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THE AVERAGE AND THE INDIVIDUAL

BY

ARTHUR L. BOWLEY, C.B.E., Sc.D., F.B.A.
Emeritus Professor of Statistics in the University of London

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THE AVERAGE AND THE INDIVIDUAL

THE purpose of this Lecture is to examine the contribution that is made by Statistics to the study of the 'Modern Social, Economic, and Political Questions' which are the objective of the Sidney Ball Fund.

There are some 130 definitions of statistics listed, from which I select two. 'Statistics is the science of the measurement of the social organism, regarded as a whole, in all its manifestations' (Bowley). 'Statistics is the numerical study of groups and masses through the study of their component units' (Willcox). On the other side, 'Sociology is the study of human interactions and interrelations, their conditions and consequences' (Ginsberg). The word, however, implies that these relations are only of interest to the sociologist as relations or actions within a society and as leading to some generalization. We may conclude then that statistics measures the objects and reactions that sociology studies. But in both cases generalization implies the existence of a type recalling Tennyson's Nature—'So careful of the type she seems, so careless of the single life'. But individuals do not conform to type, except under narrow definitions, and we may well consider the limitations and faults of generalization when applied to the actual circumstances and character of a person who is the unit in society.

I propose to examine in some detail the process of statistical analysis, without reference to the actual technique of counting or measuring. The first step is to define the 'population' or 'universe' which is to be the subject of observation. This may be as numerous as the sands of the sea-shore or as small as a College, but not so small that generalization is inappropriate and simple enumeration and description of the individuals exhausts the possible information. The universe must be composed of separate units, each of which could be studied, while their total number can be known. The universe is delimitated rather than defined,

being limited by the conditions of observation and enumeration. There may, however, be some extension after the first processes of analysis from what can be seen or is known, to a wider universe which appears to have similar characteristics; but in any such extension we pass beyond the proper sphere of statistics.

The universe is then defined as an aggregate of individuals, each of which possesses certain attributes. For example, persons alive, actually within the frontiers of Great Britain, at midnight of 26 April 1931, entered on a Census form. Or persons, insured, in the general scheme of unemployment insurance of the United Kingdom, aged over 16 and under 65, whose book was lodged at an Employment Exchange (it being assumed that the person is still eligible for employment), on 15 August 1938.

In these cases the words in the list of attributes have meanings which can be rigidly defined. When this is not possible, statistics halts. For example, a universe now under discussion is the number of Germans living in Czechoslovakia. Here it is difficult to define a German, the date for enumeration is uncertain, living or residence is a vague term, and there is no adequate machinery for observation.

Having defined the universe for our purpose, we next consider what attributes, not uniform for all units, should be or are recorded. In the English Population Census there is recorded for each person, the Civil Parish in which he is enumerated, sex, age, relationship to the head of the household, birth-place (in some censuses), occupation, industry which contains the occupation, whether single, married, widowed or divorced, the number of persons in the household and the number of rooms in the tenement. These ten do not exhaust the attributes that are recorded in the English or other censuses.

For the unemployment return there are records of district, sex, and industry, with a distinction between permanent and temporary unemployment, duration of unemployment, whether eligible for benefit or allowances.

There can also be recorded the age of the unemployed person.

Division of the population by means of the records of these attributes is the process of classification. Before discussing it, let us consider how many attributes are necessary to define each individual separately. If we take, for example, the twenty-six letters of the alphabet we can write six of them, such as P, Q, W, E, R, T in any of 300 million ways. If then there were six attributes, each of them capable of twenty-six variants, and no two individuals had the same grouping, we could identify each of 300 million persons. Similarly, the London telephone system with three letters and three digits is capable of distinguishing 999,000 subscribers. A familiar case is the identification of persons by their finger-prints; but here it is not a question of how many variations are possible, but rather of experimental verification that no two persons are found to have the same grouping of marks. Consideration of the small numbers of alternatives that, when combined, lead to great numbers of possible combinations will help to explain the great range of variation in a population, so that individuals can be distinguished from each other. Even sheep are said to be known individually by shepherds. First cousins have two out of four grandparents in common, second cousins two out of eight, twenty-sixth cousins would have in common only two out of 134 million ancestors of a remote generation, if there had been no marriage of relations.

