

would be directly touched by it. If it were possible to levy import duties and a tax on incomes, the agricultural poor might be relieved, but hardly in any other way. I offer these suggestions for what they may be considered worth.

The prime measure, however, of agricultural reform, on which all native India seems agreed, is the granting of a permanent revenue settlement to every province, such as was ninety years ago granted to Bengal, and limiting thereby the preposterous claim of the Government to all ownership in land. This right of State ownership has worked everywhere, or nearly everywhere, its full natural result of impoverishment and disaffection; and Bengal, which has been exempted from its action, has alone remained prosperous. It is impossible for me in the limits of space imposed upon me to argue out this great question here. But I intend to return to it on a future occasion; and it will be sufficient for me now to say, that the value placed by native opinion on a fixed revenue settlement is the cause of the strong agitation actually in progress against the Bengal Rent Bill. This measure, in spite of Lord Ripon's immense popularity, is decidedly unpopular, and native politicians see in it a first blow struck at the prosperity of the only province which has hitherto escaped the universal drain of wealth into the Imperial coffers; nor am I without reason to believe that so it was intended, not by Lord Ripon, but by some of his advisers. At present, however, I only state the fact that a permanent settlement of the land revenue is urgently demanded by all India.

To sum up, Indian economists are in favour first of import duties on manufactured goods such as are imposed in Australia and other colonies; secondly, of a shifting of the financial burden as far as possible from the agricultural poor to the commercial rich, and thirdly, of a renunciation by the Government of its indefinite claims upon the land. These views will probably be considered preposterous in England, where we have cut and dry principles of economy in contradiction to them. But it is certain that all native opinion is against us, and that our present system is bringing India very near to ruin. Surely, there must be something wrong in a state of things which has produced the spectacle of a Government, after having absorbed to itself the whole land rent of a country, still finding itself constantly in financial shifts. The Government of India, as landlord, does practically nothing for the land. All is squandered and spent on other things; and the people who till the soil are yearly becoming poorer and more hopeless. This I call the agricultural danger, and if it is not one I again ask where the flaw in my reasoning lies. At least it is a reasoning held by ninety-nine out of every hundred educated and intelligent Indians.

WILFRID SCAWEN BLUNT.

MEASUREMENT OF CHARACTER.

I do not plead guilty to taking a shallow view of human nature, when I propose to apply, as it were, a foot-rule to its heights and depths. The powers of man are finite, and if finite they are not too large for measurement. Those persons may justly be accused of shallowness of view, who do not discriminate a wide range of differences, but quickly lose all sense of proportion, and rave about infinite heights and unfathomable depths, and use such like expressions which are not true and betray their incapacity. Examiners are not, I believe, much stricken with the sense of awe and infinitude when they apply their foot-rules to the intellectual performances of the candidates whom they examine; neither do I see any reason why we should be awed at the thought of examining our fellow creatures as best we may, in respect to other faculties than intellect. On the contrary, I think it anomalous that the art of measuring intellectual faculties should have become highly developed, while that of dealing with other qualities should have been little practised or even considered.

The use of measuring man in his entirety, is to be justified by exactly the same arguments as those by which any special examinations are justified, such as those in classics or mathematics; namely, that every measurement tests, in some particulars, the adequacy of the previous education, and contributes to show the efficiency of the man as a human machine, at the time it was made. It is impossible to be sure of the adequacy in every respect of the rearing of a man, or of his total efficiency, unless he has been measured in character and physique, as well as in intellect. A wise man desires this knowledge for his own use, and for the same reason that he takes stock from time to time of his finances. It teaches him his position among his fellows, and whether he is getting on or falling back, and he shapes his ambitions and conduct accordingly. "Know thyself" is an ancient phrase of proverbial philosophy, and I wish to discuss ways by which its excellent direction admits of being better followed.

The art of measuring various human faculties now occupies the attention of many inquirers in this and other countries. Shelves full of memoirs have been written in Germany alone, on the discriminative powers of the various senses. New processes of inquiry are yearly invented, and it seems as though there was a general lightning up of the sky in front of the path of the anthropometric experimenter, which betokens the approaching dawn of a new and interesting science. Can we discover landmarks in character to serve as bases for a survey, or is it altogether too indefinite and fluctuating

to admit of measurement? Is it liable to spontaneous changes, or to be in any way affected by a caprice that renders the future necessarily uncertain? Is man, with his power of choice and freedom of will, so different from a conscious machine, that any proposal to measure his moral qualities is based upon a fallacy? If so, it would be ridiculous to waste thought on the matter, but if our temperament and character are durable realities, and persistent factors of our conduct, we have no Proteus to deal with in either case, and our attempts to grasp and measure them are reasonable.

