IV.—RESEARCH AND DISCUSSION.

FREE-WILL—OBSERVATIONS AND INFERENCES.

By Francis Galton, F.R.S.

The cases appear rare in which any of the numerous writers on Free-will have steadily, and for a long time together, watched the operations of their own minds, whenever it was engaged in such an act, and discussions on Free-will have certainly been much more frequent than systematic observations of it.[1] Consequently, for my own information, I undertook a course of introspective inquiry last year: it was carried on almost continuously during six weeks, and has been proceeded with, off and on, for many subsequent months.

As the results were not what I expected and as they were very distinct, I publish them, of course on the understanding that I profess to speak only of the operations of my own mind. If others will do the same, we shall be hereafter in a position to generalise.

My course of observation was that, whenever I caught myself engaged in a feat of what might fairly be called Free-will, I checked myself, and recalled the antecedents and noted any circumstances that might have influenced my decision, and forthwith wrote down an account of the whole transaction. After I had collated several notes I found that the variety of processes to be observed was small; I therefore discontinued my notes but maintained the observations, until I felt satisfied that I could describe as much of what goes on in my own mind as falls within the ken of its consciousness.

I may say that, after some preliminary maladroitness had been overcome, I did not find the task difficult, nor even irksome; not nearly so much as in other introspective inquiries I have made. It is true that facility in any kind of introspection is difficult to acquire; it depends on the establishment of a habit something like that of writing in the midst of avocations. When the latter has once been attained, the writer recovers the thread of thought that had been dropped at each interruption, and rarely finds it broken. So it is with introspection.

The word 'Will' is of course applicable to more acts than the word 'Free-will,' as it accompanies many that are obviously automatic. I did not occupy myself about these, of which I

[1] I only know of one such course, by Mr. Henry Travis, in Mind V. I did not read that article until after my own inquiries were finished. We do not cover exactly the same ground, and so far as we do our results differ.

will merely mention the chief, to show that they have not been overlooked.

All that depends upon constitutional tenacity of purpose is to be suspected of automatism. A man in whom this quality is conspicuous, is spoken of as obstinate. He is frequently likened to some brute animal, which shows that tenacity of purpose is not popularly considered to be of a high order of psychical activity. Thus an obstinate man is vulgarly said to be as obstinate as a mule or a donkey, or, more vulgarly still, as a pig. It is more proper to consider tenacity of purpose as antagonistic to freedom of will, as in a madman who is constrained by his monomania. A block of wood or stone gravitates obstinately, and if it were conscious of the act might be said to have tenacity of purpose.

The appetites are among the motives that automatically direct the Will, for it is proverbial that they make men their slaves. I did not trouble myself with any acts that were determined wholly by them.

Lastly, I did not care to trouble myself with cases in which two motives of the same kind were in conflict and the greater prevailed. There is no more anomaly in these than there is in the heavier scale-pan of a balance descending.

The events with which I did concern myself were those in which feelings of different quality had been in opposition, as when the appetites or passions had been thwarted by alien influences, and I endeavoured to infer from a comparison with past experiences, how far the issue of each contest had really at any time been doubtful.

I began my observations under the belief that I should be seriously embarrassed by their number and frequency, and I spent much preliminary thought over different methods of dealing with otherwise overwhelming multitudes of data. I was also prepared to find that the origin of the motives by which my Will was determined, lay usually too deep to be reached without severe and persistent effort. Great then was my surprise in discovering, after I had fairly entered upon my observations, that the occasions were rare in which there seemed room for the exercise of Free-will. I ultimately reckoned that the rate of occurrence of such interesting cases, during the somewhat uneventful but pleasant months of a summer spent in the country, was less than one a day. All the rest of my actions seemed clearly to lie within the province of normal cause and consequence.

It will of course be understood that I do not commit myself to the absurd assertion that I was able in any one case to record every convergent motive and the history of each of them, how it was induced by such and such circumstances, and these again by others, and so on *ad infinitum;* but I mean that, in whatever one direction I cared to follow the track backwards, I found it to be continuous and orderly until it led to a tangle of familiar paths

whose issues were well known. I believe however that, if I had undertaken the inquiry in youth, when the number of my past experiences was only a fraction of what they now are, I should have found it much less easy to persuade myself of the frequency with which I act as an automaton.