Apply these considerations to the statistical examples I have given. In the population census there are 60 major territorial divisions, 8 divisions by sex and civil condition, some 500 separate occupations. With, say, 8 subdivisions by age there are nearly 2 million subdivisions, such as 'Oxfordshire, male, married, carpenter, aged between 25 and 35'. If, as of course is not the case, every compartment was occupied, the content of each would be small, the average for England and Wales about 15 per subdivision.

Similarly, in the unemployment figures, if we take the 9

territorial divisions, two sexes, 100 industries, 5 classes of length of unemployment, and 6 age-groups, we have 54,000 possibilities, the average content of which would be now about 25. In fact, the compartments in *The Ministry of Labour Gazette* are very unequally filled. In August this year there were 120,440 men in the Distributive Trades wholly unemployed, about whom there is no further information, while there was one woman wholly unemployed in Lead, Tin, and Copper Mining (faithfully expressed as 10·0 per cent. of the ten women normally occupied) and there are seven blank entries under 'women wholly or temporarily unemployed'.

It is clear from these examples that the process of classification may in some cases lead to identification, and in others to a large undifferentiated group. As a digression it may be remarked that a group that is very small in relation to the universe may have characteristics that it is important to study separately, and also in relation to the whole. The sport or genius may be of more value than the undistinguished herd. There is a curious constancy in the occurrence of rare events, when the population at risk is large. Deaths by lightning, fires in a town, rare hands at bridge, observation of fire-balls, and other phenomena which lead to letters to the Press are examples. I asked my students three years ago to find new illustrations of this principle from statistical records. There were numerous answers, of which I give two—the number of deaths caused by steam-rollers in England, and the number of quadruplets born in Italy, each of which varied about a small average year by year. The number of fatal motor accidents weekly illustrates this regularity, unfortunately on a larger scale. But what is regular in the mass is rare for the individual. Not even the most conscientious statistician would involve himself in an accident to restore the average.

The phenomenon of regularity in events related to large numbers has of course been observed since the beginning of statistics. Dickens's *Hard Times* is in one classification a tract on my present subject. You will remember that Tom

Gradgrind says to his father, who expresses surprise at his delinquencies, 'I don't see why. So many people are employed in situations of trust; so many people out of so many will be dishonest. I have heard you talk, a hundred times, of its being a law. How can I help laws?' The sociologist and the statistician are like Gradgrind before his son's fall, only interested in the class, not in the individual. Such approximate constancy is more familiar in connexion with large numbers than with small. Under a scheme of classification we enumerate classes the members of which are homogeneous in respect of a number of selected attributes and heterogeneous with respect to others. While the population itself increases, the ratios of such classes to the total or to a major class in many important cases remain constant, or vary in a systematic manner.

Marriage Rates. England and Wales

	Marriages per 1,000 of the population	*Spinsters over 20 years married per 1,000*
1870–2 . .	8·4	10·3
1880–2 . .	7·6	9·4
1890–2 . .	7·8	8·8
1900–2 . .	8·0	8·2
1910–12 . .	7·6	7·5
1920–2 . .	8·1	8·3
1930–2 . .	7·8	7·4

Marriage is pre-eminently a matter for two individuals. But in the mass there is a regular movement in the spinsters' marriage-rate, interrupted by the aftermath of the War in 1921. The constancy of the general marriage-rate is due to the balance between the increasing proportions that single women over 21 years form of the population and the falling proportion married in a year.

It is the movement of such general figures over a period and their aberrations in particular years that are important from the sociological point of view. Till we are in the presence of great numbers, which are approximately constant or regular in their changes, we cannot analyse the influences that affect the phenomenon.