I have taken pains, as some of my readers may be aware, to obtain fresh evidence upon this question, which, in other words, is, whether or no the actions of men are mainly governed by cause and effect. On the supposition that they are so governed, it is as important to us to learn the exact value of our faculties, as it is to know the driving power of the engine and the quality of the machine that does our factory-work. If, on the other hand, the conduct of man is mainly the result of mysterious influences, such knowledge is of little service to him. He must be content to look upon himself as on a ship, afloat in a strong and unknown current, that may drift her in a very different direction to that in which her head is pointed.

My earlier inquiries into this subject had reference to the facts of heredity, and I came across frequent instances in which a son, happening to inherit somewhat exclusively the qualities of his father, had been found to fail with his failures, sin with his sins, surmount with his virtues, and generally to get through life in much the same way. The course of his life had, therefore, been predetermined by his inborn faculties, or, to continue the previous metaphor, his ship had not drifted, but pursued the course in which her head was set until she arrived at her predestined port.

The second of my inquiries was into the life-histories of twins, in the course of which I collected cases where the pair of twins resembled each other so closely, that they behaved like one person, thought and spoke alike, and acted similar parts when separated. Whatever spontaneous feeling the one twin may have had, the other twin at the very same moment must have had a spontaneous feeling of exactly the same kind. Such habitual coincidences, if they had no common cause, would be impossible; we are therefore driven to the conclusion that whenever twins think and speak alike, there is no spontaneity in either of them, in the popular acceptance of the word, but that they act mechanically and in like ways, because their mechanisms are alike. I need not reiterate my old arguments, and will say no more about the twins, except that new cases have come to my knowledge which corroborate former information. It follows, that if we had in our keeping the twin of a man, who was his "double," we might obtain a trustworthy forecast of what the man

would do under any new conditions, by first subjecting that twin to the same conditions and watching his conduct.

My third inquiry is more recent. It was a course of introspective search into the operations of my own mind, whenever I caught myself engaged in a feat of what at first sight seemed to be free-will. The inquiry was carried on almost continuously for three weeks, and proceeded with, off and on, for many subsequent months. After I had mastered the method of observation a vast deal of apparent mystery cleared away, and I ultimately reckoned the rate of occurrence of perplexing cases, during the somewhat uneventful but pleasant months of a summer spent in the country, to be less than one a day. All the rest of my actions seemed clearly to lie within the province of normal cause and consequence. The general results of my introspective inquiry support the views of those who hold that man is little more than a conscious machine, the larger part of whose actions are predicable. As regards such residuum as there may be, which is not automatic, and which a man, however wise and well informed, could not possibly foresee, I have nothing to say, but I have found that the more carefully I inquired, whether it was into hereditary similarities of conduct, into the life-histories of twins, or now introspectively into the processes of what I should have called my own Free-Will, the smaller seems the room left for the possible residuum.

I conclude from these three inquiries that the motives of the will are mostly normal, and that the character which shapes our conduct is a definite and durable "something," and therefore that it is reasonable to attempt to measure it. We must guard ourselves against supposing that the moral faculties which we distinguish by different names, as courage, sociability, niggardness, are separate entities. On the contrary, they are so intermixed that they are never singly in action. I tried to gain an idea of the number of the more conspicuous aspects of the character by counting in an appropriate dictionary the words used to express them. Roget's *Thesaurus* was selected for that purpose, and I examined many pages of its index here and there as samples of the whole, and estimated that it contained fully one thousand words expressive of character, each of which has a separate shade of meaning, while each shares a large part of its meaning with some of the rest.

It may seem hopeless to deal accurately with so vague and wide a subject, but it often happens that when we are unable to meet difficulties, we may evade them, and so it is with regard to the present difficulty. It is true that we cannot define any aspect of character, but we can define a test that shall elicit *some* manifestation of character, and we can define the act performed in response to it. Searchings into the character must be conducted on the same

fundamental principle as that which lies at the root of examinations into the intellectual capacity. Here there has been no preliminary attempt to map out the field of intellect with accuracy; but definite tests are selected by which the intellect is probed at places that are roughly known but not strictly defined, as the depth of a lake might be sounded from a boat rowing here and there. So it should be with respect to character. Definite acts in response to definite emergencies have alone to be noted. No accurate map of character is required to start from.