After these prefatory remarks, I come to the results. It will be best to begin with what I observed to be the usual conditions of irresolution. When I was distressed between opposite motives and the Will delayed to act, my irresolution seemed due to one or other of two or even three states, sufficiently different to be described separately, though having much in common.

The first was that in which each of the alternative plans became less attractive the longer it was looked at, until it grew indifferent or even repellent; then the attention lapsed to the other alternative; and so it swung to and fro, incapable of wholly fixing itself upon either.

The second was due to a fitfulness in the growth of the desire to change, accompanied by frequent retrogressions, and to an equally fitful waning of the wish not to change. The resolution was delayed until a considerable rise of the new desire corresponded with a sudden fall of the old one. Without caring to specify grandiose examples, I may say that in the daily act of wakening up and rising in the morning many instances of this occurred.

The same process of rising afforded excellent illustrations of a third form of irresolution, which is, I think, of especial interest. The conditions I have in view are—no particular call to get up, a comfortable bed, and a disinclination to leave it. My mind is then nimble and much more than half-awake, and I have a general sense of complete adaptation to circumstances, but a faint voice, as out of a different condition of things, preaches to me the merits of early rising. To this I may give intellectual assent, but, before it is possible for me to will to rise, the Ego that is subsisting in content must somehow be abolished and a transmigration must take place into a different Ego, that of wide-awake life. What I mean, is well expressed by the colloquial phrase of "turning over a new leaf". The mind is shifted into a new position of stable equilibrium, and it is just at the momentary heave of tumbling over into it, or, as it is sometimes expressed, at the moment of "making up the mind," that the wrench of will is felt. There is a somewhat similar sense of discomfort when a visual object has been interpreted in a particular fashion, and suddenly a different interpretation of it is forced upon us. The simplest example of this is found . . . . . in the successive ways in which we apprehend a . . . . . system of dots disposed in parallel lines and at . . . . . equal distances apart. We may view them in . . . . . lines that are either horizontal, sloping from left to right or from

right to left, or vertical. After looking at them in one aspect, another unexpectedly forces itself upon us, and at the same moment we have a slight sense of discomfort. In other examples the discomfort is more severe and amounts to a mental wrench, though much less acute than that which accompanies the "turning over of a new leaf," because the emotions are hardly engaged.

The conditions under which the "transmigration" of which I spoke took place, were various. Sometimes it was due to the momentary triumph of the waxing over the waning desire. Sometimes a velleity produced a will by aid of an artifice, seen through but not regarded. It did trigger-work only, neutral as regards the immediate future but which, like lazily pulling the string of a shower bath, produced an abundantly awakening effect after a short interval. The determining cause of the Will to rise was sometimes a slight accidental stimulus. On one occasion it consisted of two very light taps against the window, caused by something blown against it. This aroused no special association but was as effectual as any other slight sense-stimulus might have been, to rouse the sleepy Will.

I suspect that much of what we stigmatise as irresolution is due to our Self being by no means one and indivisible, and that we do not care to sacrifice the Self of the moment for a different one. There are, I believe, cases in which we are wrong in reproaching ourselves sternly, saying "The last week was not spent in the way you now wish it had been," because the Self was not the same throughout. There is room for applying the principle of the greatest happiness to the greatest number; the particular Self at the moment of making the retrospect being not the only one to be considered.

I will now speak of instances in which incommensurable motives had been pitted together and the one that was not the most keenly felt, nor gave the greatest pleasure in any sense of the word, emerged triumphant. Here is a case of a very common type which shows how easily a very feeble voice of conscience may win. I condense it out of my note-book, changing details for obvious reasons.

"An acute sense of annoyance and irritation came over me as I thought of some interests of mine that had suffered owing to an old friend's having neglected to read a letter with ordinary attention, he being, as I knew at the time, much engrossed with his own business. Then the thought arose 'So much irritation is unjustifiable; he certainly did not mean ill, and he has on past occasions helped me much'. There was no emphasis in the mental expression of this thought, nevertheless I felt sure from vague memories of past experiences that it was bound to prevail. It did so, by gradually cutting off the supply of irritation. The angry feeling however broke out after an interval, and was twice

exorcised subsequently by the same process; so I had a threefold experience."