In brief, the first service of statistics is to show the general movements in measurable parts of the social organism. It is clear that the choice of the attributes which are to be possessed by every member of the subdivision is wide, and must be determined by the purpose for which the statistics are needed. Thus, consider the recent problem of transferring part of the inhabitants of a large city into a zone at some distance from it. The group to be transferred might be defined as children and other persons not necessary for carrying on the work of the city, subdivided by sex and in age-groups; we might add, not able to make their own arrangements for moving. The number of children in the public elementary and other state-aided schools is adequately known. For other classes of the community there is room for a wide range of estimate. We have thus one measurable group and others partly measurable, homogeneous in respect of needing transference. On the other side we need a measurement of possible accommodation. This was crudely defined as the excess of the number of rooms in houses over the number of persons resident in them, the definition being applied equally to each house and to groups of houses. The definition of a room, which it is well known to be difficult, appears to have been left to the canvassers. The number of rooms thus measured is a class without sufficient common attributes for the purpose, that of accommodating visitors. Nor is the class, visitors, sufficiently homogeneous in relation to accommodation. Each class needs subdivision statistically, or sorting out individually, before visitors can be fitted into houses with reasonable convenience.

I give another instance of an insufficient number of attributes. When in 1916 I was at work at the Ministry of Blockade, it was decided that an additional professional expert was needed, and we were offered a musician. I daresay that many statisticians are musical, but I doubt if many musicians are statistical.

Suppose the purpose to be to examine the stress of unemployment, either to determine the expense of insurance

payments, or in the hope of devising measures for diminishing the number.

We can consider homogeneity with respect to occupation, district, age, duration, &c., as already named.

Thus in February 1938 we have:

Coal-mining. Insured Persons Unemployed

	Wholly unemployed	*Temporary stoppages*
Great Britain . .	81,936	15,459
Northumberland .	3,334	86
Scotland . .	12,045	2,895

Grouping by Age

	Under 25 years	*25 to 45*	*45 and over*	*All*
Number . . .	12,000	39,000	47,000	98,000
Percentage of insured .	5·6	9·1	18·0	11·2

The grouping by age is not available for the districts separately, nor is the grouping by duration of unemployment available for separate industries. But these could be obtained, and we should have such a subdivision as coal-miners in Northumberland, aged over 45, who have been out of work for twelve months or more. Though the individuals in this group would differ in many characteristics relating to their mobility in respect of place or occupation, the group would be sufficiently homogeneous for a preliminary survey.

The process of classification is one of abstracting. As in the cases already named, the abstraction is arbitrary, at the choice of the observer. We can look at the universe from many angles, all arbitrarily selected, but all limited by our powers of observation. The physicist's universe is not the sociologist's nor even the same as the chemist's. The physicist is now finding that there is an apparent arbitrariness—I will not say individuality—in his ultimate subdivision of the atom. The relativist is prepared to discuss many hypothetical universes, observable or not. I received

by the same post the programmes of five Learned Societies —Geological, Linnean, Geographical, Microscopical, and Historical—each has made its own choice of a Universe. The process of classification within the universe is not unique, but determined by some ulterior purpose. Whatever that purpose is, it ignores the individual except as a member of a class.

The universe with which I am at present concerned is that of a human population in an assigned area at one date or in a sequence of years. The Population Census, as we have seen, chronicles some ten attributes for each person, but there are many others. We learn nothing directly about income or distribution of expenditure; nothing about physical or physiological characteristics; nothing about intellectual ability or attainment, nor adherence to any religious, social, or political cult. There is very little of use to the student of heredity. The Census gives only an instantaneous view. In only a few respects can individuals be followed from one Census to another, and then only as members of a class. If we find, for example, so many native-born Britains aged between 25 and 35 in 1921, so many single and so many married, we can find in 1931 how many survive and are still in Great Britain, and how many have been married in the interval, if we use the Annual Registrar-General's Reports. (In fact there would be a good deal of approximation in the statistics.)