Emergencies need not be waited for, they can be extemporised; traps, as it were, can be laid. Thus, a great ruler whose word can make or mar a subject's fortune, wants a secret agent and tests his character during a single interview. He contrives by a few minutes' questioning, temptation, and show of displeasure, to turn his character inside out, exciting in turns his hopes, fear, zeal, loyalty, ambition, and so forth. Ordinary observers who stand on a far lower pedestal, cannot hope to excite the same tension and outburst of feeling in those whom they examine, but they can obtain good data in a more leisurely way. If they are unable to note a man's conduct under great trials for want of opportunity, they may do it in small ones, and it is well that those small occasions should be such as are of frequent occurrence, that the statistics of men's conduct under like conditions may be compared. After fixing upon some particular class of persons of similar age, sex, and social condition, we have to find out what common incidents in their lives are most apt to make them betray their character. We may then take note as often as we can, of what they do on these occasions, so as to arrive at their statistics of conduct in a limited number of well-defined small trials.

One of the most notable differences between man and man, lies in the emotional temperament. Some persons are quick and excitable; others are slow and deliberate. A sudden excitement, call, touch, gesture, or incident of any kind evokes, in different persons, a response that varies in intensity, celerity, and quality. An observer watching children, heart and soul at their games, would soon collect enough material to enable him to class them according to the quantity of emotion that they showed. I will not attempt to describe particular games of children or of others, nor to suggest experiments, more or less comic, that might be secretly made to elicit the manifestations we seek, as many such will occur to ingenious persons. They exist in abundance, and I feel sure that if two or three experimenters were to act zealously and judiciously together as secret accomplices, they would soon collect abundant statistics of conduct. They would gradually simplify their test conditions and extend their scope, learning to probe character more quickly and from more of its sides.

It is a question by no means to be decided off-hand in the nega-

tive, whether instrumental measurements of the magnitude of the reflex signs of emotion in persons who desire to submit themselves to experiment, are not feasible. The difficulty lies in the more limited range of tests that can be used when the freedom of movement is embarrassed by the necessary mechanism. The exciting cause of emotion whatever it be, a fright, a suspense, a scold, an insult, a grief, must be believed to be genuine, or the tests would be worthless. It is not possible to sham emotion thoroughly. A good actor may move his audience as deeply as if they were witnessing a drama of real life, but the best actor cannot put himself into the exact frame of mind of a real sufferer. If he did, the reflex and automatic signs of emotion excited in his frame would be so numerous and violent, that they would shatter his constitution long before he had acted a dozen tragedies.

The reflex signs of emotion that are perhaps the most easily registered, are the palpitations of the heart. They cannot be shammed or repressed, and they are visible. Our poet Laureate has happily and artistically exemplified this. He tells us that Launcelot returning to court after a long illness through which he had been nursed by Elaine, sent to crave an audience of the jealous queen. The messenger utilises the opportunity for observing her in the following ingenious way like a born scientist.

"Low drooping till he well nigh kissed her feet
For loyal awe, saw with a sidelong eye
The shadow of a piece of pointed lace
In the Queen's shadow, vibrate on the wall
And parted, laughing in his courtly heart."

Physiological experimenters are not content to look at shadows on the wall, that depart and leave no mark. They obtain durable traces by the aid of appropriate instruments. Mare's pretty little pneumo-cardiograph is very portable, but not so sure in action as the more bulky apparatus. It is applied tightly to the chest in front of the heart, by a band passing round the body. At each to-and-fro movement, whether of the chest as a whole, or of the portion over the heart, it sucks in or blows out a little puff of air. A thin india-rubber tube connects its nozzle with a flat elastic bag under the short arm of a lever. The other end of the lever moves up and down in accordance with the part of the chest to which the pneumo-cardiograph is applied, and scratches light marks on a band of paper which is driven onwards by clockwork. This little instrument can be worn under the buttoned coat without being noticed. I was anxious to practise myself in its use, and wore one during the formidable ordeal of delivering the Rede Lecture in the Senate House at Cambridge, a month ago (most of this very memoir forming part of that lecture). I had no connection established between my instru-

ment and any recording apparatus, but wore it merely to see whether or no it proved in any way irksome. If I had had a table in front of me, with the recording apparatus stowed out of sight below, and an expert assistant near at hand to turn a stop-cock at appropriate moments, he could have obtained samples of my heart's action without causing me any embarrassment whatever. I should have forgotten all about the apparatus while I was speaking.

