. As the true pioneer in the field of moral statistics, however, he formulated and applied with impressive effectiveness the method of research which is especially appropriate in sociology and economics. It does not seem at all impossible that the social sciences may one day approximate the exactness of the physical sciences. Quetelet would then appear as the most conspicuous among the early workers in the field of exact social science, and as the first formulator of the quantitative method in the study of social phenomena. The demonstration of those regularities in human actions which evidence the presence of law, and the formulation of the method for their discovery were immense contributions to man's knowledge of and power over his world. Though Comte used both the words social physics and sociology, he did not succeed in formulating a method of investigation. This was done by his scorned² contemporary, Quetelet.

¹See chap. i, p. 33, *supra*.

²Auguste Comte, *Cours de philosophie positive*, (4th ed., Paris, 1877), vol. iv, p. 15, note.