Whether we have the ten attributes of the Census, or have also the more numerous attributes that could be recorded, there is the necessity of selection of groups of attributes for tabulation. It is not physically possible to print separately the millions of subdivisions that can be made, nor for reasons already given is it desirable. The Census process is to make a card for each individual punched so as to record in code the information available. Then by machinery any group, sub-group, or aggregate of attributes can be rapidly counted. The detail that shall be published has to be decided. I take, for example, the volume of the 1921 Census relating to occupations. The occupations themselves are

divided into 23 main groups, 78 sub-groups, and about 474 separate occupations. This is a reduction from a list of some 30,000 different occupations actually written on the householders' forms. Besides the occupations we have districts, sex, age, marital conditions, and status (as employer, operative, &c.).

For England and Wales as a whole the age-distribution is given for each occupation, and for males and females separately, and also the number of employers, &c., but not the age-distribution for employers apart from others occupied. Supplementary tables distinguish married from unmarried by age and status.

When we come to classification by 55 counties there is no distribution of age conjoined with occupation. For the subdivision by some 700 urban districts, age and status are sacrificed, and occupations are grouped under 39 headings for each sex. These tables occupy over 300 closely printed folio pages. A supplementary table showing occupation, age, and sex-distribution for each county and borough with more than 50,000 inhabitants, and some other aggregates of districts, occupies 750 pages.

I give these numbers to show how rapidly the limits of classification are approached in a simple case, when it is a question of printing. For limited purposes it would be easy to sort out any detailed class; for example, the number of retired, male, married, University teachers, resident in the civil parishes of Fernhurst and Lynchmere in Sussex, namely from two to four according to the date taken.

Enough has been said to explain the significance of a class in statistics. I would only emphasize again the importance of pedantically exact definition.

I come now to the word 'average'. According to the *Concise Oxford Dictionary* it means 'the generally prevailing rate, degree, or amount'. This is what the statistician calls the mode, and is too limited. Let us rather take Dr. Venn's explanation:

'The first vague notion of an average, as we now

understand it, seems to me to involve little more than that of a something intermediate to a number of objects. The objects must of course resemble each other in certain respects, otherwise we should not think of classing them together; and they must differ in other respects, otherwise we should not distinguish between them. What the average does for us, under this primitive form, is to enable us conveniently to retain the group together as a whole. That is, it furnishes a sort of representative value of a quantitative aspect of the things in question, which will serve for certain purposes to take the place of any single member of the group.'[1]

An average thus relates to a class the members of which have some attributes in common but vary with respect to some measurable characteristic. This is the connexion in which I shall use the word in the sequel.

There are many other meanings of the word 'average' that have their uses. Thus a purely arithmetical quotient such as the daily supply of water to a region divided by the number of its inhabitants, or the average consumption per head, has obvious use. A more developed conception, such as a series of index-numbers representing the course of average weekly wages, is a most useful datum for historical study. This has in fact two applications: it enables us with other data to compute the relation of aggregate wages to other elements of the national income, and it provides a norm with which we can compare the course of particular wages. But it does not tell us anything about the wages of an individual, even indirectly.

Another use of the word is as an adjective. The average Englishman is said to have certain characteristics. This is near Dr. Venn's explanation, but goes beyond it. The class in question is presumably an adult male born in and living in England, with probably some limitation of social class. But the qualities stubbornness, kindness, obtuseness, or whatever they are, are not measurable, as is the average height; they are only adjectival, chosen out of a vague

[1] *Logic of Chance*, p. 436.

hierarchy of grades, and each refers to a different class of attributes.

The statistician's average is usually, but not exclusively, related to measurable attributes of a defined class of persons or things. Not exclusively, because if the units can be placed in order without measurement, the average termed the *median* can be applied. But I propose to extend the meaning, and to regard the average as only one of a family of measurements which serve to describe a group.

First, however, it should be pointed out that we can deal with a measurable characteristic more directly, by marking divisions on the scale, and treating the resulting grades as classes. Thus, if we have a set of examinees' marks, we can class the candidates as first, second, third, or fourth class; grades which have an accepted significance. Or with ages, we can separate the groups at 5, 14, 21 . . . and get the classes infants, school-children, young persons, and other grades used in official classification. This is, however, only an extension of classification.