Instrumental observers of the reflex signs of emotion have other means available besides this, and the sphygmograph that measures the pulse. Every twitch of each separate finger even of an infant's hand is registered by Dr. Warner's ingenious little gauntlet. Every movement of each limb of man or horse is recorded by Dr. Marek. The apparatus of Mosso measures the degree in which the blood leaving the extremities rushes to the heart and head and internal organs. Every limb shrinks sensibly in volume from this withdrawal of the blood, and the shrinkage of any one of them, say the right arm, is measured by the fall of water in a gauge that communicates with a long bottleful of water, through the neck of which the arm has been thrust, and in which it is softly but effectually plugged.

I should not be surprised if the remarkable success of many persons in "muscle-reading" should open out a wide field for delicate instrumental investigations. The poetical metaphors of ordinary language suggest many possibilities of measurement. Thus when two persons have an "inclination" to one another, they visibly incline or slope together when sitting side by side, as at a dinner-table, and they then throw the stress of their weights on the near legs of their chairs. It does not require much ingenuity to arrange a pressure gauge with an index and dial to indicate changes in stress, but it is difficult to devise an arrangement that shall fulfil the threefold condition of being effective, not attracting notice, and being applicable to ordinary furniture. I made some rude experiments, but being busy with other matters, have not carried them on, as I had hoped.

Another conspicuous way in which one person differs from another is in temper. Some men are easily provoked, others remain cheerful even when affairs go very contrary to their liking. We all know specimens of good and bad-tempered persons, and all of us could probably specify not a few appropriate test conditions to try the temper in various ways, and elicit definite responses. There is no doubt that the temper of a dog can be tested. Many boys do it habitually, and learn to a nicety how much each will put up with, without growling or showing other signs of resentment. They do the same to one another, and gauge each other's tempers accurately.

It is difficult to speak of tests of character without thinking of Benjamin Franklin's amusing tale of the "Handsome and the Deformed Leg," and there is no harm in quoting it, because, however

grotesque, it exemplifies the principle of tests. In it he describes two sorts of people; those who habitually dwell on the pleasanter circumstances of the moment, and those who have no eyes but for the unpleasing ones. He tells how a philosophical friend took special precautions to avoid those persons who being discontented themselves, sour the pleasures of society, offend many people, and make themselves everywhere disagreeable. In order to discover a pessimist at first sight, he cast about for an instrument. He of course possessed a thermometer to test heat, and a barometer to tell the air-pressure, but he had no instrument to test the characteristic of which we are speaking. After much pondering he hit upon a happy idea. He chanced to have one remarkably handsome leg, and one that by some accident was crooked and deformed, and these he used for the purpose. If a stranger regarded his ugly leg more than his handsome one he doubted him. If he spoke of it and took no notice of the handsome leg, the philosopher determined to avoid his further acquaintance. Franklin sums up by saying, that every one has not this two-legged instrument, but every one with a little attention may observe the signs of a carping and fault-finding disposition.

This very disposition is the subject of the eighteenth "character" of Theophrastus, who describes the conduct of such men under the social conditions of the day, one of which is also common to our own time and countrymen. He says that when the weather has been very dry for a long time, and it at last changes, the grumbler being unable to complain of the rain, complains that it did not come sooner. The British philosopher has frequent opportunities for applying weather tests to those whom he meets, and with especial fitness to such as happen to be agriculturists.

The points I have endeavoured to impress are chiefly these. First, that character ought to be measured by carefully recorded acts, representative of the usual conduct. An ordinary generalisation is nothing more than a muddle of vague memories of inexact observations. It is an easy vice to generalise. We want lists of facts, every one of which may be separately verified, valued and revalued, and the whole accurately summed. It is the statistics of each man's conduct in small every-day affairs, that will probably be found to give the simplest and most precise measure of his character. The other chief point that I wish to impress is, that a practice of deliberately and methodically testing the character of others and of ourselves is not wholly fanciful, but deserves consideration and experiment.

FRANCIS GALTON.