Here the opposition occasioned no struggle, and was accompanied by no balancing of pleasures and pains. A passionate feeling was quieted by a consideration that was almost unfelt. It was annihilated by turning off, as it were, some tap at its source. I do not say that if I had yielded to the sense of irritation I might not have subsequently felt pains of remorse, but that has nothing to do with what actually occurred. I am sure that I did not consciously discount the contingent remorse, and balance its present proceeds of pain against the present pleasure of indulging in anger.

Habit is another colourless influence that obtains easy victories. We are so drilled by social life that we perform, as a matter of course, multitudes of acts that a solitary being governed by his likes and dislikes would think preposterous. Here is an example of one of these common cases condensed out of my note-book, with changed details as before.

"An imperious old lady, infirm and garrulous, called at my house just as I had finished much weary work and was preparing with glee for a long walk. Hearing that I was at home, she dismissed her carriage for three quarters of an hour, so I was her prisoner for all that time. As she talked with little cessation, I had full opportunity for questioning myself on the feeling that supported me through the infliction. The response always shaped itself in the same way, 'Social duties may not be disregarded; besides, this is a capital occasion for introspection'."

Leaving aside the last clause of the reply, we see here, as before, how a keen desire may wither under the influence of something about which our consciousness is scarcely exercised; some one of the many habits, whose quiet and firm domination gives a steadiness and calm to mature life that children cannot comprehend.

Those who find a difficulty in understanding how a feebly felt mental action can vanquish a strong desire, will find the difficulty vanish if they consent to assume a physiological and not a psychical standpoint. The gain is as great as that of viewing the planetary system after the fashion of Copernicus, instead of that of Ptolemy. There is nothing contrary to experience in supposing that conflicting physiological actions may be perceived with a distinctness quite disproportionate to their real efficacy. We may compare the conflict between faintly perceived activities of one kind and clearly perceived activities of another kind, to that between troops dressed in a uniform scarcely distinguishable from the back-ground with others clad in staring scarlet. We must be content to admit that our consciousness has a very inexact cognisance of the physiological battles in our brain, and that the mystery why apparently weak motives of one class

should invariably get the better of apparently strong motives of another class, lies wholly in the word 'apparently'. In short, that the appearances of their relative strength are deceptive.

The remaining difficulty connected with Free-will seems also to depend on the word 'apparently'. It is the startling spontaneity with which some of those ideas that determine the Will seem to arise. These sudden presentations belong to a large category of cases of which hallucinations are the most striking examples. These ordinary accompaniments of insanity occasionally occur also among the sane, and may consist of voices denouncing, exhorting, or conversing in grammatical and well-turned sentences, or else of apparitions undistinguishable from real objects. A similar spontaneity, though in a far less marked degree, characterises all our thoughts. Most of our ideas are partially shaped when they are first consciously perceived, and frequently they are fully shaped. Thus, a versifier, having the jingle and run of a just completed line in his head, may produce a second line at a single birth, that shall rhyme, scan and make sense. I have elsewhere[1] pointed out a close and instructive analogy between the process by which completely shaped ideas probably arise, and that by which "fire-faces," as they are sometimes named, are certainly formed. I mean by that word those well defined faces, landscapes or other pictures, that most persons are apt to trace in the red hot coals of the fire, in the clouds, or in the patterns of wall paper. A part of the mind, unconsciously, and frequently against subsequent judgment and will, is found to have been struck by some chance-lines or sequence of points that serve to suggest a picture. It has ignored everything that does not conform to the unconsciously suggested image and has fancifully supplied whatever is deficient. Sometimes this imaginative process is slow and may be watched in operation, sometimes it halts and we wait for it, but usually it is quicker than thought, and the face, or whatever it may be, starts before our consciousness in its perfected shape, just as an hallucination.