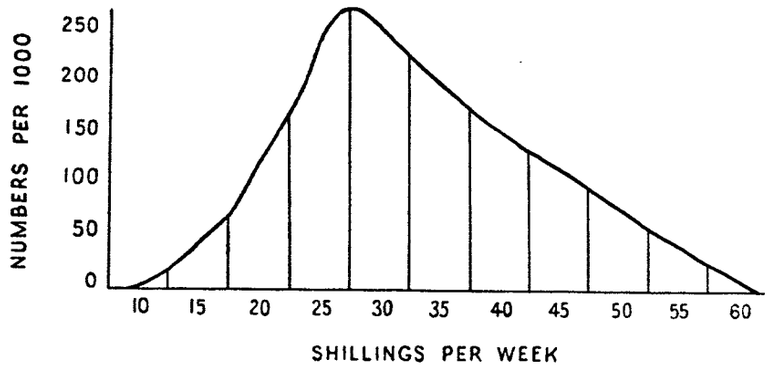
The main problem is to describe briefly so as, in Venn's words, to furnish a sort of representative value of a group of units, to each of which a measurement is attached; or more generally, when several measurements are attached to each unit, to compute values which will serve to describe the whole complex. For example, the average ages at marriage in England in 1931 were about 26 for the bride and 29 for the groom; a brief and unsatisfactory description of a very complex group, which could be supplemented by other descriptive measurements.

Statisticians usually visualize a group. On a horizontal line a scale of the variable is marked, on a vertical line a scale of numbers; ordinates are erected at each scale-reading of the variable to correspond on the vertical scale to the number of cases at that value. A more or less regular curve is then drawn through the summits of the ordinates.

An example of such a group is found in the table of weekly earnings of women in London in *The New Survey of London Life and Labour* (vi. 84). The highest column of the

diagram is that of the grade 25*s.* to 30*s.*, which contains one-quarter of all the cases. From the left the curve rises steeply, to the right it falls more gradually and spreads to

Full-time Earnings of Women, aged 20–25, living in working-class families in London. Circa *1930.*



Range of Earnings	*Relative Numbers*
Under 15*s.*	13
15*s.* and under 20*s.*	49
20*s.* „ „ 25*s.*	137
25*s.* „ „ 30*s.*	251
30*s.* „ „ 35*s.*	201
35*s.* „ „ 40*s.*	119
40*s.* „ „ 45*s.*	90
45*s.* „ „ 50*s.*	45
50*s.* „ „ 60*s.*	48
60*s.* and over	47
	1,000

Average 33*s.* 6*d.* Median 31*s.*
Mode 28*s.* 6*d.*
Quartile deviation 6*s.* 6*d.*
Mean deviation 7*s.* 3*d.*

over 60*s.* The average of all is 33*s.* 6*d.* and is not centrally placed, for about 57 per cent. earn less than the average and 43 per cent. more than it. The average by itself is therefore an imperfect characterization of the group, and statisticians have devised various supplementary measurements to give a more adequate, but still a concise, description of such a group, especially with a view to make simple comparisons with similar groups, such as earnings in another district or

another year. Such measurements are still of the nature of averages—one of the most convenient is the average deviation from the average, known as the mean deviation, which in this case is about 7*s.* 3*d.* The word deviation implies the existence of a norm.

The mathematical statistician is not satisfied till he has found an equation that describes such a group. In this case the second approximation to the normal curve of error expresses the group by three constants—the average, the standard deviation, and a measurement of asymmetry. The purpose of this is twofold. First, it packs most of the information contained in the figures into three intelligible measurements; secondly, it reduces the apparently sporadic variation to a regular law, by the help of which the system of causation underlying them can be studied. Till a mathematically expressed formula of variation is established, it may be held that the nature of the phenomena cannot be completely analysed.

A similar but more involved example is to be found in budgets of household expenditure. The starting-point is found in Engel's Law, that as income is increased smaller proportions are devoted to food and some other commodities, and larger proportions to less necessary goods. It is found that the adjectives in these laws can be replaced by simple numerical formulae, when a collection of budgets is studied. Thus if expenditure on any commodity is graphed against income, the points lie approximately on a straight line, to which of course an algebraic expression can be given. In words we should have such a statement as 'in a certain group weekly expenditure on food is one-third of the family income plus 15*s*'. Thus if the income was 40*s.* the food expenditure would be 28*s.* 4*d.*, or 71 per cent., and if the income was 60*s.* it would be 35*s.*, or 58 per cent.—a greater amount but a smaller proportion. To obtain greater regularity we must make the class as uniform as possible—thus it should be expenditure of one social class in one country—and since the allotment of expenditure varies with the size and constitution of the family, we should standardize

the family by the familiar method of counting it as equivalent to so many adult males. We still get a straight line that relates expenditure on a commodity to income, and are in a better position to study variations from it. Thus we have a sub-group such as 'families where the income per equivalent adult is 25*s*.' The formula may give expenditure on meat as 6*s*., but this is only the average of the class '25*s*. per head', and separate families vary in their habits of consumption. To complete the analysis we need to know the nature of this variation; available statistics suggest clearly that it is in accordance with the normal law of error. If this is the case, the analysis is complete; the normal law of error results from sporadic variations not regimented by any law.

But the main purpose of this lecture is to emphasize that in the end we can only define and measure a new sub-class without identifying the individual. We are left with such a statement as '30 per cent. of families with income 25*s*. per head spend between 6*s*. and 8*s*. per head on meat'. When we come to an actual family we find that it is vegetarian, or spends its money on dog-racing, or on beer or books. The necessary ration for the class as a whole could be provided in a food-distribution scheme, but it may be quite unsuitable for any selected household.

The collection of working-class budgets recently completed in this country will no doubt be classified from many points of view; I understand that the cards on which the data will be coded will contain over 800 columns for each family. We shall know the aggregate and average expenditure in great detail. It can be known what proportion of families make adequate expenditure on food, and even what proportion spend their money wisely from the food-expert's point of view. The magnitude of the problem of providing fully adequate nourishment for every one can be ascertained. But the result will still relate to masses and to averages, not to individuals.

The main purpose of this budget inquiry is to establish the Index-number of the Cost of Living on a sounder basis. These numbers will show how changes in prices affect the

average budget of the average family; it is very important that the foundation of the computations should be sound, and the number has great utility in many directions. But it is a misfit, not only for individuals but for whole classes, as consideration of Engel's Laws will show. Further, if it fits an average family with a certain income, it will not fit others. The three sizes of gas-masks may be sufficient, but a boot manufacturer stocks many sizes, each with more than one shape. If the price of milk rises it may be compensated in the index-number by a fall in the price of meat; but the results would be different for a family with several children and for one consisting of male adults only.

The last example of the statistician's methods that I shall consider is that of correlation, or as it might have been better termed co-variation. The origin of the term is from Galton's studies in heredity. Tall fathers have tall sons, but not invariably. If we have a group of fathers, say those whose height is 2 inches above the average, and measure the heights of their sons, their average is neither that of the general population nor that of the selected class of fathers. There is a regression towards the general average from the extra 2 inches, to perhaps $1\frac{1}{3}$ inches; the proportional regression is the same for each class of heights. But this is true for the average, not for the individual. Individual heights of sons deviate from their average, approximately at least, in accordance with the normal law of error. As a digression I may say that it appears to me that it is the variation in a family, rather than its average resemblance to parents, that requires explanation. Why are not brothers as like as two peas? In fact they are not, and the statisticians' and geneticists' task is to establish laws of variation. The coefficient of correlation is a mathematical device, of the same character as the device of the average, for packing into one intelligible term the relationship between two sets of attributes, such as height of father and height of son, proficiency in algebra and proficiency in arithmetic, age of bride and age of bridegroom, or any pair of attributes measured for each of a number of units. Its numerical value,

which varies from plus one to minus one, is a measurement of the degree of relationship, or co-variation between two attributes. The exact nature and application of the measurement are complex and often misunderstood, but I am not now concerned with their exposition. Its mathematical importance is that under certain conditions the whole of a complex group can be adequately described by five terms, viz. two averages, two standard deviations, and one correlation coefficient.