This curious property of the imagination to be set a-going by a trifle and to run on by itself in fanciful directions to extravagant lengths, and to end by forming pictures that are complete even to minute details, must be accepted as a fact, for which it is not difficult dimly to see a rational interpretation. Even a kaleidoscope, which consists of only two small strips of mirrors, is adequate to compose an indefinite number of tasteful and complicated patterns out of glimpses of bits of coloured glass, tossed into haphazard arrangements. Much more may we suppose that the brain, whose structure is enormously complicated and acted on by organic memories as well as by present stimuli, should be capable of doing a vast deal more and something of the same

[1] *Inquiries into Human Faculty*, p. 170. Macmillan & Co., 1883.

kind as the very simple but suggestive instrument, the kaleidoscope.

Leonardo da Vinci and Turner both recognised the need of the imagination for something to work upon, for they, and doubtless very many other painters have done the same, systematically watched chance-groupings of objects to gain pictorial suggestions. This "something" need not be external; it may be due to any casual activity of a part of the brain, set in motion by causes alien to that connected series of physiological actions of which the previous chain of thought was the psychical counterpart. These alien causes may be of innumerable kinds, ranging from what might be described as mere fidget, to the results of grave lesions, the consequence of accident or disease.

In illustration of what I mean, I give the following example of a visual hallucination being traced to its origin. My correspondent wrote to me at length about two classes of mental imagery to which she had been subject for at least 16 years. The one was always present in the dark, when she closed her eyes. It was an assemblage of rapidly moving dots with occasional specks of light. The other occurred at the moment of waking, and was seen behind the still closed lids, though sometimes it persevered like a real object after the eyes had been opened in full daylight. It took the form of some beautiful pattern either of lacework or rich carpetry, full of elaborate details. Then she goes on to say:—"Well, one morning I discovered how these patterns were formed. When I awoke but kept my eyes shut, I saw a confused mass of little dots, shapeless but rapidly moving; suddenly they separated into lines at regular intervals, then followed cross-lines forming diamonds, and in an instant there was the pattern of a carpet, with clusters of roses and leaves at the points, and a smaller rose at the side."

I infer that audible hallucinations and every other form of sudden presentation, every new idea, have an analogous source to these visual ones. Moreover, as the imagination works in obscure depths out of the usual ken of consciousness, there seems reason for supposing that the "something" upon which it works may in most cases be equally beyond its view. It is also certain that those who introspect, and those who study the genesis of dreams, succeed in discovering plain causes for numerous images and thoughts that had seemed to have risen spontaneously.

If these explanations are correct, as I feel assured they are, we must understand the word "spontaneity" in the same sense that a scientific man understands the word "chance". He thereby affirms his ignorance of the precise causes of an event, but he does not in any way deny the possibility of determining them. 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 predictable. 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 the facts of hereditary similarities of conduct, into the life-histories of very like or of very unlike 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.

VISUAL HALLUCINATIONS IN HYPNOTISM.

By Alfred Binet.

I offer the following summary of experiments made upon five hysterical girls at the Hospice de la Salpetrière in Paris; having treated the subject at greater length in the *Revue Philosophique* of last May.

Visual hallucinations verbally suggested in the somnambulist stage of hypnotism fall under the following rule:—The imaginary object is perceived under the same conditions as a real one (Ch. Féré).

(1) The hallucination is suppressed by a screen, like the external view of a real object. Some patients, however, continue to experience the hallucination in spite of the screen placed before their eyes; but we may be sure that in these the view of real objects is subject to the same conditions, and also continues in spite of the screen. Further, attentive observation shows that in this case it is upon the screen that the subject projects the hallucinatory image.

(2) The hallucination naturally takes the bilateral form, like external vision. In the absence of special suggestion the subjects perceive the imaginary object with each of the two eyes as if it were a real object.

If the patient has one eye colour-blind, this eye, which cannot see real colours, is equally incapable of seeing imaginary colours; coloured hallucinations cannot be suggested to this eye.

It was the same in a case of spontaneous hallucination observed in an hysterical mad woman. She always saw at her left side a man dressed in scarlet; when this patient's right eye was closed, and her left eye, which was colour-blind, alone remained open, the man in question appeared to her grey and enveloped in clouds.

This rule is, however, by no means absolute. There are hypnotics to whom coloured hallucinations can be suggested through their defective eye. The loss of the sense of colours results from a paralysis of cortical origin, and we can see that the verbal suggestion may overcome this paralysis in certain patients and fail in others.