Its practical importance from my present point of view is that it leads to such a relation as that already given between income and specific expenditure. (Speaking technically we should term this a regression equation and use the regression-coefficient, which is closely related to the correlation-coefficient.) Given the position of an individual on the scale of one measurable characteristic we can forecast his position with regard to another; or rather we can say, for example, that the sub-group, 'families with incomes 25*s*. per head', has a certain average expenditure on food; or that in a group with a defined proficiency in one subject the average proficiency in another is known. In a regular or normal double distribution we can also assign the most probable value of the second attribute, and the chance of each deviation from the most probable.

We always come back to the average, not to the individual. The statistical position is that we measure the mass, the size, of a defined class, and the average where it is appropriate and the nature of the deviations from the average. The correlative to this in administration is standardization, regimentation, institutionalism, the bed of Procrustes.

If we are confronted by a practical problem, the remedy for unemployment, for poverty, malnutrition, delinquency, it is no doubt of first importance to know its magnitude and anything else that can be learnt about it *en masse*. But when we come to treatment it is a question of the individual. He not only differs from the average in the class in question, but also with regard to attributes that would come from a different scheme of classification. The three thousand and

more unemployed coal-miners in Northumberland can be subdivided by age and duration of unemployment, but for dealing with one of them there are also questions of capacity for work, aptitude for any other employment, family and local ties, and other personal circumstances. There were in August 2,679 girls aged 16 or 17 on the Northern Labour Exchange Division Unemployment Registers; we cannot say how many, if any, could replace the Austrian girls in domestic service in the south of England.

In administration all units satisfying certain definitions must be taken as completely similar, in general but not universally. Thus unemployment benefit proceeds by strict rules, interpreted by an umpire in doubtful cases; but the application of the Means Test is more elastic, though in the end rules must be drawn up for fairness and ease of application. In Law Courts the verdict depends on the rules of evidence, but the sentence often depends on unclassified individual circumstances.

The income-tax and surtax are graded only roughly by ability to pay.

The proposal to raise the school-leaving age is based on the assumption that all children between 14 and 15 or 15 and 16 years of age are equally capable of receiving instruction under school conditions, and after the higher age are equally capable of work; even so their family circumstances and the occupational environment vary so much, that the rigidity of the rule is in process of being broken.

The present tendency in this country is away from the rigidity of standards and institutionalism in the social, as contrasted with the economic sphere. It is long since lunatics were put into the common prison, and individual treatment of mental defectives is developing. The general mixed workhouse now hardly exists; the generalization that all persons incapable of earning their own living ought to have the same treatment is no longer accepted.

Nationalistic countries are concerned, like Tennyson's Nature, with the type. Democratic countries are primarily built up on the individual. The cult of the development of

the individual is spreading in many schools. The task of education is no longer generally regarded as to produce boys of standard pattern, rubbing off roughly all the corners of eccentricity, literally beating them into shape; indeed, I doubt whether that was ever a true generalization. Besides the classification by the Binet or more developed tests, with the view of separating school classes into more homogeneous groups, there is developing direct, and if necessary remedial, treatment of the individual, taking into account all his characteristics and circumstances.

On the other side are the efforts to standardize opinions and thought in the interest of nationality and to standardize products in the interests of economy. In the realm of nature an organism that differs from the average may have a poor chance of survival, but in the evolutionary theory progress depends on variation. This suggests that concentration on the average leads to a standardized and unprogressive people, while the hope of progress depends on the much more difficult and dangerous path of giving individuality free play—dangerous because there is no guarantee that injurious variations, not destroyed by natural or artificial action, may not outweigh those of value to the community. But here I trench on the ground of the eugenist and the student of heredity, whereas my intention was only to mark out the limitations of the task of the statistician.

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